Investigation of Mould Growth

Cabins 1-8
1225 Grass Lake Road, Haliburton, Ontario

Prepared for:

Fleming College
599 Brealey Drive
Peterborough, Ontario, K9J 7B1

October 31, 2022

Pinchin File: 316099

Issued to:	**Fleming College**
Issued on:	**October 31, 2022**
Pinchin File:	**316099**
Issuing Office:	**Mississauga, ON**

Author: Meaghan Dunn, B.Sc., Adv. Env. Tech
Senior Project Technologist
289.928.0366
mdunn@pinchin.com

Reviewer: Valerie Johnston, B.Sc., EEAD, LEED AP BD+C, WELL AP, ROH
Operations Manager
905.245.0688
vjohnston@pinchin.com

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

1.0 INTRODUCTION AND SCOPE

1.1 Statement of Understanding

Pinchin Ltd. (Pinchin) was retained by Fleming College (Client) to conduct an investigation of potential mould growth at 1225 Grass Lake Road, Haliburton, Ontario. Pinchin Ltd. assessed the cabins the previous year and the client would like to verify the current condition of each cabin.

This investigation was undertaken to address recommendations provided in the previous Pinchin Ltd. Reports:

- "*Investigation of Mould Growth, Cabin 1 and 6, 1225 Grass Lake Road, Haliburton, Ontario*" Prepared by: Pinchin Ltd. Dated: August 27, 2021. Pinchin File No. 296878.
- "*Investigation of Mould Growth, Cabin 2-5, 7 and 8, 1225 Grass Lake Road, Haliburton, Ontario*" Prepared by: Pinchin Ltd. Dated: October 4, 2021. Pinchin File No. 296878.

1.2 Scope of Work

Pinchin performed the investigation on September 29, 2022. and September 30, 2022 The investigation addressed all accessible areas of each cabin.

The investigation involved the following activities:

- Review of occupant and management concerns.
- Spot readings of moisture content of building materials.
- Walkthrough site review for water damage or mould growth.
- Collection and analysis of the following (including reference and field blanks):
    - Twelve spore trap mould air samples
    - Ten mould bulk and/or tape-lift samples
    - Nine samples to test for asbestos in bulk materials

2.0 METHODOLOGY

2.1 Interviews and Site Reviews

Pinchin interviewed building staff, to discuss the history of the building, maintenance practices, water damage and any indoor air quality complaints.

Pinchin performed a walkthrough site review for indications of suspect mould growth and/or water damage on accessible building materials, paying particular attention to areas where past water damage had been reported.

The investigator did not perform any destructive work to inspect concealed conditions inside wall and/or ceiling cavities. In all Cabins with an access hatch to the attic, the investigator performed visual inspection from the hatch as the safety of entering the attic space was unknown.

The investigator used a moisture meter to test for elevated moisture levels in building materials.

Pinchin identified suspect hazardous building materials within the area of expected water damage and/or mould remediation. The assessment will provide sufficient detail to allow for the removal and replacement of these materials using appropriate precautions to facilitate repair of the building. This assessment does not provide sufficient detail for long term management of hazardous materials as required by Health and Safety regulations.

2.2 Test Methods and Criteria

The following table presents the parameters tested in this investigation, recommended limits or interpretation guides, the units of measurement, and the instruments and sampling/analytical methods employed.

Table I – Parameters Tested, Recommended Limits and Instruments or Methods Used

Parameter	Unit of Measurement	Recommended Limit or Guide to Interpretation	Instrumentation or Test Method
Temperature, T	°C	Consider the risk of condensation on cold surfaces to prevent mould growth	System Delmhorst® Thermo-Hygrometer HT-3000
Relative Humidity, RH	%RH	Maintain long term below 80 %, to prevent mould growth[1]	
Moisture in building materials (Note: detects surface moisture only, may not detect deeper moisture)	% Moisture	Threshold for mould growth:[2] Drywall, 0.7% Wood materials, 17%	System Delmhorst® BD-2100

1 O.A.G. Adan, R.A. Samson (Editors): *Fundamentals of Mold Growth in Indoor Environments and Strategies for Healthy Living*. Wageningen, The Netherlands: Wageningen Academic Publishers, 2011
2 Macher, J. (Ed): *Bioaerosols, Assessment and Control*. Cincinnati OH: American Conference of Governmental Industrial Hygienists, 1999.

Table I – Parameters Tested, Recommended Limits and Instruments or Methods Used

Parameter	Unit of Measurement	Recommended Limit or Guide to Interpretation	Instrumentation or Test Method
Airborne mould (spore trap method)	Spores per cubic metre of air	Compare test area to reference areas and outdoors[3] Consider water-damage indicator moulds Reference results of Pinchin Ambient Mould Index (PAMI)	Allergenco-D® sampler, laboratory analysis by Direct Microscope Examination
Mould in tape-lift samples (DME)	Presence or absence of Mould Growth, to genus, and Light, Moderate or Heavy density [4]	Current guidelines recommend remediation of all interior mould growth, regardless of species	Direct Microscope Examination with staining
Asbestos in bulk materials	% Asbestos	Threshold for mandatory precautions set in provincial regulations	Polarized Light Microscopy, dispersion staining

All air sampling pumps were calibrated before and after use.

2.3 Laboratory Analysis

The analysis for mould was performed at the Pinchin Environmental Microbiology Laboratory, Mississauga. The Pinchin laboratory is independently accredited to ISO/IEC 17025:2017 for mould and bacteria analysis, by the American Industrial Hygiene Association Laboratory Accreditation Program LLC (AIHA LAP LLC) (Lab ID 158835)[5] and the Quebec government (Lab ID 495).[6]

The spore trap mould air sample results include a report from the Pinchin Ambient Mould Index database (PAMI) ©. PAMI is a compilation of over 36,000 outdoor spore trap mould air samples analysed in the Pinchin laboratory, since 2006. The database has been analysed by month and region (18 regions across Canada) to report statistical data on means, medians, confidence intervals, etc. As a measure of the ranges in outdoor mould concentrations, the PAMI data can assist in the interpretation of indoor mould air sample results.

3 Health Canada: *Fungal Contamination in Public Buildings: Health Effects and Investigation Methods*. Ottawa ON: Health Canada, 2004.
4 The density of mould growth is ranked by the Pinchin Environmental Microbiology Laboratory as: Light (covers less than about 10% of specimen); Moderate (covers 10-20% of specimen); or Heavy (covers more than about 20% of specimen).
5 Accredited by the American Industrial Hygiene Association Laboratory Accreditation Program LLC (AIHA LAP LLC) under the Environmental Microbiology Laboratory Accreditation Program (EMLAP), for Bulk, Surface and Air testing for moulds, Escherichia coli, Legionella by the ISO 11731 method and for Legionella pneumophila by qPCR ISO 12869 method (Lab ID 158835).
6 Accredited by the Quebec government under the Programme d'accreditation des laboratoires d'analyses (PALA) program for Air Microbiology – domains 601, 603, 604, 605, 606.

The asbestos samples were analysed at the Pinchin Ltd. Asbestos Bulk Laboratory, Mississauga, Ontario. The analysis was performed in accordance with US EPA Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993. The laboratory is independently accredited for the analysis of asbestos in bulk materials to ISO/IEC 17025/2017.[7]

3.0 FINDINGS

3.1 Results of Interviews

Building maintenance reported the following:

- Cabins were all built in the 1980s.
- Cabin 1 is currently not in use due to foundation issues - issue due to water run off causing the cinder blocks supporting the cabin to erode.
- Cabin 6 historically had squirrel issues in the attic, historically a clean up was completed in the attic space. Cabin 6 also had a leaking sink in the kitchen which caused mould growth in the wall with the kitchen cabinets. This abatement was completed in the past year.
- Roofs of cabins 7 and 8 were replaced in 2019 to sloped metal roofing.
- All cabin windows are poorly insulated, condensation is common and ice build up occurs often in the winter.
- In results of surveys from guests staying, the most common complaint received is regarding an odd odour in the cabins.

7 Accredited by the US National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0).

3.2 Facility Description

Table II – Cabins 1,3-6

Item	Details
Construction Date	~1980s
Number of Floors	One storey, plus attic and crawlspace (only in cabins 3-6)
Area of Building	750 square feet
Structural Type	Wooden frame
Foundation Type	Concrete cinderblocks
Exterior Cladding	Wood
HVAC	Baseboard radiators – cabins with crawlspaces have a unit heater underneath so pipes don't freeze
Roof	Not assessed – sloped asphalt shingled
Flooring	Carpet, vinyl sheet flooring and plywood
Interior Walls	Drywall and wood fibre panelling
Ceilings	1x1 mechanically fastened ceiling tiles
Pertinent Exterior Details	Cabin 1: water erosion causing cinder blocks to erode and organic growth on the roof Cabin 3: exterior siding damage and gap underneath of overhang to attic space Cabin 4: exterior siding is rotting in some areas, water damage on underneath of overhang Cabin 5: exterior siding is rotting in some areas Cabin 6: organic growth on exterior siding and Styrofoam.

Table III – Cabin 2

Item	Details
Construction Date	~1980s
Number of Floors	Two storeys (second storey is a loft/attic space turned into two rooms)
Area of Building	~1,000 square feet
Structural Type	Wooden frame
Foundation Type	Concrete cinderblocks
Exterior Cladding	Wood
HVAC	Baseboard radiators
Roof	Not assessed – sloped asphalt shingled

Table III – Cabin 2

Item	Details
Flooring	Carpet, wood and vinyl sheet flooring.
Interior Walls	Drywall
Ceilings	1x1 mechanically fastened ceiling tiles and drywall
Pertinent Exterior Details	Lower parts of wooden siding is starting to rot in some areas and condition of wooden deck/balcony is deteriorating due to moisture

Table IV – Cabins 7,8

Item	Details
Construction Date	~1980s
Number of Floors	One storey, plus attic and small inaccessible crawlspace.
Area of Building	~500 square feet
Structural Type	Wooden frame
Foundation Type	Elevated wwood
Exterior Cladding	Wood
HVAC	Baseboard radiators
Roof	Not assessed - slanted metal
Flooring	Wood
Interior Walls	Drywall, ceramic tiles and wood fibre panelling
Ceilings	Drywall
Pertinent Exterior Details	Cabin 7: none Cabin 8: exterior siding is rotting in some areas

All cabins were built at a time when asbestos-containing building materials were commonly used.

3.3 Results of Site Reviews and Testing

This section presents the findings of the walkthrough investigation and any tests for mould and asbestos. Appendix I presents the drawings. The analytical certificates for the mould tests are given in Appendix II. The results of the asbestos tests are given in Appendix III.

Table V – Cabin 1

Temperature	11.7 °C	Extent of Mould Growth	200 ft²
Relative Humidity	50.6 %RH	Extent of Water Damage Including Mould Growth	240 ft²

Photo 1 - Cabin 1.

Photo 2 - Organic growth on cabin 1 roof.

Photo 3 - Erosion on concrete cinderblocks and cabin is shifting off the blocks.

Photo 4 - Typical water staining identified on1x1 tiles in various locations throughout the cabin.

Photo 5 - Cracks in drywall walls due to building shift.

Photo 6 - Water damage on lower part of wood cabinets and slight mould growth on drywall (TL-01) where stove would go.

Table V – Cabin 1

Photo 7 - Wet wall behind toilet in Washroom.

Photo 8 - Typical spotting observed in attic space.

Moisture Measurements

Material/Location	Results	Material	Results
Drywall wall/ Living Area	0.3% -- DRY	Drywall wall/ Living Area	0.8% -- WET
Drywall wall/ Living Area	0.4% -- DRY	Drywall wall/ Washroom	0.4% -- DRY
Drywall wall/ Washroom	1.4% -- WET	Drywall wall/ Bedroom 3	0.5% -- DRY
Drywall wall/ Bedroom 3	0.4% -- DRY	Drywall wall/ Bedroom 2	0.5% -- DRY
Drywall wall/ Bedroom 2	0.4% -- DRY	Drywall wall/ Bedroom 1	0.3% -- DRY
Drywall wall/ Bedroom 1	0.4% -- DRY	Drywall wall/ Bedroom 1	0.3% -- DRY

Sample Log

Sample Type/ Location	Sample No.	Result
Mould Tape-Lift/ Wall in Kitchen	TL-01	Slight growth
Airborne Mould Spore Trap/ Living Area	ST-01	Impacted

Observations and Comments

Pinchin observed a musty odour upon entry of the cabin. A total of 29 water-stained ceiling tiles were noted and wet walls behind the toilet in the washroom. Mould growth was confirmed on the wall where the stove used to be in the living area (this is a shared wall with the washroom). Organic growth was observed on the roof of the cabin and the cinderblocks used to support the cabins were eroding due to water. Cracks in drywall walls are present throughout the assessed area due to building shift. Pinchin also identified spotting on the wood sheathing within the attic.

Table VI – Cabin 2

Temperature	7.6 °C	Extent of Mould Growth	15 ft²
Relative Humidity	63.2 %RH	Extent of Water Damage Including Mould Growth	20 ft²

Photo 9 - Cabin 2.

Photo 10 - Organic growth/water damage on balcony.

Photo 11 - Lower part of wood exterior panelling is starting to rot.

Photo 12 - Water staining on baseboard (TL-02).

Photo 13 - Cracks in drywall due to building shift.

Table VI – Cabin 2

Moisture Measurements			
Material/Location	**Results**	**Material**	**Results**
Drywall wall/ Kitchen	0.2% -- DRY	Drywall wall/ Kitchen	0.4% -- DRY
Drywall wall/ Kitchen	0.3% -- DRY	Drywall wall/ Living Area	0.2% -- DRY
Drywall wall/ Living Area	0.5% -- DRY	Drywall wall/ Living Area	0.4% -- DRY
Drywall wall/ Living Area	0.3% -- DRY	Drywall wall/ Washroom	0.2% -- DRY
Drywall wall/ Washroom	0.3% -- DRY	Drywall wall/ Bedroom 1	0.3% -- DRY
Drywall wall/ Bedroom 1	0.4% -- DRY	Drywall wall/ Bedroom 1	0.5% -- DRY
Drywall wall/ Bedroom 2	0.5% -- DRY	Drywall wall/ Bedroom 2	0.3% -- DRY
Drywall wall/ Bedroom 3	0.2% -- DRY	Drywall wall/ Bedroom 3	0.3% -- DRY
Drywall wall/ Bedroom 3	0.4% -- DRY		

Sample Log		
Sample Type/ Location	**Sample No.**	**Result**
Mould Tape-Lift/ Washroom	TL-02	No growth identified
Airborne Mould Spore Trap/ Living Area	ST-02	Impacted

Observations and Comments

Pinchin observed water staining on the baseboard in the washroom, and cracks in various locations due to building shift. Organic growth was seen on the balcony on the second floor, and the wood panelling on the exterior of the cabin is beginning to rot in some areas. Due to the second floor being turned into a loft there was no attic space to be assessed.

Table VII – Cabin 3

Temperature	20.4 °C	Extent of Mould Growth	105 ft²
Relative Humidity	50.7 %RH	Extent of Water Damage Including Mould Growth	105 ft²

Photo 14 - Cabin 3.

Photo 15 - Exterior wood siding is warping.

Photo 16 - Gap in underside of overhang to attic space.

Photo 17 - Typical condensation on windows identified throughout the cabin.

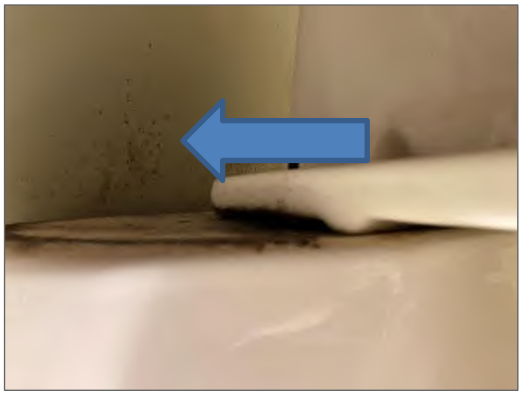


Photo 18 - Spotting on drywall behind toilet confirmed to be mould growth (TL-07).

Photo 19 - Typical spotting observed on side walls of attic space.

Table VII – Cabin 3

Photo 20 - Typical spotting observed on side walls of attic space.

Moisture Measurements

Material/Location	Results	Material	Results
Drywall wall/ Living Area	0.5% -- DRY	Drywall wall/ Living Area	0.4% -- DRY
Drywall wall/ Living Area	0.6% -- DRY	Drywall wall/ Washroom	0.6% -- DRY
Drywall wall/ Washroom	0.5% -- DRY	Drywall wall/ Washroom	0.5% -- DRY
Drywall wall/ Bedroom 3	0.5% -- DRY	Drywall wall/ Bedroom 3	0.6% -- DRY
Drywall wall/ Bedroom 2	0.4% -- DRY	Drywall wall/ Bedroom 2	0.5% -- DRY
Drywall wall/ Bedroom 2	0.6% -- DRY	Drywall wall/ Bedroom 1	0.5% -- DRY
Drywall wall/ Bedroom 1	0.6% -- DRY		

Sample Log

Sample Type/ Location	Sample No.	Result
Mould Tape-Lift/ Washroom	TL-07	Heavy growth
Airborne Mould Spore Trap/ Living Area	ST-08	Impacted

Observations and Comments

Pinchin observed a musty odour upon entering the cabin. Mould growth was visually identified on the side walls of the attic space, and mould growth was confirmed to be present on the drywall wall behind the toilet. Additionally, there is damage to the overhang which can allow access to the attic space for rodents.

Table VIII – Cabin 4			
Temperature	17.8 °C	Extent of Mould Growth	152 ft²
Relative Humidity	58.6%RH	Extent of Water Damage Including Mould Growth	166 ft²

Photo 21 - Cabin 4.

Photo 22 - Lower portion of exterior wood siding is rotting in various locations.

Photo 23 - Water damage by exterior door.

Photo 24 - Water stained ceiling tile and ceiling falling in.

Photo 25 - Typical water stained ceiling tiles identified throughout cabin.

Photo 26 - Black spotting on wooden door frame and damage to wood panelling by shower confirmed mould (TL-08).

Table VIII – Cabin 4

Photo 27 - Flooring by toilet is lifting due to water damage.

Photo 28 - Spotting identified on wood in attic space on all sides.

Photo 29 - Spotting identified on wood in attic space on all sides.

Moisture Measurements

Material/Location	Results	Material	Results
Drywall wall/ Living Area	0.3% -- DRY	Drywall wall/ Living Area	0.4% -- DRY
Drywall wall/ Living Area	0.5% -- DRY	Drywall wall/ Living Area	0.6% -- DRY
Drywall wall/ Washroom	0.4% -- DRY	Drywall wall/ Bedroom 3	0.4% -- DRY
Drywall wall/ Bedroom 2	0.4% -- DRY	Drywall wall/ Bedroom 1	0.4% -- DRY
Drywall wall/ Bedroom 1	0.5% -- DRY		

Sample Log

Sample Type/ Location	Sample No.	Result
Mould Tape-Lift/ Washroom	TL-08	Heavy growth
Airborne Mould Spore Trap/ Living Area	ST-09	Impacted

Observations and Comments

Pinchin observed a total of 19 water-stained ceiling tiles throughout the cabin. Additionally, water damage was observed by both exterior doors and the floor is starting to lift in the washroom by the shower. Black spotting was observed on wooden framing by shower and confirmed to be mould growth (TL-08). Black spotting was observed in the attic on all sides.

Table IX – Cabin 5

Temperature	8.1 °C	Extent of Mould Growth	160 ft²
Relative Humidity	75.2 %RH	Extent of Water Damage Including Mould Growth	210 ft²

Photo 30 - Cabin 5.

Photo 31 - Exterior wood siding is beginning to rot due to water.

Photo 32 - Asbestos containing sink mastic on sink in Kitchen.

Photo 33 - Non-asbestos 12x12 ceramic tile pattern sheet flooring.

Photo 34 - Wet wall adjacent to exterior door.

Photo 35 - Wet wall adjacent to other exterior door.

Table IX – Cabin 5

Photo 36 - Black spotting on wall confirmed to be mould growth (TL-03).

Photo 37 - Typical water stained ceiling tiles identified throughout cabin.

Photo 38 - Wet wall identified behind toilet.

Photo 39 - Typical light spotting identified on all sides of attic.

Photo 40 - Typical spotting identified on all sides of attic.

Table IX – Cabin 5

Moisture Measurements			
Material/ Location	**Results**	**Material**	**Results**
Drywall wall/ Living Area	0.4% -- DRY	Drywall wall/ Living Area	0.5% -- DRY
Drywall wall/ Living Area	0.7% -- WET	Drywall wall/ Living Area	0.8% -- WET
Drywall wall/ Living Area	0.9% -- WET	Drywall wall/ Washroom	0.5% -- DRY
Drywall wall/ Washroom	0.7% -- WET	Drywall wall/ Washroom	0.8% -- WET
Drywall wall/ Bedroom 3	0.2% -- DRY	Drywall wall/ Bedroom 3	0.3% -- DRY
Drywall wall/ Bedroom 2	0.2% -- DRY	Drywall wall/ Bedroom 2	0.3% -- DRY
Drywall wall/ Bedroom 2	0.4% -- DRY	Drywall wall/ Bedroom 2	0.5% -- DRY
Drywall wall/ Bedroom 1	0.3% -- DRY	Drywall wall/ Bedroom 1	0.4% -- DRY

Sample Log		
Sample Type/Location	**Sample No.**	**Result**
Mould Tape-Lift/ Living Area	TL-03	Moderate growth
Asbestos/ Drywall joint compound	S001A-C	Non-asbestos
Asbestos/ Black sink mastic	S002A-C	Asbestos-containing
Asbestos/ 12x12 ceramic tile pattern sheet flooring	S003A-C	Non-asbestos
Airborne Mould Spore Trap/ Living Area	ST-03	Impacted

Observations and Comments

Pinchin observed 25 water-stained ceiling tiles throughout the assessed area and wet walls in the washroom behind the toilet and by both exterior doors. Spotting was identified by one of the exterior doors which was confirmed to be mould growth (TL-03). Condensation was identified on the interior windows. A musty odour was observed in the attic space and light spotting was seen on all sides.

Table X – Cabin 6

Temperature	9.0 °C	Extent of Mould Growth	155 ft²
Relative Humidity	77.8 %RH	Extent of Water Damage Including Mould Growth	170 ft²

Photo 41 - Cabin 6.

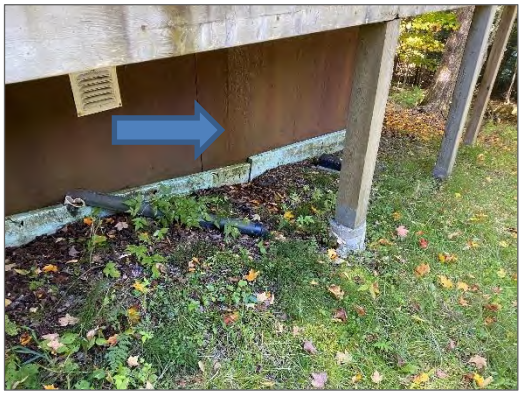


Photo 42 - Organic growth on wood siding and Styrofoam.

Photo 43 - Condensation on windows throughout the cabin due to poor insulation.

Photo 44 - Wet wall in washroom.

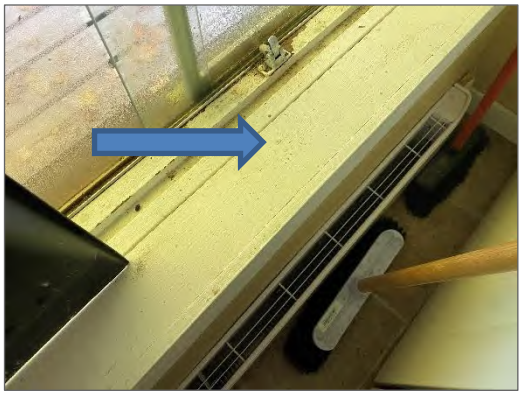


Photo 45 - Spotting identified on window frame confirmed to be mould growth (TL-04).

Photo 46 - Typical spotting identified on all sides of attic.

Table X – Cabin 6

Moisture Measurements			
Material/Location	**Results**	**Material**	**Results**
Drywall wall/ Living Area	0.4% -- DRY	Drywall wall/ Living Area	0.5% -- DRY
Drywall wall/ Living Area	0.6% -- DRY	Drywall wall/ Washroom	0.6% -- DRY
Drywall wall/ Washroom	0.7% -- WET	Drywall wall/ Bedroom 3	0.5% -- DRY
Drywall wall/ Bedroom 3	0.6% -- DRY	Drywall wall/ Bedroom 2	0.5% -- DRY
Drywall wall/ Bedroom 2	0.6% -- DRY	Drywall wall/ Bedroom 1	0.5% -- DRY
Drywall wall/ Bedroom 1	0.6% -- DRY		

Sample Log		
Sample Type/ Location	**Sample No.**	**Result**
Mould Tape-Lift/ Living Area	TL-04	Moderate growth
Airborne Mould Spore Trap/ Living Area	ST-04	Impacted

Observations and Comments

Pinchin observed condensation on the windows and spotting on the window frame which was confirmed to be mould growth (TL-04). Wet walls were identified in the washroom on the wall adjacent to the shower. In the attic space there was a build up of insulation over the hatch which was likely due to the historical presence of squirrels in the attic space, and spotting/growth was observed on all sides of the attic.

Table XI – Cabin 7

Temperature	16.6 °C	Extent of Mould Growth	10 ft²
Relative Humidity	60.5 %RH	Extent of Water Damage Including Mould Growth	15 ft²

Photo 47 - Cabin 7.

Photo 48 - Black spotting behind radiator in Closet confirmed mould growth (TL-09).

Table XI – Cabin 7

Photo 49 - Water damage behind hot water tank.

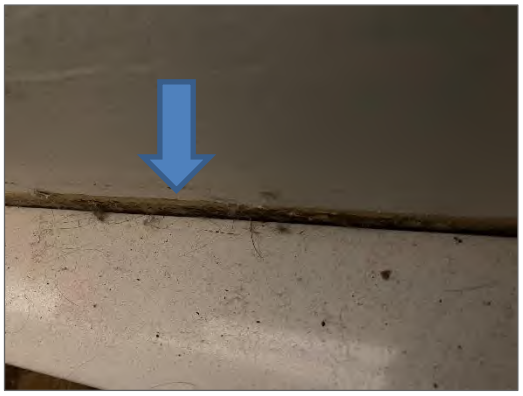


Photo 50 - Black spotting behind baseboard radiator in bedroom.

Photo 51 - No suspect mould identified in attic space.

Moisture Measurements

Material/Location	Results	Material	Results
Drywall wall/ Living Area	0.3% -- DRY	Drywall wall/ Living Area	0.4% -- DRY
Drywall wall/ Washroom	0.3% -- DRY	Drywall wall/ Bedroom	0.3% -- DRY
Drywall wall/ Bedroom	0.4% -- DRY	Drywall wall/ Closet	0.3% -- DRY
Drywall wall/ Closet	0.4% -- DRY	Drywall wall/ Closet	0.5% -- DRY

Sample Log

Sample Type/ Location	Sample No.	Result
Mould Tape-Lift/ Closet	TL-09	Heavy growth
Airborne Mould Spore Trap/ Living Area	ST-10	Impacted

Observations and Comments

Pinchin observed a musty odour upon entry and identified black spotting behind baseboard radiators in the bedroom and closet which was confirmed mould growth (TL-09). Water damage was identified by the hot water tank in the closet but access was limited due to the tank. Above ceiling in the attic space no spotting was identified, and the crawl space below the cabin was inaccessible.

Table XII – Cabin 8

Temperature	14.9 °C	Extent of Mould Growth	20 ft²
Relative Humidity	56.2 %RH	Extent of Water Damage Including Mould Growth	50 ft²

Photo 52 - Cabin 8.

Photo 53 - Organic growth and rotting exterior siding.

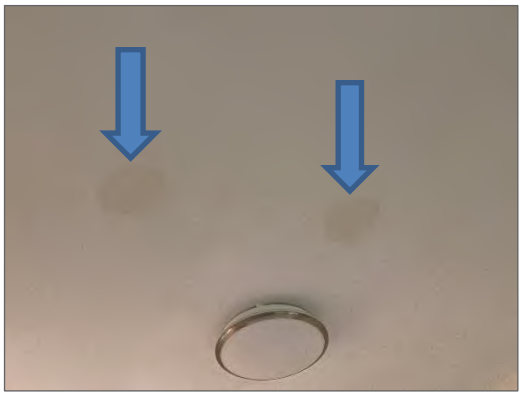


Photo 54 - Water staining on drywall ceiling in Bedroom.

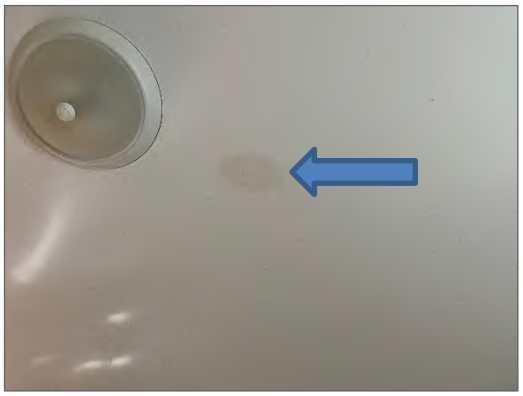


Photo 55 - Water staining on drywall ceiling in Living Area.

Photo 56 - Black spotting on curtain in bedroom.

Photo 57 - Water damage under tank, floor has rotted through.

Table XII – Cabin 8

Photo 58 - Rodent droppings in Pump Room.

Photo 59 - Water staining and mould growth on drywall wall in Pump Room (TL-05).

Moisture Measurements

Material/Location	Results	Material	Results
Drywall wall/ Living Area	0.1% -- DRY	Drywall wall/ Living Area	0.3% -- DRY
Drywall wall/ Washroom	0.3% -- DRY	Drywall wall/ Washroom	0.4% -- DRY
Drywall wall/ Bedroom	0.3% -- DRY	Drywall wall/ Bedroom	0.4% -- DRY
Drywall wall/ Pumproom	0.4% -- DRY		

Sample Log

Sample Type/ Location	Sample No.	Result
Mould Tape-Lift/ Pumproom	TL-05	Heavy growth
Airborne Mould Spore Trap/ Living Area	ST-05	Impacted

Observations and Comments

Pinchin observed water staining on the drywall ceiling in the Bedroom and Living Area, however there is no access hatch in this cabin to inspect the attic space. Black spotting was observed on the curtain in the bedroom and is presumed to be mould, additionally black spotting was identified in the Pump Room on the wall that is shared with the shower and was confirmed to be mould growth (TL-05). The Pump Room also has large amounts of rodent droppings and water damage on the drywall wall the mould was identified on and on the floor by the hot water tank which has rotted through and been covered with additional plywood.

Table XIII – Outdoors

Temperature	7.3 °C	 Photo 60 - 1225 Grass Lake Road, Haliburton, Ontario
Relative Humidity	44.9 %RH	
Sample Type/Location	**Sample No.**	
Mould Air Sample	ST-06	
Mould Air Sample	ST-11	
Observations and Comments		
Cool and sunny.		

3.4 Summary of Hazardous Materials

Based on sampling the following is a summary of the designated substances, limited to the materials impacted the water damage.

3.4.1 Asbestos

With the exception of Cabin 5, all drywall and joint compound should be tested for asbestos, or presumed to be asbestos-containing and removed following Type 2 procedures.

All ceiling tiles are constructed of wood fibre and are mechanically fastened, they are considered non-asbestos and no additional precautions are needed.

Asbestos-containing black sink mastic is present on the underside of the sink in Cabin 5 and should not be impacted by any removal recommended in this report.

3.4.2 Lead

Paint should be sampled for lead, paint is presumed to have elevated levels of lead until sampling proves otherwise.

3.4.3 Silica

Crystalline silica is a presumed component of concrete, mortar, ceramic tiles, and grout.

3.4.4 Mercury

Materials that could contain mercury are not impacted by the remediation work.

3.4.5 Polychlorinated Biphenyls

Materials that could contain PCBs are not impacted by the remediation work.

4.0 DISCUSSION

4.1 Discussion of Water Damage and Mould Growth

Wet, mouldy and water damaged materials were identified in Cabin 1, consisting of 29 water-stained ceiling tiles, ~15 square feet of wet wall and ~5 square feet of mould on the wall shared by the toilet and kitchen counters. It is anticipated there will be more mould identified in the wall cavity during remediation. Additionally, mould growth was identified on all sheathing of the attic at ~150 square feet and cracking drywall was observed in various locations throughout the cabin due to building shift. Exterior organic growth on the roof was also noted. The building is currently not in use by guests as water erosion is causing the cinder block foundation to deteriorate.

Water damaged materials were identified in Cabin 2, consisting of ~6 square feet of water staining on the baseboard by the toilet in the washroom. Cracks were identified in the drywall walls throughout the cabin due to building shift. Additionally, organic growth was identified on the second-floor balcony and rotting of the lower part of exterior siding was noted.

Mould growth was identified in Cabin 3 consisting of ~5 square feet of mould growth on the washroom wall behind the toilet, and ~100 square feet of mould growth along the two sides of the attic. Pinchin also identified a gap in the underside of the roof overhang which could give small rodents access to the attic.

Mould and water damaged materials were identified in Cabin 4, consisting of 19 water-stained ceiling tiles, ~10 square feet of water damaged drywall wall by exterior door and ~4 square feet of water damage was identified on the washroom floor. Additionally mould growth was identified on the wood panelling and door frame by the shower in the washroom totalling ~2 square feet and ~150 square feet of mould growth was identified in total on all walls of the attic. The lower portion of exterior siding in some locations is beginning to rot.

Wet, mouldy and water damaged materials were identified in Cabin 5, consisting of 25 water-stained ceiling tiles, ~10 square feet of wet wall was identified by both exterior doors and ~15 square feet of wet wall in the washroom. Mould growth was identified on one side of the exterior door totalling ~10 square feet and ~100 square feet was identified in total among the walls in the attic space.

Wet materials and mould growth were identified in Cabin 6, consisting of ~15 square feet of wet drywall in the washroom side wall of the shower and ~5 square feet of mould growth on the wooden window frame. Additionally, ~150 square feet of mould growth was identified in total throughout the attic space and organic growth was seen on the exterior wood siding.

Mould and water damaged materials were identified in Cabin 7 consisting of ~5 square feet of water damage by the hot water tank in the Closet, and ~10 square feet of mould growth identified behind the baseboard radiators in the Washroom and Closet.

Mould and water damaged materials were identified in Cabin 8, consisting of ~10 square feet of water damage on the drywall ceiling in the bedroom and living area, ~20 square feet of flooring and drywall wall in the pump room and ~ 18 square feet of mould growth on drywall in the pump room and ~2 square feet of mould growth on the blinds in the bedroom. Additionally, an odd odour was present in the unit and mice droppings were prominent in the pump room.

The mould air sampling in cabins 1-8 indicated that indoor air quality was being impacted by mould growth at the time of testing. The tape lifts collected from areas where spotting or water damage were identified came back with slight to heavy growth in all cabins with the exception of Cabin 2 which came back with hyphal fragments and spores and can be considered not impacted by mould growth. The client may want to consider an intrusive investigation of Cabin 2, as the air sample results indicated that air quality was impacted but the tape lift results indicated mould growth was not present and no additional water damage/mould growth were identified in the cabin at the time of the investigation.

The water damage, mould growth and wet materials identified in this investigation were likely caused by running toilets, poor shower practices, building envelope issues and/or lack of insulation/ventilation.

The spot measurements of relative humidity ranged from 50.6 to 77.8 %RH. The outdoor relative humidity averaged 44.9 %RH. Authorities recommend that long-term interior relative humidity be maintained below 80 %RH at all locations to avoid mould growth.

4.2 Mould Remediation and Site Reviews

Mould growth in buildings can be a risk factor for adverse health effects.[8] The mould growth found in this investigation should be remediated as soon as possible following currently accepted procedures. Pinchin recommends that mould remediation follow the procedures set by the Environmental Abatement Council of Canada (EACC).[9,] The work should be performed by a contractor with appropriate training, experience and insurance coverage. Ensure that remaining building materials are dry prior to reinstating mould-susceptible finishes, to prevent future mould growth.

Pinchin would be pleased to provide project management services to develop a remediation work plan and retain a specialized environmental abatement contractor. Pinchin could conduct a competitive bidding process to achieve the lowest possible price for the work. Proceeding in this manner will relieve the Client from taking on regulatory responsibility for contractor health and safety, and will reduce the risk of poor contractor performance and possible cross-contamination. Pinchin recommends that the Client retain services for project management, as well as for inspection and testing of this project. Health Canada and

8 US Environmental Protection Agency: *Mold Remediation in Schools and Commercial Buildings*. US EPA. 2001.
9 Environmental Abatement Council of Canada: *Mould Abatement Guidelines*. Toronto, ON: EACC, 2021.

other authorities recommend independent inspection of medium and large scale mould remediation, to protect the occupants and building from cross-contamination.

The client requested Pinchin Ltd. only provide asbestos testing in Cabin 5. The presence of asbestos is possible based on the age of construction. Asbestos precautions should be followed for the removal work recommended unless sampling determines that asbestos is not present in the materials to be remediated.

4.3 Communication and Interim Risk Management

The findings of this report should be communicated to the occupants as recommended by current mould guidelines, and in workplaces, as mandated by occupational health and safety legislation. The Client should consider any interim risk management actions that would be appropriate under the circumstances, until the mould growth can be remediated. Interim risk management might include isolating an area of the building, or relocating persons experiencing adverse health effects or with greater sensitivity to mould.

5.0 RECOMMENDATIONS

Pinchin offers the following recommendations to improve air quality in this building and address any mould growth or other microbial contamination found. Pinchin would be pleased to assist with further investigations indicated by this investigation, make recommendations for remediation contractors, and provide services for the planning and review of the recommended remediation work.

1. Communicate the findings of this report to the occupants, staff, joint health and safety committee, tenants.
2. Consider any necessary steps for interim risk management.
3. Arrange for the preparation of a detailed Scope of Work for the mould remediation including any required asbestos precautions and finalize a site review and oversight plan.
4. Arrange for the following mould remediation following EACC Level 1 methods in conjunction with Ontario Regulation 278/05 Type 2 asbestos procedures and EACC Class 1 Lead procedures (ensure you remove 1 ft past any mould growth/wet materials and if more then 10 square feet of mould is uncovered seal the area and proceed following EACC Level 2 procedures):
    a. Remove lower 2 feet of mouldy drywall wall behind toilet in Cabin 3 (~8 square feet) where identified in Appendix I.
    b. Remove to full height wet drywall wall in Cabin 4 by exterior doors (~12 square feet) where identified in Appendix I.
    c. Remove lower 4 feet of wet drywall in Cabin 6 Washroom (~16 square feet) where identified in Appendix I.

d. Remove lower 2 feet of mouldy drywall behind baseboard radiators in Cabin 7 (~8 square feet) where indicated in Appendix I.

e. Remove lower 2 feet of water damaged drywall by hot water tank in Cabin 7 (~6 square feet) where identified in Appendix I.

f. Remove water damaged drywall ceiling in Cabin 8 (~10 square feet) where indicated in Appendix I.

5. Arrange for the following mould remediation following EACC Level 1 methods in conjunction with Ontario Regulation 278/05 Type 1 asbestos procedures:

   a. Remove or repair flooring in Cabin 4 Washroom (~4 square feet) where identified in Appendix I.

6. Arrange for the following mould remediation, following EACC Level 2 methods in conjunction with Ontario Regulation 278/05 Type 2 asbestos procedures and EACC Class 1 Lead procedures:

   a. Remove lower 4 feet of wet/mouldy drywall wall in Cabin 1 washroom/kitchen (~20 square feet) where identified in drawing in Appendix I.

   b. Remove full height (~20 square feet) of water damaged and mouldy drywall in pump room of Cabin 8 where identified in drawing in Appendix I.

7. Arrange for the following mould remediation, following EACC Level 1 methods in conjunction with EACC Class 1 Lead procedures:

   a. Remove lower 2 feet of wood panelling/wood door frame in Cabin 4 washroom (~4 square feet) where identified in drawing in Appendix I.

   b. Remove lower 4 feet of wet drywall in Cabin 5 living area (~16 square feet) by exterior doors where identified in Appendix I.

   c. Remove or clean wooden window frame in Cabin 6 living area (~5 square feet) where indicated in Appendix I.

8. Arrange for the following mould remediation, following EACC Level 2 methods in conjunction with EACC Class 1 Lead procedures:

   a. Remove lower 4 feet of mouldy drywall in Cabin 5 living area (~12 square feet) by exterior doors where identified in Appendix I.

9. Remove and dispose of water damaged ceiling tiles in all cabins where identified in drawings in Appendix I following EACC Level 1 methods.

10. Remove ~6 square feet of water damaged baseboard by the toilet in the washroom of Cabin 2 where identified in Appendix I following EACC Level 1 methods.

11. Remove ~10 square feet of water damaged/rotting plywood floor in Cabin 8 pump room where identified in Appendix I following EACC Level 2 methods.
12. Clean or remove blinds in Cabin 8 following EACC Level 1 methods.
13. Consider various methods to address mould in Attic spaces following EACC Level 3 mould procedures in Cabins 1, 3-6:
    a. Ice blasting and encapsulation, or
    b. Abrasive cleaning and encapsulation, or
    c. Full removal during roof replacement.
14. Contact pest control to address possible issues with rodent activity in crawlspaces under Cabins 7 and 8, cleanup of rodent droppings in Cabin 8 pumproom and address potential squirrels in Cabin 3.
15. Consider a building envelope inspection on all cabins to identify areas of water infiltration, rodent entry points, or deteriorating wood siding to be repaired.
16. Finalize a site review and testing plan to document the mould remediation. To confirm, Pinchin will perform site reviews at the following stages:
    a. Clean Site Preparation
    b. Post-Remediation Inspection and Air Sampling
17. Clean the floors, other building surfaces, furnishings and contents in areas immediately adjacent to the remediation work area(s), following normal custodial practices.
18. Implement drying procedures as necessary. Ensure all surfaces are dry before installation of new finishes.

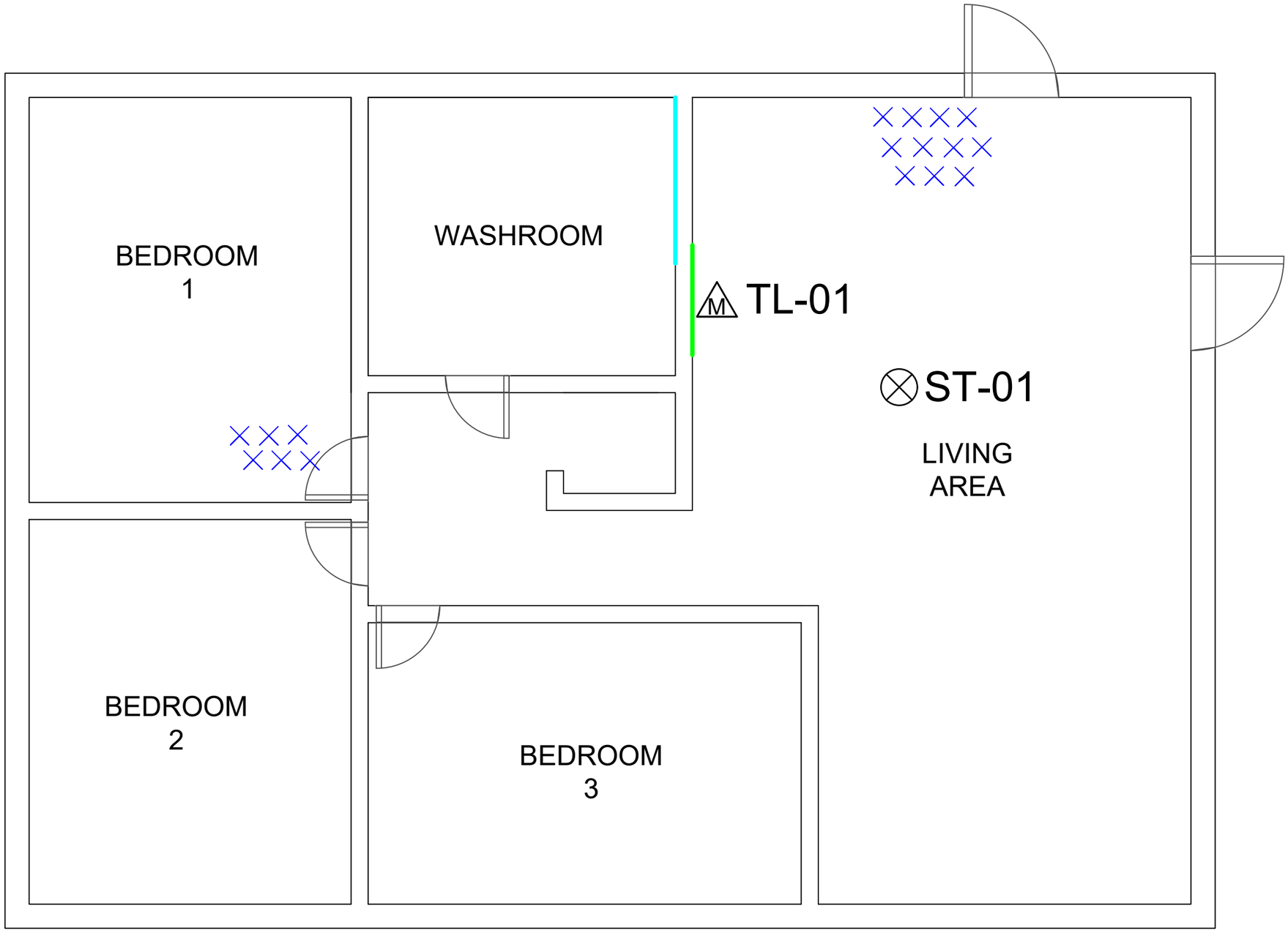
6.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

APPENDIX I

Drawings



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 1
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 1
GROUND FLOOR

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	1 OF 22

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 1
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 1
ATTIC

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	2 OF 22

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

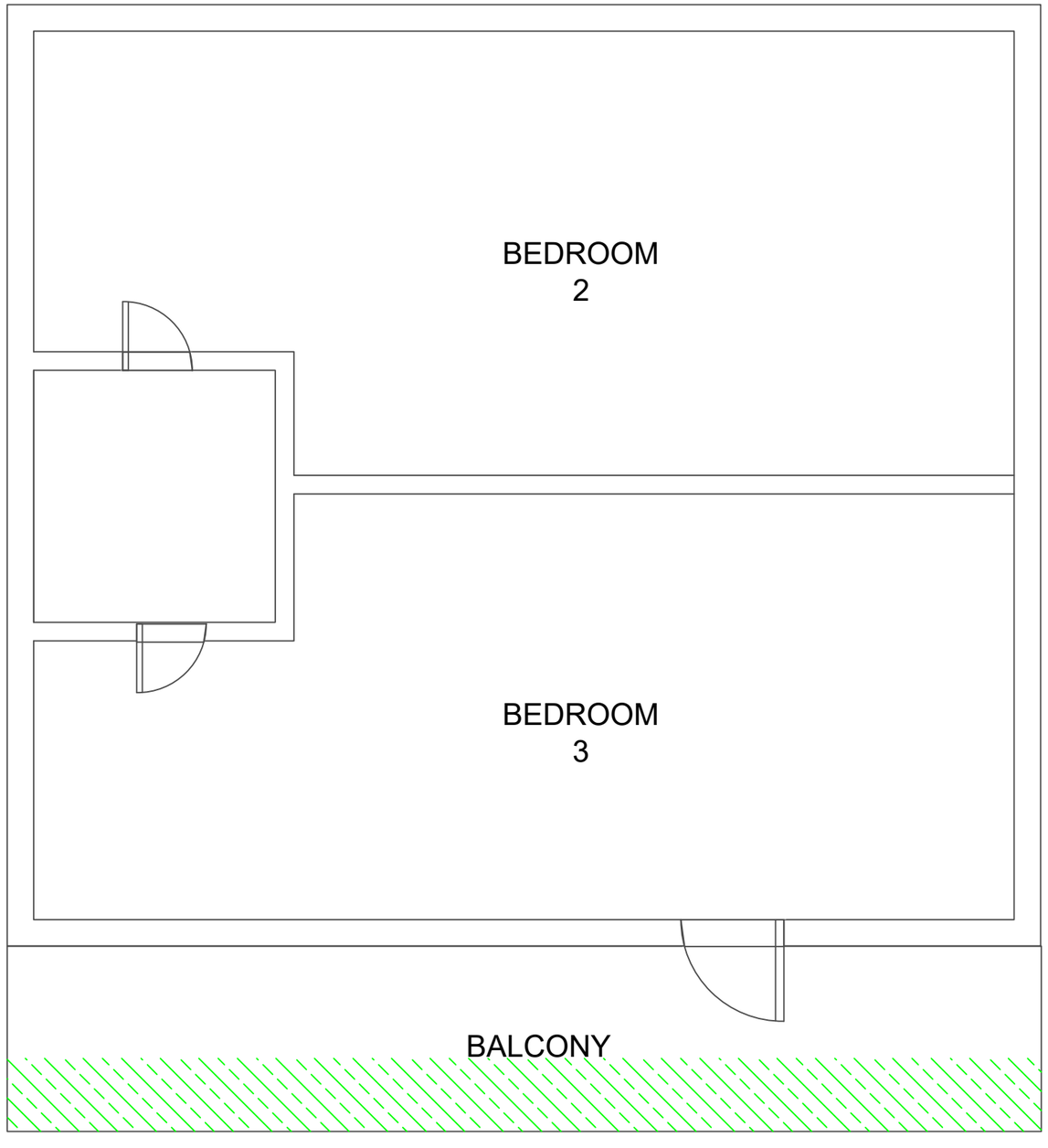
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 2
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 2
GROUND FLOOR

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	3 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

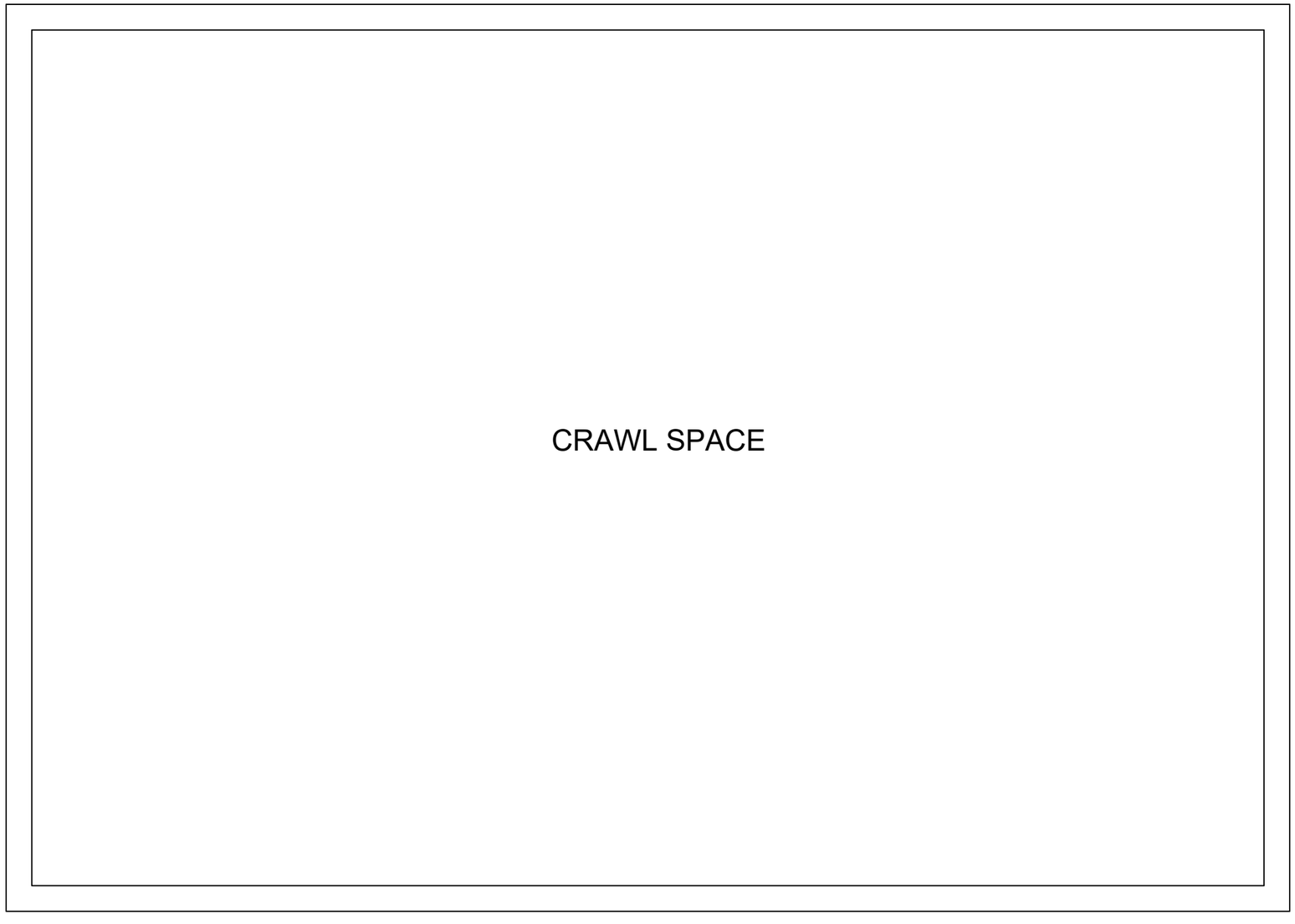
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 2
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 2
SECOND FLOOR

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	4 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

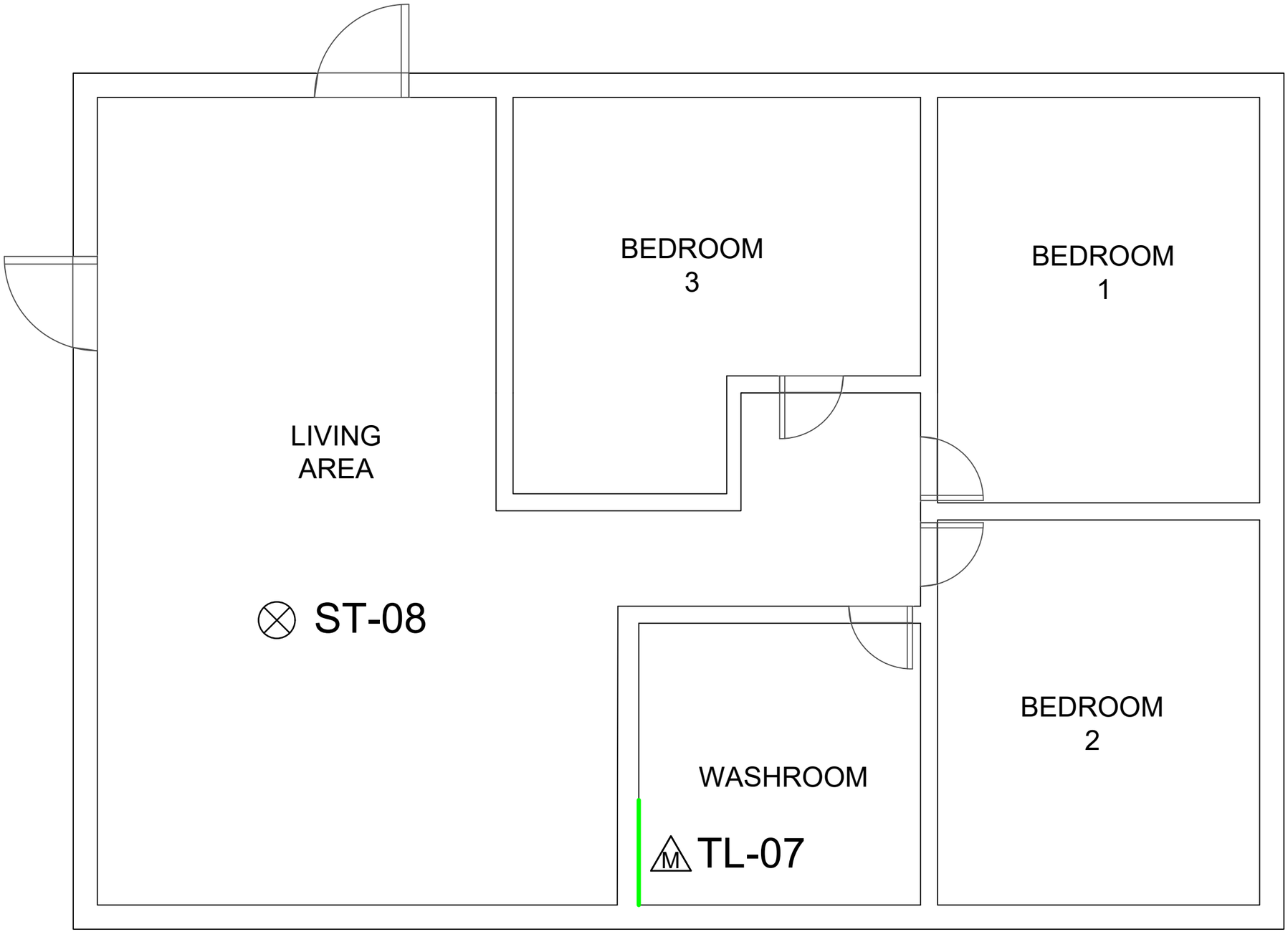
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 3
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 3
CRAWL SPACE

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	5 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 3
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 3
GROUND FLOOR

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	6 OF 22

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 3
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 3
ATTIC

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	7 OF 22

CRAWL SPACE

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

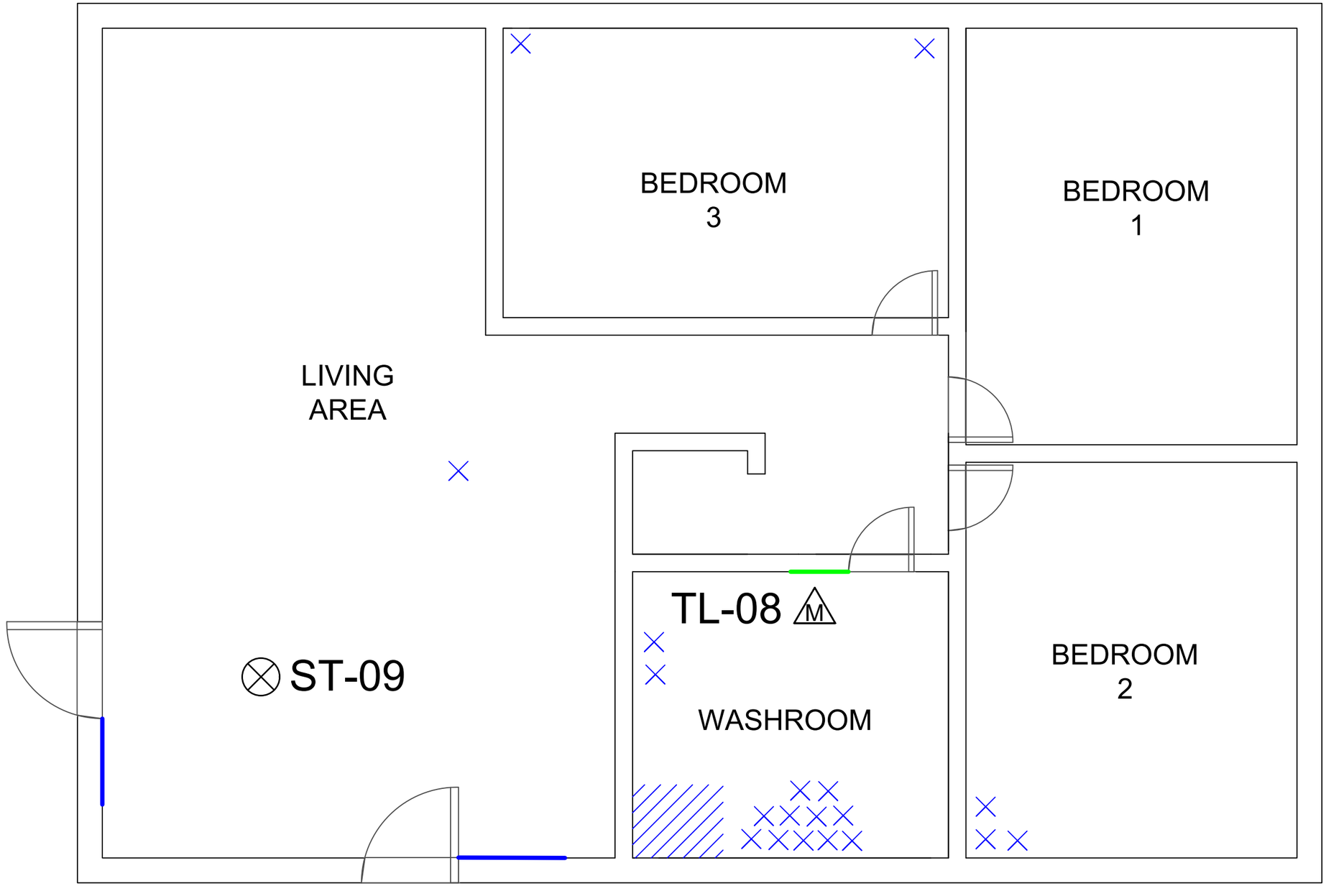
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 4
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 4
CRAWL SPACE

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	8 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 4
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 4
GROUND FLOOR

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	9 OF 202

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 4
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 4
ATTIC

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	10 OF 22

CRAWL SPACE

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

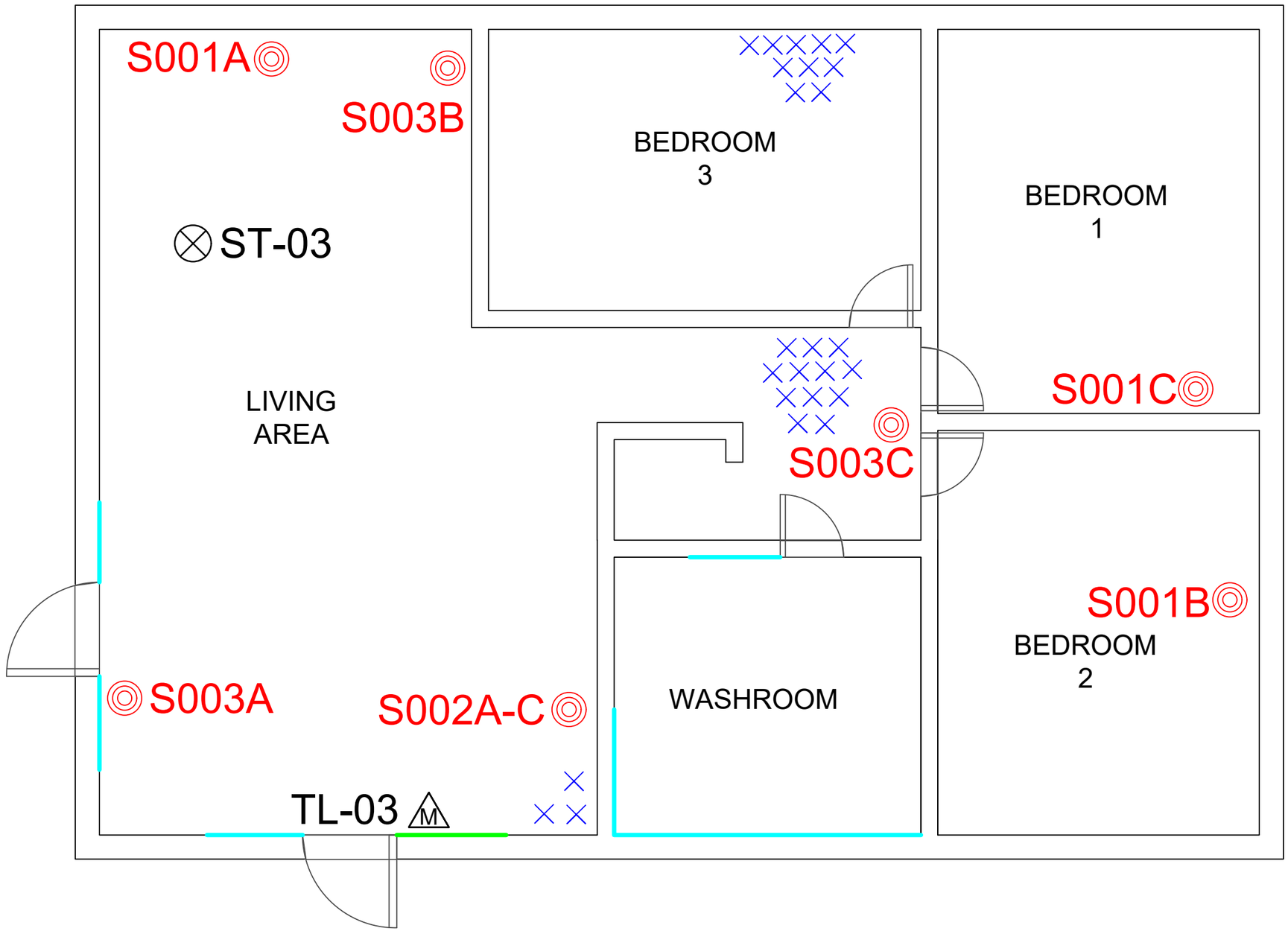
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 5
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 5
CRAWL SPACE

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	11 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 5
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 5
GROUND FLOOR

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	12 OF 22

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 5
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 5
ATTIC

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	13 OF 22

CRAWL SPACE

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

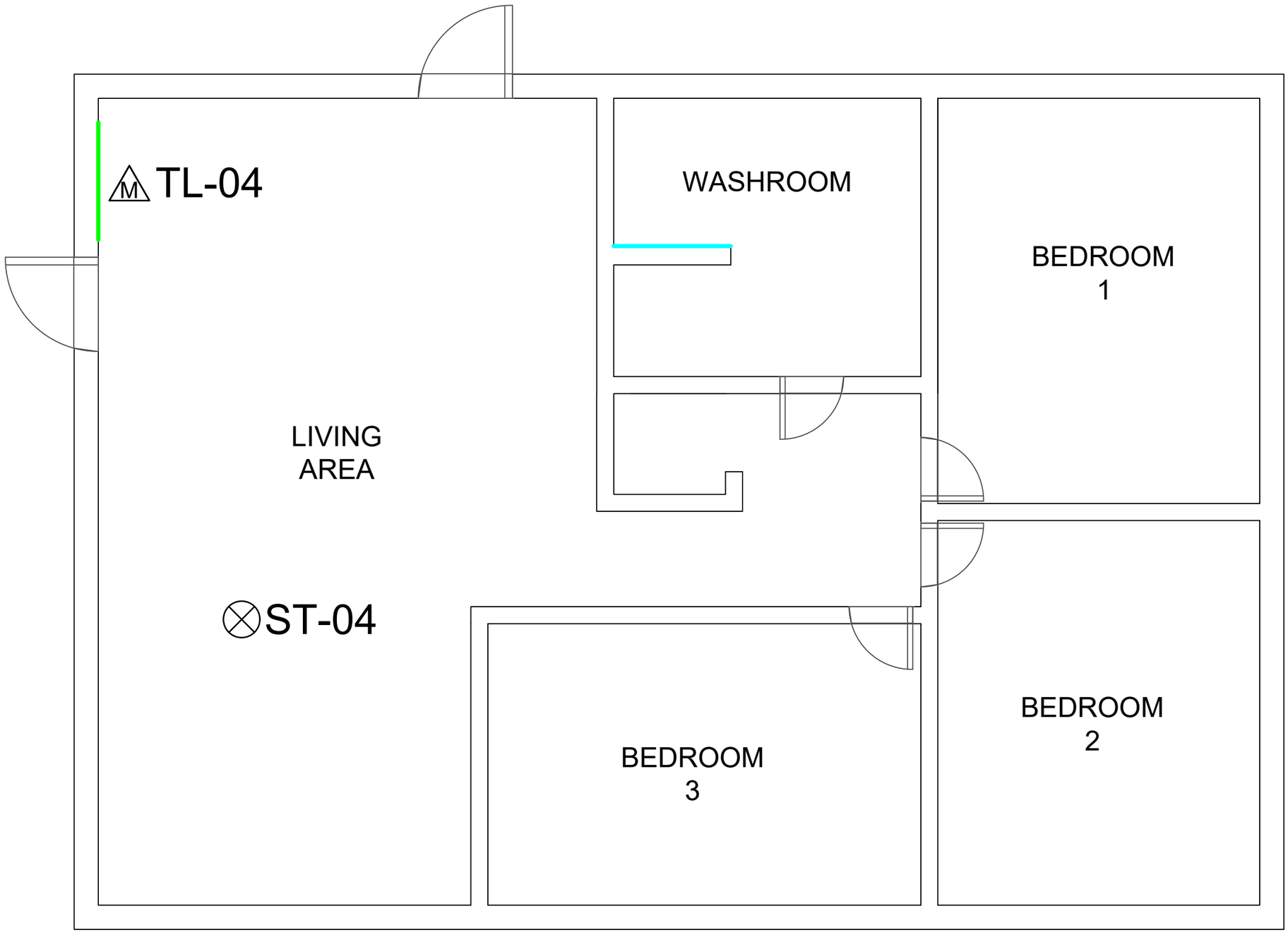
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 6
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 6
CRAWL SPACE

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	14 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 6
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 6
GROUND FLOOR

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	15 OF 22

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

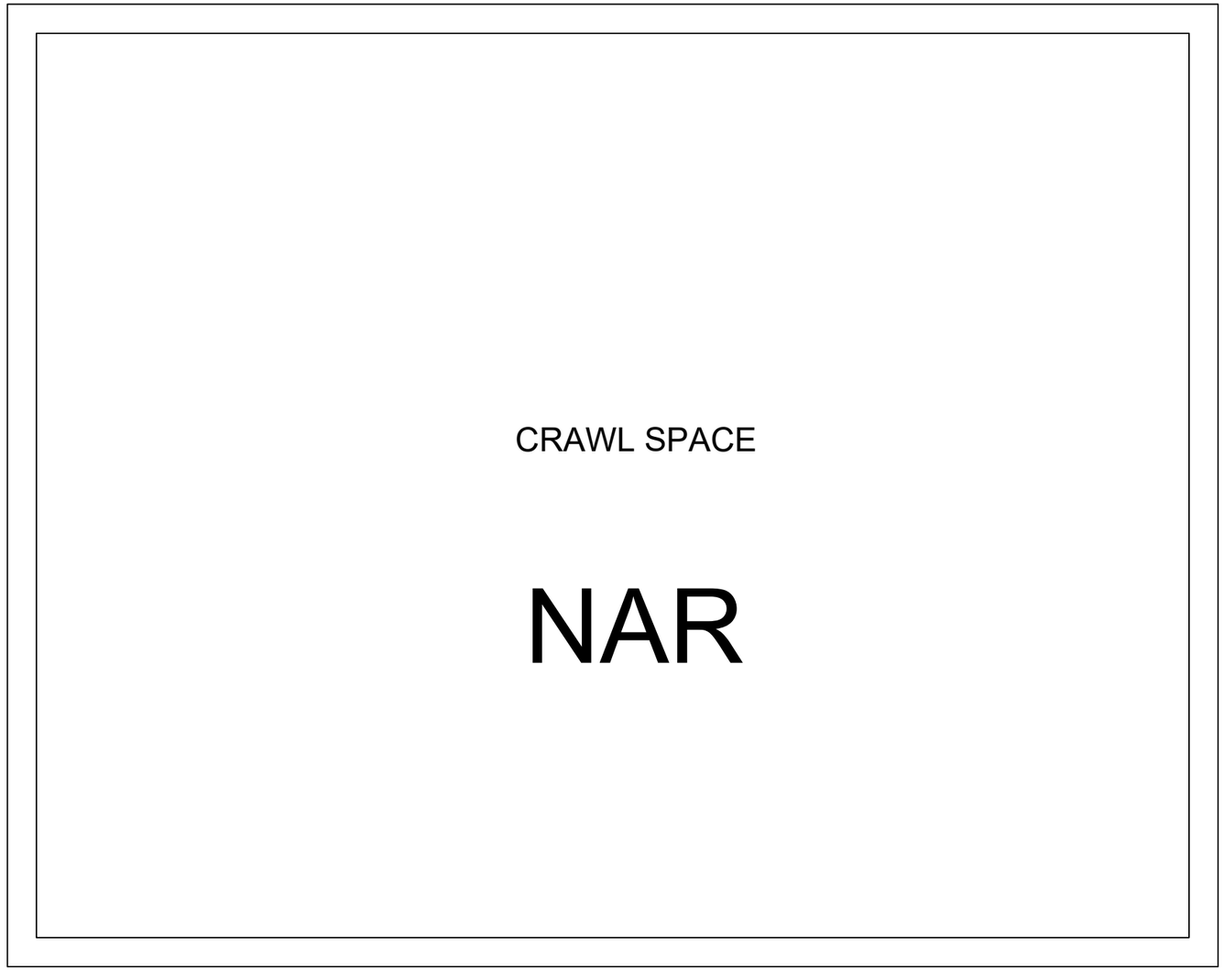
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 6
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 6
ATTIC

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	16 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

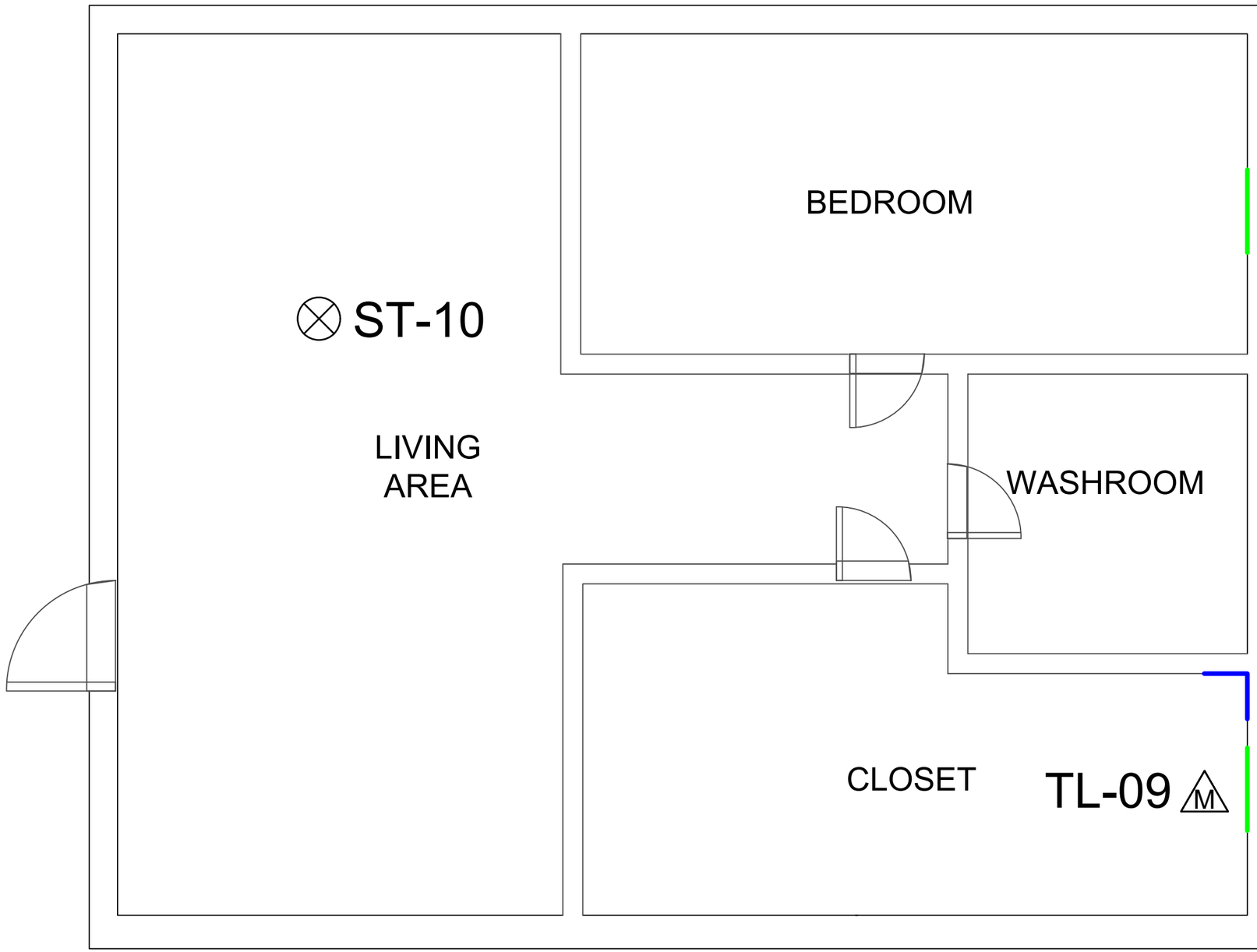
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 7
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 7
CRAWL SPACE

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	17 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

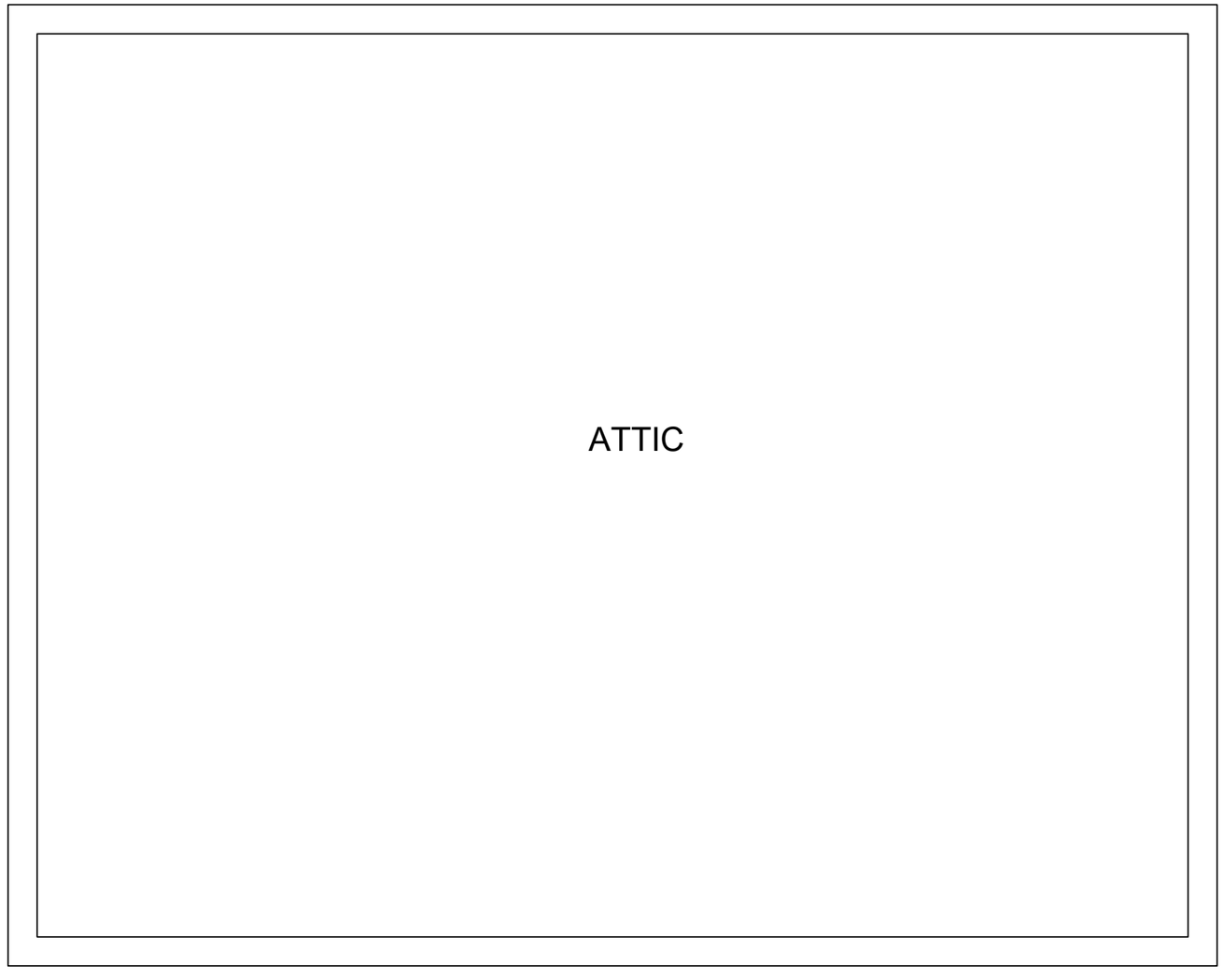
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 7
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 7
GROUND FLOOR

PROJECT NUMBER:	SCALE:
296878	NOT TO SCALE
DRAWN BY: PINCHIN LTD.	REVIEWED BY: PINCHIN LTD.
DATE: SEPT 2021	FIGURE NUMBER: 18 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 7
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 7
ATTIC

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	19 OF 22

CRAWL SPACE

NAR

N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

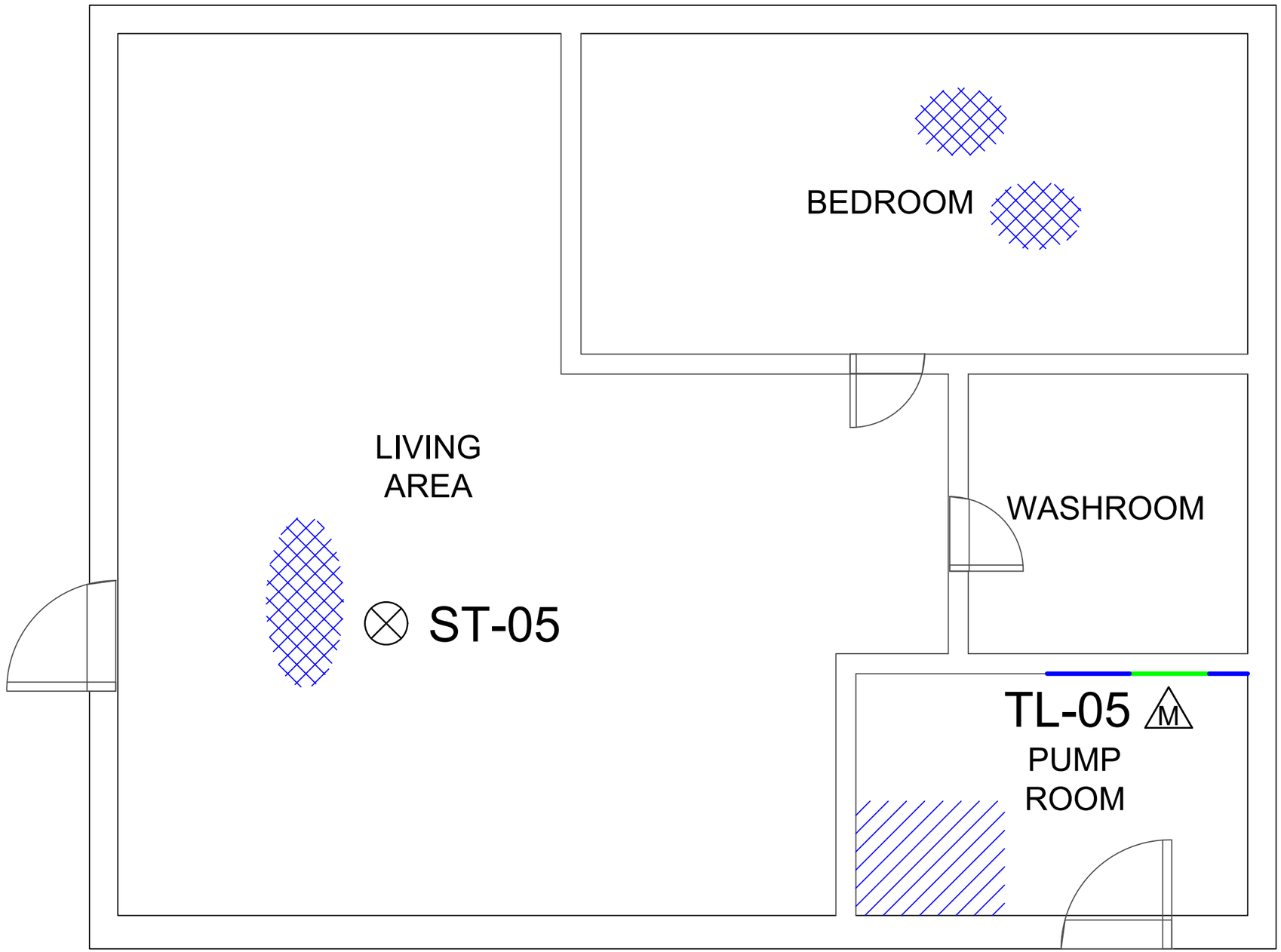
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 8
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 8
CRAWL SPACE

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
MD	VJ
DATE:	FIGURE NUMBER:
OCT 2022	20 OF 22



N

LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

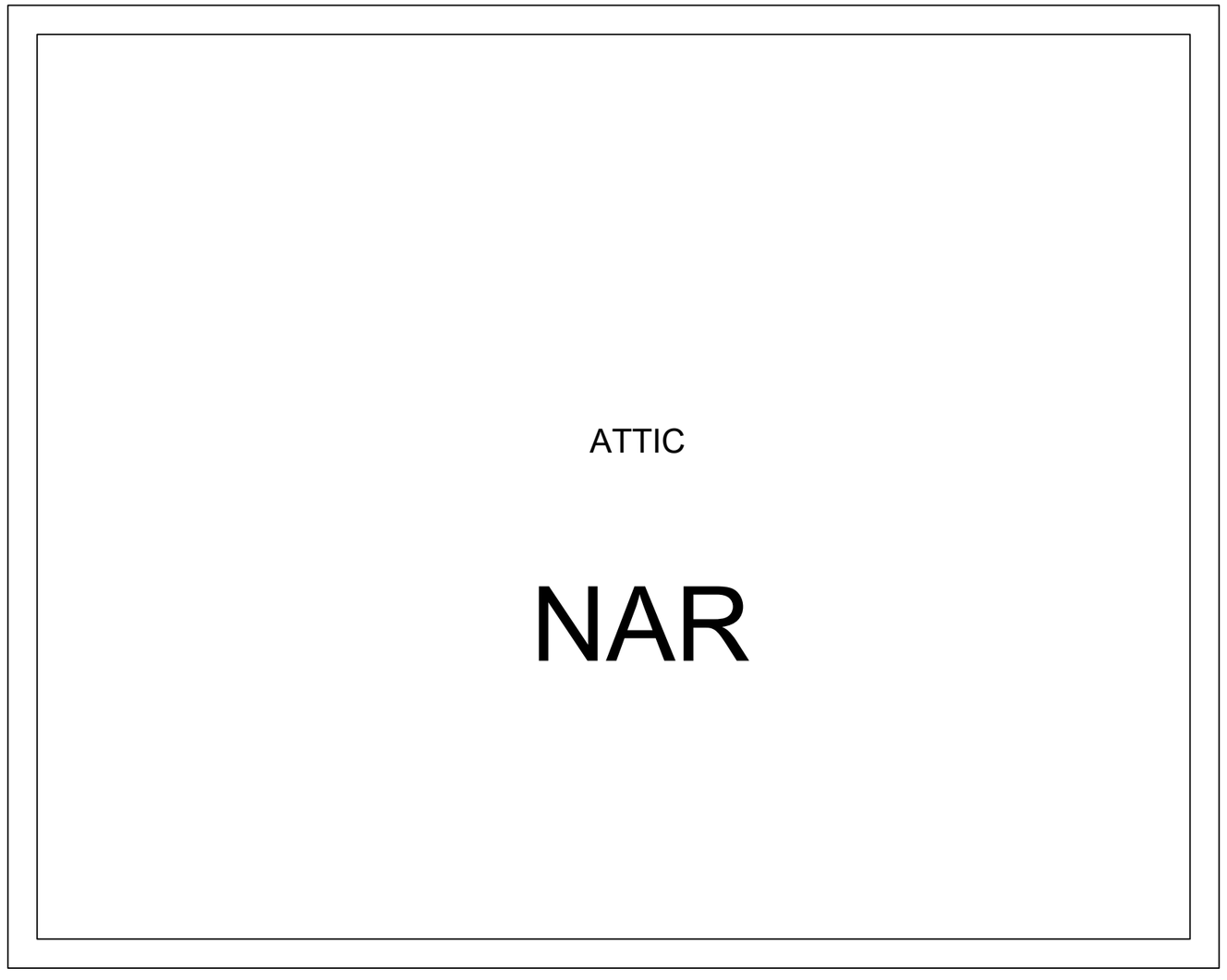
PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 8
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 8
GROUND FLOOR

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY: MD	REVIEWED BY: VJ
DATE: OCT 2022	FIGURE NUMBER: 21 OF 22



LEGEND

- SPORE TRAP MOULD AIR SAMPLE
- TAPE LIFT SAMPLE
- ASBESTOS BULK SAMPLE
- WATER STAINED CEILING TILE
- MOULD GROWTH ON WALL
- WET WALL
- WATER DAMAGED MATERIALS ON WALL
- WATER STAINED/DAMAGED FLOOR
- WATER STAINED CEILING
- ORGANIC GROWTH
- NAR NO ACCESS TO AREA

NOT ALL KNOWN OR SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE ASBESTOS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED ASBESTOS-CONTAINING BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

PINCHIN

PROJECT NAME:
MOULD AND WATER DAMAGE INVESTIGATION

CLIENT NAME:
FLEMING COLLEGE

PROJECT LOCATION:
CABIN 8
1225 GRASS LAKE ROAD
HALIBURTON, ONTARIO

FIGURE NAME:
CABIN 8
ATTIC

PROJECT NUMBER:	SCALE:
316099	NOT TO SCALE
DRAWN BY: MD	REVIEWED BY: VJ
DATE: OCT 2022	FIGURE NUMBER: 22 OF 22

APPENDIX II

Results of Mould Samples

PINCHIN
2555 Meadowpine Blvd. Unit 2
Mississauga, ON L5N 6C3
T: (905) 363-0678
E: microbiolab@pinchin.com

Certificate of Analysis

Pinchin Environmental Microbiology Laboratory

Laboratoire d'analyse accrédité par le gouvernement du Québec
Lab ID# 495

CUSTOMER:	Meaghan Dunn	**PROJECT NAME:**	
COMPANY:	Pinchin Ltd.	**TYPE OF SAMPLES:**	AllergencoD
ADDRESS:	191 Bloor Street East, Unit 11 Oshawa, ON L1H 3M3	**NO. OF SAMPLES:**	5
		DATE COLLECTED:	September 30, 2022
		DATE RECEIVED:	October 4, 2022
		DATE ANALYSED:	October 17, 2022
		DATE REPORTED:	October 17, 2022
		PROJECT NO:	316099
		LAB REFERENCE NO:	m280009
		ANALYST:	Lubov Beliakov, CMS (PhD) Environmental Microbiologist
		REVIEWER:	Inesa Liashko B.Eng. Environmental Microbiologist

CONDITION OF SAMPLES ON RECEIPT: Acceptable

Method of Analysis: Analysis of Air Samples for Fungal Spores (SOP: DME-SPT, Rev. 13, December 18, 2019)

This SOP is based on the method described in the AIHA's "Field Guide for the Determination of Biological Contaminants in the Environmental Samples" and also partially on the ASTM method D7391-09. The cassette slide with the trace (area impacted with air) facing upwards is fixed on a clean microscope slide. It is stained with lactophenol cotton blue or lactofuschin, and then scanned under low power magnification to locate the trace and to give the analyst an idea of the diversity of the spores. The final analysis is performed at X600 magnification by counting the different spores along a number of traverses or fields of view to cover at least 25% of the sample. A lower percentage of the sample is counted if it is overloaded. Raw counts are converted to spores/m^3 of air. Counts of fungal fragments and pollens are not computed in the total. Spores lacking unique characteristics for identification are reported as "Unidentified spores". Spores showing features of specific groups are recorded under the respective groups such as "Unidentified Basidiospores or Unidentified Ascospores". Spores occurring in chains are counted individually. Spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium*, *Paecilomyces*) are indistinguishable.

A scale of 0 to 5 is used to rate abundance of non-fungal material, with 5 indicating the largest amount. Large amounts of non-fungal material may obscure small spores. Therefore, counts from samples with 4-5 non-fungal material may be treated as undercounts. Except for blanks, samples with no detected spores are recorded as "less than the analytical sensitivity " (AS). Results are not corrected for blanks. Estimation of the measurement of uncertainty is available upon request.

Comments/Observations (if any):

Notes:
1. The laboratory is not responsible for sample collection.
2. The report applies to the samples submitted to the laboratory and, the result(s) relate only to sample(s) tested.
3. The report shall not be reproduced except in full, without written approval of the laboratory.
4. Services are subject to Pinchin Ltd. Standard Terms and Conditions for Laboratory Services.

PINCHIN
2555 Meadowpine Blvd. Unit 2
Mississauga, ON L5N 6C3
T: (905) 363-0678
E: microbiolab@pinchin.com

Certificate of Analysis

Pinchin Environmental Microbiology Laboratory

Laboratoire d'analyse accrédité par le gouvernement du Québec
Lab ID# 495

DATE ANALYSED: October 17, 2022 **ANALYST:** Lubov Beliakov, CMS (PhD)

PROJECT NO: 316099
LAB REFERENCE NO: m280009

Customer Sample No:	4592765			4592759			4592757			4592758			4592760								
Lab Sample ID:	m280009-1			m280009-2			m280009-3			m280009-4			m280009-5								
Description	ST-08 - Living Area Cabin 3			ST-09 - Living Area Cabin 4			ST-10 - Living Area Cabin 7			ST-11 - Outdoor			ST-12 - Blank								
Total Air Volume (L)	150			150			150			150			N/A								
% of Sample Counted	20.8			25.4			11.6			6.9			25.4								
Fungal spores identified	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3
Alternaria/Ulocladium-like				1	0	26															
Ascospores, non-specified	34	6	1100	32	7	840	2	0	120	98	18	9400									
Aspergillus/Penicillium-like	212	39	6800	68	16	1800	460	84	27000	33	6	3200									
Basidiospores, non-specified	277	50	8900	247	57	6500	76	14	4400	412	74	40000									
Bipolaris/Drechslera/ Exserohilum/Helminthosporium																					
Botrytis																					
Chaetomium-like				1	0	26															
Cladosporium	18	3	580	81	19	2100	5	1	290												
Coprinus	3	1	96							9	2	870									
Epicoccum	1	0	32																		
Fusarium-like																					
Ganoderma	2	0	64	2	0	52	4	1	230	3	1	290									
Myxomycetes/Periconia/Rusts/Smuts	2	0	64																		
Non-specified spores	1	0	32																		
Oidium-like																					
Pithomyces-like																					
Polythrincium																					
Stachybotrys																					
Pollens				1																	
Fungal fragments	2		64	3		79	1		58												
Non-fungal material	3			2			2			1											
Spores/sample	550			432			547			555											
TOTAL SPORES/M^3			18000			11000			32000			54000	No fungal spores								
A.S. (SPORES/M^3)			32			26			58			96									

Note: 1. Samples analysed at 600X magnification. 2. A.S. = Analytical Sensitivity
3. Total spores/m^3 and counts/m^3 reported to two significant figures where applicable

M280009

PINCHIN

2555 Meadowpine Blvd. Unit 2
Mississauga, ON L5N 6C3
T: 905.363.0678
E: microbiolab@pinchin.com
www.pinchin.com

Environmental Microbiology Laboratory
Chain of Custody Form

REPORT RESULTS TO					
	Contact: Meaghan Dunn ✓			Dept:	
	Company: Pinchin Ltd.			Tel: 289.928.0366	Fax:
	Mailing Address: 191 Bloor Street East Unit 11			Email: mdunn@pinchin.com vjohnston@pinchin.com	
	City: Oshawa	Prov: Ontario		Customer Job #:	P.O. #:

Special Instructions:	Project:
Report Language: English ☒ French ☐	No. Samples Submitted: 5 / Invoice To:

ANALYSIS TYPES (check)	
☒ Total Fungal Particulate (Spore count and Identification)	☐ Bacteria (Quantification/Gram staining)
☐ Direct Microscope Examination (Fungal)	☐ Heterotrophic Plate Counts (HPC)
☐ Direct Microscope Examination (NON-Fungal Particulate): Quantitative ☐ Qualitative ☐	☐ E.coli/Total Coliforms
☐ Fungal Quantification & Identification (Anderson/RCS)	Legionella: Culturing qPCR
Other: _____	

Sample#	Description	Date Sampled	Vol (L) or Area (cm^2)	TAT REG.	TAT RUSH	FOR LAB USE ONLY LAB #
4592765 ✓	ST-08 – Living Area Cabin 3 ✓	09/30/22	150	X		M280009-1
4592759 ✓	ST-09 – Living Area Cabin 4 ✓	09/30/22	150	X		2
4592757 ✓	ST-10 – Living Area Cabin 7 ✓	09/30/22	150	X		3
4592758 ✓	ST-11 – Outdoor ✓	09/30/22	150	X		4
4592760 ✓	ST-12 – Blank ✓	09/30/22	N/A	X		5

CHAIN OF CUSTODY				
	Collected by: MMD		FOR LAB USE ONLY:	
	Relinquished by: MMD	Date/Time:	Received by: [signature]	Date/Time: 10/4/22 11:51
	Method of Shipment: Purolator		Sample Condition Upon Receipt:	Acceptable ☒ Other (explain) ☐

Authorized by:_____ **Date:** _____

Customer Signature MUST Accompany Request. Customer accepts Pinchin Ltd. Standard Terms and Conditions for Laboratory Services (see over)

Distribution: White = Laboratory, Yellow = Customer Copy

Rev. 0g D 10/17/22

Pinchin Ambient Mould Index (PAMI) ©

Region:	Greater Toronto Area
Month:	September
# Samples:	778
Period:	2006 – 2018

Mould/Groups Recorded	Frequency of detects (%)	Min (spores/m^3)	5th percentile (spores/m^3)	50th percentile (spores/m^3)	95th percentile (spores/m^3)	Max (spores/m^3)
Basidiospores non-specified	99.74	26	1334	7989	38014	136800
Ascospores non-specified	99.36	26	211	1029	5665	32114
Cladosporium	97.94	26	130	1371	13000	45864
Ganoderma	96.92	26	52	343	1714	7657
Aspergillus/Penicillium-like	89.72	26	26	340	2512	9800
Coprinus	85.60	26	26	130	547	1886
Non-specified spores	68.38	26	26	158	1489	28286
Myxomycetes/Periconia/Rusts/Smuts	59.25	26	26	79	480	4510
Alternaria/Ulocladium-like	55.01	26	26	79	457	1500
Epicoccum	29.95	26	26	52	242	1286
Cercospora	19.79	26	26	53	498	870
Polythrincium	19.54	26	26	37	210	857
Pithomyces-like	17.22	26	26	26	162	830
Oidium-like	10.80	26	26	44	169	343
Botrytis	7.46	26	26	37	169	21873
Arthrinium	6.43	26	26	26	206	514
Torula	5.91	26	26	47	199	340
Helicospores	5.01	26	26	49	128	889
Nigrospora	3.34	26	26	26	275	350
Fusicladium	3.21	26	26	26	76	110
Curvularia	2.44	26	26	36	172	185
Bipolaris/Drechslera/Exserohilum/Helminthosporium	2.31	26	26	26	128	209
Fusarium-like	1.80	26	26	88	172	230
Stemphylium	1.67	26	26	26	185	290
Peronospora	1.29	26	26	26	97	130
Chaetomium-like	0.64	26	26	26	31	33
Rhizopus	0.39	34	35	44	121	130
Exosporiella	0.26	26	27	30	34	34
Spegazzinia	0.13	57	57	57	57	57
Scopulariopsis	0.13	52	52	52	52	52
Zygophiala	0.13	52	52	52	52	52

Based on detection limit of 26 spores per cubic metre of air.

PINCHIN

2555 Meadowpine Blvd, Unit 2
Mississauga, ON L5N 6C3
T: (905) 363-0678
E: microbiolab@pinchin.com

Laboratoire d'analyse accrédité par le gouvernement du Québec
Lab ID# 495

Pinchin Environmental Microbiology Laboratory

Certificate of Analysis

CUSTOMER: Meaghan Dunn
COMPANY: Pinchin Ltd.
ADDRESS: 191 Bloor Street East, Unit 11
Oshawa, ON L1H 3M3

PROJECT NAME:
PROJECT NO.: 316099
TYPE OF SAMPLE(S): TAPE-LIFT
DATE COLLECTED: September 30, 2022
DATE ANALYSED: October 17, 2022
ANALYST: Lubov Beliakov, CMS (PhD)
TITLE: Environmental Microbiologist
REVIEWER: Inesa Liashko B.Eng.
TITLE: Environmental Microbiologist

LAB REFERENCE NO.: m280010
SAMPLE CONDITION: Acceptable
DATE RECEIVED: October 4, 2022
DATE REPORTED: October 17, 2022

Method of Analysis: Analysis of Bulk and Tape-lift Samples by Direct Microscope Examination (SOP: DME-BLK, Rev. 9, December 18, 2019)

This SOP is based on methods described in: "AIHA's Field Guide for Determination of Biological Contaminants in Environmental Samples", "Samson et al's Food and Indoor Fungi", and the "IRRST method 360". Bulk samples are scanned under a stereomicroscope for the presence of mould growth; cellotape samples taken from these are mounted on glass slides and examined under light microscope at X400, X600 or X1000 magnifications as appropriate. Moulds are identified to the genus using keys in relevant books and literature. Mould growth is assessed as Heavy, Moderate or Slight by examining the mycelium cover on the sample and/or the slide preparations. Some moulds may be difficult to identify from bulk samples and these are reported as "Unidentified mould". Spores observed in the absence of an established mycelium are identified whenever possible and rated as "few" for 5-50 spores or "masses" for >50 spores. Results are not corrected for blanks. Estimation of uncertainty is provided upon request.

COMMENTS/OBSERVATIONS (IF ANY):

Notes:
1. The laboratory is not responsible for sample collection.
2. The report applies to the samples submitted to the laboratory and, the result(s) relate only to sample(s) tested.
3. The report shall not be reproduced except in full, without written approval of the laboratory.
4. Services are subject to Pinchin Ltd. Standard Terms and Conditions for Laboratory Services.

PINCHIN

2555 Meadowpine Blvd, Unit 2
Mississauga, ON L5N 6C3
T: (905) 363-0678
E: microbiolab@pinchin.com

Laboratoire d'analyse accrédité par le gouvernement du Québec

Lab ID# 495

Pinchin Environmental Microbiology Laboratory

Certificate of Analysis

CUSTOMER: Meaghan Dunn
PROJECT NAME:
LAB REFERENCE NO: m280010
PROJECT NO.: 316099
DATE ANALYSED: October 17, 2022
ANALYST: Lubov Beliakov, CMS (PhD)

RESULTS FOR TAPE-LIFT DME ANALYSIS

Customer Sample No.	Lab Sample ID.	Description	Mould Identified, in Rank Order	Comments (if any)
B2874868	m280010-1	ST-07 - Spotting behind toilet in Washroom Cabin 3	*Cladosporium* sp Aspergillus/Penicillium sp (a few spores)	Heavy growth
B2873610	m280010-2	ST-08 - Black wood by shower in Washroom Cabin 4	*Cladosporium* sp Aspergillus/Penicillium sp (a few spores)	Heavy growth
B2878848	m280010-3	TL-09 - Cabin 7 spotting by radiator in closet	Unidentified mould (mycelium only) *Aspergillus* sp	Heavy growth
B2874858	m280010-4	TL-10 - Blank	No mould detected	

Signature of Analyst:

M280010

PINCHIN

2555 Meadowpine Blvd. Unit 2
Mississauga, ON L5N 6C3
T: 905.363.0678
E: microbiolab@pinchin.com
www.pinchin.com

Environmental Microbiology Laboratory
Chain of Custody Form

REPORT RESULTS TO					
	Contact: Meaghan Dunn			Dept:	
	Company: Pinchin Ltd.			Tel: 289.928.0366	Fax:
	Mailing Address: 191 Bloor Street East Unit 11			Email: mdunn@pinchin.com vjohnston@pinchin.com	
	City: Oshawa	Prov: Ontario		Customer Job #:	P.O. #:
Special Instructions:				Project:	
Report Language: English ☒ French ☐		No. Samples Submitted: 4		Invoice To:	

ANALYSIS TYPES (check)	
☐ Total Fungal Particulate (Spore count and Identification)	☐ Bacteria (Quantification/Gram staining)
☒ Direct Microscope Examination (Fungal)	☐ Heterotrophic Plate Counts (HPC)
☐ Direct Microscope Examination (NON-Fungal Particulate): Quantitative ☐ Qualitative ☐	☐ E.coli/Total Coliforms
☐ Fungal Quantification & Identification (Anderson/RCS)	Legionella: Culturing qPCR
Other: _____	

Sample#	Description	Date Sampled	Vol (L) or Area (cm^2)	TAT REG.	TAT RUSH	FOR LAB USE ONLY LAB #
B2874868	ST-07 – Spotting behind toilet in Washroom Cabin 3	09/30/22	N/A	X		M280010-1
B2873610	ST-08 – Black wood by shower in Washroom Cabin 4	09/30/22	N/A	X		2
B2878848	TL-09 – Cabin 7 spotting by radiator in closet	09/30/22	N/A	X		3
B2874858	TL-10 - Blank	09/30/22	N/A	X		4

CHAIN OF CUSTODY				
Collected by: MMD		FOR LAB USE ONLY:		
Relinquished by: MMD	Date/Time:	Received by:	Date/Time: 10/19/22 11:54	
Method of Shipment: Purolator		Sample Condition Upon Receipt:	Acceptable ☒	Other (explain) ☐

Authorized by:_____ **Date:** _____

Customer Signature MUST Accompany Request. Customer accepts Pinchin Ltd. Standard Terms and Conditions for Laboratory Services (see over)

Distribution: White = Laboratory, Yellow = Customer Copy

Rev. Cy 2 10/18/22

2555 Meadowpine Blvd, Unit 2
Mississauga, ON L5N 6C3
T: (905) 363-0678
E: microbiolab@pinchin.com

Laboratoire d'analyse accrédité par le gouvernement du Québec
Lab ID# 495

Pinchin Environmental Microbiology Laboratory

Certificate of Analysis

CUSTOMER: Meaghan Dunn
COMPANY: Pinchin Ltd.
ADDRESS: 191 Bloor Street East, Unit 11
Oshawa, ON L1H 3M3

PROJECT NAME:
PROJECT NO.: 316099
TYPE OF SAMPLE(S): TAPE-LIFT
DATE COLLECTED: September 29, 2022
DATE ANALYSED: October 17, 2022
ANALYST: Lubov Beliakov, CMS (PhD)
TITLE: Environmental Microbiologist
REVIEWER: Partinder Puri, B.Sc.
TITLE: Environmental Microbiologist

LAB REFERENCE NO.: m280011
SAMPLE CONDITION: Acceptable
DATE RECEIVED: October 4, 2022
DATE REPORTED: October 17, 2022

Method of Analysis: Analysis of Bulk and Tape-lift Samples by Direct Microscope Examination (SOP: DME-BLK, Rev. 9, December 18, 2019)

This SOP is based on methods described in: "AIHA's Field Guide for Determination of Biological Contaminants in Environmental Samples", "Samson et al's Food and Indoor Fungi", and the "IRRST method 360". Bulk samples are scanned under a stereomicroscope for the presence of mould growth; cellotape samples taken from these are mounted on glass slides and examined under light microscope at X400, X600 or X1000 magnifications as appropriate. Moulds are identified to the genus using keys in relevant books and literature. Mould growth is assessed as Heavy, Moderate or Slight by examining the mycelium cover on the sample and/or the slide preparations. Some moulds may be difficult to identify from bulk samples and these are reported as "Unidentified mould". Spores observed in the absence of an established mycelium are identified whenever possible and rated as "few" for 5-50 spores or "masses" for >50 spores. Results are not corrected for blanks. Estimation of uncertainty is provided upon request.

COMMENTS/OBSERVATIONS (IF ANY):

Notes:
1. The laboratory is not responsible for sample collection.
2. The report applies to the samples submitted to the laboratory and, the result(s) relate only to sample(s) tested.
3. The report shall not be reproduced except in full, without written approval of the laboratory.
4. Services are subject to Pinchin Ltd. Standard Terms and Conditions for Laboratory Services.

PINCHIN

2555 Meadowpine Blvd, Unit 2
Mississauga, ON L5N 6C3
T: (905) 363-0678
E: microbiolab@pinchin.com

Laboratoire d'analyse accrédité par le gouvernement du Québec
Lab ID# 495

Pinchin Environmental Microbiology Laboratory

Certificate of Analysis

CUSTOMER: Meaghan Dunn
PROJECT NAME:
LAB REFERENCE NO: m280011 **PROJECT NO.:** 316099
DATE ANALYSED: October 17, 2022 **ANALYST:** Lubov Beliakov, CMS (PhD)

RESULTS FOR TAPE-LIFT DME ANALYSIS

Customer Sample No.	Lab Sample ID.	Description	Mould Identified, in Rank Order	Comments (if any)
B2874868	m280011-1	TL-01 - Spotting on wall in Kitchen (stove is missing) in Cabin 1	*Aspergillus* sp	Slight growth
B2873610	m280011-2	TL-02 - Water staining on baseboard behind toilet in Cabin 2	Aspergillus/Penicillium sp (a few spores) Hyphal fragments (few)	
B2878550	m280011-3	TL-03 - Spotting by front door in Living Area in Cabin 5	*Aspergillus* sp *Ulocladium* sp	Moderate growth
B2878660	m280011-4	TL-04 - Spotting on window frame in Cabin 6	*Aspergillus* sp *Cladosporium* sp	Moderate growth
B2874856	m280011-5	TL-05 - Spotting on drywall in Pump Room in Cabin 8	*Chaetomium* sp *Aspergillus* sp	Heavy growth
B2874864	m280011-6	TL-06 - Blank	No mould detected	

Signature of Analyst:

M280011
M280011

PINCHIN

2555 Meadowpine Blvd. Unit 2
Mississauga, ON L5N 6C3
T: 905.363.0678
E: microbiolab@pinchin.com
www.pinchin.com

Environmental Microbiology Laboratory
Chain of Custody Form

REPORT RESULTS TO					
	Contact: Meaghan Dunn			Dept:	
	Company: Pinchin Ltd.			Tel: 289.928.0366	Fax:
	Mailing Address: 191 Bloor Street East Unit 11			Email: mdunn@pinchin.com vjohnston@pinchin.com	
	City: Oshawa	Prov: Ontario	✓	Customer Job #:	P.O. #:
Special Instructions:				Project: 316099	
Report Language: English ☒ French ☐		No. Samples Submitted: 6		Invoice To: ✓	

ANALYSIS TYPES (check)	
☐ Total Fungal Particulate (Spore count and Identification)	☐ Bacteria (Quantification/Gram staining)
☒ Direct Microscope Examination (Fungal)	☐ Heterotrophic Plate Counts (HPC)
☐ Direct Microscope Examination (**NON**-Fungal Particulate): Quantitative ☐ Qualitative ☐	☐ E.coli/Total Coliforms
☐ Fungal Quantification & Identification (Anderson/RCS)	Legionella: Culturing qPCR
Other: _____	

Sample#	Description	Date Sampled	Vol (L) **or** Area (cm^2)	TAT REG	TAT RUSH	FOR LAB USE ONLY LAB #
B2874868	TL-01 – Spotting on wall in Kitchen (stove is missing) in Cabin 1	09/29/22	N/A	x		M280011-1
B2873610	TL-02 – Water staining on baseboard behind toilet in Cabin 2	09/29/22	N/A	x		2
B2878550	TL-03 – Spotting by front door in Living Area in Cabin 5	09/29/22	N/A	x		3
B2878660	TL-04 – Spotting on window frame in Cabin 6	09/29/22	N/A	x		4
B2874856	TL-05 – Spotting on drywall in Pump Room in Cabin 8	09/29/22	N/A	x		5
B2874864	TL-06 - Blank	09/29/22	N/A	x		6

CHAIN OF CUSTODY				
Collected by: MMD		FOR LAB USE ONLY:		
Relinquished by: MMD	Date/Time:	Received by:	Date/Time: 10/4/22 11:59	
Method of Shipment: Purolator		Sample Condition Upon Receipt:	Acceptable ☒	Other (explain) ☐

Reviewed Par 10/17/22

Authorized by: _____ **Date:** _____

Customer Signature MUST Accompany Request. Customer accepts Pinchin Ltd. Standard Terms and Conditions for Laboratory Services (see over)

Distribution: White = Laboratory, Yellow = Customer Copy

PINCHIN
2555 Meadowpine Blvd. Unit 2
Mississauga, ON L5N 6C3
T: (905) 363-0678
E: microbiolab@pinchin.com

Certificate of Analysis

Pinchin Environmental Microbiology Laboratory

Laboratoire d'analyse accrédité par le gouvernement du Québec
Lab ID# 495

CUSTOMER: Meaghan Dunn
COMPANY: Pinchin Ltd.
ADDRESS: 191 Bloor Street East, Unit 11
Oshawa, ON L1H 3M3

PROJECT NAME:
TYPE OF SAMPLES: AllergencoD
NO. OF SAMPLES: 7
DATE COLLECTED: September 29, 2022
DATE RECEIVED: October 4, 2022
DATE ANALYSED: October 17, 2022
DATE REPORTED: October 17, 2022

PROJECT NO: 316099
LAB REFERENCE NO: m280012
ANALYST: Lubov Beliakov, CMS (PhD)
Environmental Microbiologist
REVIEWER: Partinder Puri, B.Sc.
Environmental Microbiologist

CONDITION OF SAMPLES ON RECEIPT: Acceptable

Method of Analysis: Analysis of Air Samples for Fungal Spores (SOP: DME-SPT, Rev. 13, December 18, 2019)

This SOP is based on the method described in the AIHA's "Field Guide for the Determination of Biological Contaminants in the Environmental Samples" and also partially on the ASTM method D7391-09. The cassette slide with the trace (area impacted with air) facing upwards is fixed on a clean microscope slide. It is stained with lactophenol cotton blue or lactofuschin, and then scanned under low power magnification to locate the trace and to give the analyst an idea of the diversity of the spores. The final analysis is performed at X600 magnification by counting the different spores along a number of traverses or fields of view to cover at least 25% of the sample. A lower percentage of the sample is counted if it is overloaded. Raw counts are converted to spores/m^3 of air. Counts of fungal fragments and pollens are not computed in the total. Spores lacking unique characteristics for identification are reported as "Unidentified spores". Spores showing features of specific groups are recorded under the respective groups such as "Unidentified Basidiospores or Unidentified Ascospores". Spores occurring in chains are counted individually. Spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium*, *Paecilomyces*) are indistinguishable.

A scale of 0 to 5 is used to rate abundance of non-fungal material, with 5 indicating the largest amount. Large amounts of non-fungal material may obscure small spores. Therefore, counts from samples with 4-5 non-fungal material may be treated as undercounts. Except for blanks, samples with no detected spores are recorded as "less than the analytical sensitivity " (AS). Results are not corrected for blanks. Estimation of the measurement of uncertainty is available upon request.

Comments/Observations (if any):

Notes:
1. The laboratory is not responsible for sample collection.
2. The report applies to the samples submitted to the laboratory and, the result(s) relate only to sample(s) tested.
3. The report shall not be reproduced except in full, without written approval of the laboratory.
4. Services are subject to Pinchin Ltd. Standard Terms and Conditions for Laboratory Services.

PINCHIN
2555 Meadowpine Blvd. Unit 2
Mississauga, ON L5N 6C3
T: (905) 363-0678
E: microbiolab@pinchin.com

Certificate of Analysis

Pinchin Environmental Microbiology Laboratory

Laboratoire d'analyse accrédité par le gouvernement du Québec
Lab ID# 495

PROJECT NO: 316099

DATE ANALYSED: October 17, 2022 **ANALYST:** Lubov Beliakov, CMS (PhD) **LAB REFERENCE NO:** m280012

Customer Sample No:	4592755			4592761			4592762			4592766			4592764			4592743			4592754		
Lab Sample ID:	m280012-1			m280012-2			m280012-3			m280012-4			m280012-5			m280012-6			m280012-7		
Description	ST-01 - Living Area Cabin 1			ST-02 - Living Area Cabin 2			ST-03 - Living Area Cabin 5			ST-04 - Living Area Cabin 6			ST-05 - Living Area Cabin 8			ST-06 - Outdoor			ST-07 - Blank		
Total Air Volume (L)	150			150			150			150			150			150			N/A		
% of Sample Counted	13.9			11.6			18.5			25.4			16.2			6.9			25.4		
Fungal spores identified	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3	raw ct.	%	ct./m^3
Alternaria/Ulocladium-like																1	0	96			
Ascospores, non-specified	53	10	2500	55	11	3200	21	4	760	12	3	310	46	9	1900	87	17	8400			
Aspergillus/Penicillium-like	125	23	6000	143	28	8200	115	21	4100	171	38	4500	111	22	4600	15	3	1400			
Basidiospores, non-specified	258	48	12000	309	60	18000	229	43	8300	97	22	2500	277	54	11000	402	78	39000			
Bipolaris/Drechslera/ Exserohilum/Helminthosporium																					
Botrytis																					
Chaetomium-like													2	0	82						
Cladosporium	94	17	4500	5	1	290	166	31	6000	163	37	4300	67	13	2800	1	0	96			
Coprinus	3	1	140	1	0	58	4	1	140	1	0	26	6	1	250	3	1	290			
Curvularia										1	0	26									
Epicoccum																					
Fusarium-like																					
Ganoderma	10	2	480	3	1	170	2	0	72	1	0	26	2	0	82	6	1	580			
Myxomycetes/Periconia/Rusts/Smuts				1	0	58															
Nigrospora																1	0	96			
Non-specified spores				1	0	58															
Oidium-like																					
Pithomyces-like																					
Polythrincium																					
Stachybotrys																					
Pollens																					
Fungal fragments	1		48	1		58	2		72	3		79	3		120						
Non-fungal material	2			2			2			1			2			2					
Spores/sample	543			518			537			446			511			516					
TOTAL SPORES/M^3			26000			30000			19000			12000			21000			50000	No fungal spores		
A.S. (SPORES/M^3)			48			58			36			26			41			96			

Note: 1. Samples analysed at 600X magnification. 2. A.S. = Analytical Sensitivity
3. Total spores/m^3 and counts/m^3 reported to two significant figures where applicable

M280012

PINCHIN
2555 Meadowpine Blvd. Unit 2
Mississauga, ON L5N 6C3
T: 905.363.0678
E: microbiolab@pinchin.com
www.pinchin.com

Environmental Microbiology Laboratory
Chain of Custody Form

REPORT RESULTS TO					
	Contact: Meaghan Dunn			Dept:	
	Company: Pinchin Ltd.			Tel: 289.928.0366	Fax:
	Mailing Address: 191 Bloor Street East Unit 11			Email: mdunn@pinchin.com vjohnston@pinchin.com	
	City: Oshawa	Prov: Ontario	✓	Customer Job #:	P.O. #:

Special Instructions:		Project: 316099
Report Language: English ☒ French ☐	No. Samples Submitted: 7	Invoice To: ✓

ANALYSIS TYPES (check)	
☒ Total Fungal Particulate (Spore count and Identification)	☐ Bacteria (Quantification/Gram staining)
☐ Direct Microscope Examination (Fungal)	☐ Heterotrophic Plate Counts (HPC)
☐ Direct Microscope Examination (**NON**-Fungal Particulate): Quantitative ☐ Qualitative ☐	☐ E.coli/Total Coliforms
☐ Fungal Quantification & Identification (Anderson/RCS)	Legionella: Culturing qPCR
Other: _____	

Sample#	Description	Date Sampled	Vol (L) or Area (cm^2)	TAT REG	TAT RUSH	FOR LAB USE ONLY LAB #
4592755	ST-01 – Living Area Cabin 1	09/29/22	150	X		M280012-1
4592761	ST-02 – Living Area Cabin 2	09/29/22	150	X		2
4592762	ST-03 – Living Area Cabin 5	09/29/22	150	X		3
4592766	ST-04 – Living Area Cabin 6	09/29/22	150	X		4
4592764	ST-05 – Living Area Cabin 8	09/29/22	150	X		5
4592743	ST-06 - Outdoor	09/29/22	150	X		6
4592754	ST-07 - Blank	09/29/22	N/A	X		7

CHAIN OF CUSTODY				
	Collected by: MMD		FOR LAB USE ONLY: ✓	
	Relinquished by: MMD	Date/Time:	Received by: [signature]	Date/Time: 10/4/22 12:02
	Method of Shipment: Purolator		*Sample Condition* Upon Receipt:	Acceptable ☒ Other (explain) ☐

Authorized by:_____ **Date:** Reviewed Pav 10/17/22

Customer Signature MUST Accompany Request. Customer accepts Pinchin Ltd. Standard Terms and Conditions for Laboratory Services (see over)

Distribution: White = Laboratory, Yellow = Customer Copy

Pinchin Ambient Mould Index (PAMI) ©

Region:	Greater Toronto Area
Month:	September
# Samples:	778
Period:	2006 – 2018

Mould/Groups Recorded	Frequency of detects (%)	Min (spores/m^3)	5th percentile (spores/m^3)	50th percentile (spores/m^3)	95th percentile (spores/m^3)	Max (spores/m^3)
Basidiospores non-specified	99.74	26	1334	7989	38014	136800
Ascospores non-specified	99.36	26	211	1029	5665	32114
Cladosporium	97.94	26	130	1371	13000	45864
Ganoderma	96.92	26	52	343	1714	7657
Aspergillus/Penicillium-like	89.72	26	26	340	2512	9800
Coprinus	85.60	26	26	130	547	1886
Non-specified spores	68.38	26	26	158	1489	28286
Myxomycetes/Periconia/Rusts/Smuts	59.25	26	26	79	480	4510
Alternaria/Ulocladium-like	55.01	26	26	79	457	1500
Epicoccum	29.95	26	26	52	242	1286
Cercospora	19.79	26	26	53	498	870
Polythrincium	19.54	26	26	37	210	857
Pithomyces-like	17.22	26	26	26	162	830
Oidium-like	10.80	26	26	44	169	343
Botrytis	7.46	26	26	37	169	21873
Arthrinium	6.43	26	26	26	206	514
Torula	5.91	26	26	47	199	340
Helicospores	5.01	26	26	49	128	889
Nigrospora	3.34	26	26	26	275	350
Fusicladium	3.21	26	26	26	76	110
Curvularia	2.44	26	26	36	172	185
Bipolaris/Drechslera/Exserohilum/Helminthosporium	2.31	26	26	26	128	209
Fusarium-like	1.80	26	26	88	172	230
Stemphylium	1.67	26	26	26	185	290
Peronospora	1.29	26	26	26	97	130
Chaetomium-like	0.64	26	26	26	31	33
Rhizopus	0.39	34	35	44	121	130
Exosporiella	0.26	26	27	30	34	34
Spegazzinia	0.13	57	57	57	57	57
Scopulariopsis	0.13	52	52	52	52	52
Zygophiala	0.13	52	52	52	52	52

Based on detection limit of 26 spores per cubic metre of air.

APPENDIX III

Results of Asbestos Samples

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name:	**Fleming College, Cabin 5**		
Project No.:	**0316099.000**		
Prepared For:	**M. Dunn / V. Johnston**		
Lab Reference No.:	**b280138**		
Analyst(s):	**E. Cianni / K. Cockburn / N. Barinque**		
Date Received:	**October 4, 2022**	**Samples Submitted:**	**9**
Date Analyzed:	**October 11, 2022**	**Phases Analyzed:**	**8**

The Pinchin Ltd. Mississauga asbestos laboratory is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0) for the 'EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples,' and the 'EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials'; and meets all requirements of ISO/IEC 17025:2017. The Pinchin asbestos laboratory uses the aforementioned methods of analysis.

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with provincial regulatory requirements where applicable. Multiple phases within a sample are analyzed and reported separately.

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

This report relates only to the items tested.

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: **Fleming College, Cabin 5**
Project No.: **0316099.000**
Prepared For: **M. Dunn / V. Johnston**

Lab Reference No.: **b280138**
Date Analyzed: **October 11, 2022**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0001A Drywall and Joint Compound, Cabin 5, Living Area	Homogeneous, off-white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
S0001B Drywall and Joint Compound, Cabin 5, Bedroom 2	2 Phases: a) Homogeneous, off-white, drywall joint compound. b) Homogeneous, white, drywall joint compound.	None Detected None Detected	Non-Fibrous Material > 75% Non-Fibrous Material > 75%
S0001C Drywall and Joint Compound, Cabin 5, Washroom	Homogeneous, off-white, layered drywall joint compound.	None Detected	Non-Fibrous Material > 75%
S0002A Black Sink Mastic, Cabin 5, Living Area/Kitchen sink	Homogeneous, bronze, mastic material.	Chrysotile 5-10%	Tar and other non-fibrous > 75%
S0002B Black Sink Mastic, Cabin 5, Living Area/Kitchen sink			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0002C Black Sink Mastic, Cabin 5, Living Area/Kitchen sink			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: **Fleming College, Cabin 5**
Project No.: **0316099.000**
Prepared For: **M. Dunn / V. Johnston**

Lab Reference No.: **b280138**
Date Analyzed: **October 11, 2022**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0003A 12"x12" ceramic tile pattern sheet flooring, Cabin 5, Living Area	Non-homogeneous, off-white, consolidated, fibrous material with yellow mastic on the back of vinyl sheet flooring.	None Detected	Cellulose 50-75% Man-made Vitreous Fibres 0.5-5% Non-Fibrous Material 25-50%
S0003B 12"x12" ceramic tile pattern sheet flooring, Cabin 5, Living Area by Bedroom	Non-homogeneous, off-white, consolidated, fibrous material with yellow mastic on the back of vinyl sheet flooring.	None Detected	Cellulose 50-75% Man-made Vitreous Fibres 0.5-5% Non-Fibrous Material 25-50%
S0003C 12"x12" ceramic tile pattern sheet flooring, Cabin 5, Living Area	Non-homogeneous, off-white, consolidated, fibrous material with yellow mastic on the back of vinyl sheet flooring.	None Detected	Cellulose 50-75% Man-made Vitreous Fibres 0.5-5% Non-Fibrous Material 25-50%

Reviewed by:

Digitally signed by Elizabeth DeCurtis
Date: 2022.10.11 15:59:17-04'00'

Reporting Analyst:

Digitally signed by Elizabeth DeCurtis
Date: 2022.10.11 15:59:01-04'00'

PINCHIN

MEMBER OF PG THE PINCHIN GROUP

Analyzed by: E.C

Reviewed by: NB

Report Sent by: KB

Special Instructions:

Pinchin Ltd. - Asbestos Laboratory
Internal Asbestos Bulk Sample Chain of Custody

Client Name:	Fleming College			**Project Address:**	Cabin 5		
Portfolio/Building No:				**Pinchin File:**	316099		
Submitted by:	Meaghan Dunn			**Email:**	mdunn@pinchin.com		
CC Results to:	Valerie Johnston			**CC Email:**	vjohnston@pinchin.com		
Invoice to:				**Invoice Email:**			
Date Submitted:	September	29	2022	**Required by:**	October	11	2022
# of Samples:	9			**Priority:**	5 Day Turnaround		
Year of Building Construction (*Mandatory Field*):				1980			
Do NOT Stop on Positive (Sample Numbers):				Sample 1			
Pinchin Group Company (*Mandatory Field*):				Pinchin			

To be Completed by Lab Personnel Only:					
Lab Reference #:	b280138 KB		**Time:**	24 hour clock	
Received by:	OCT 04 2022		**Date:** Oct 11, 2022	Month	Day	2021
Name(s) of Analyst(s):	EC / K.C / N.B				

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0001	A	Drywall and Joint Compound, Cabin 5, Living Area ND
S	0001	B	Drywall and Joint Compound, Cabin 5, Bedroom 2 a) ND b) ND
S	0001	C	Drywall and Joint Compound, Cabin 5, Washroom ND
S	0002	A	Black Sink Mastic, Cabin 5, Living Area/Kitchen sink CH 5-10%
S	0002	B	Black Sink Mastic, Cabin 5, Living Area/Kitchen sink NA

PINCHIN

MEMBER OF PG THE PINCHIN GROUP

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0002	C	Black Sink Mastic, Cabin 5, Living Area/Kitchen sink NA
S	0003	A	12"x12" ceramic tile pattern sheet flooring, Cabin 5, Living Area ND
S	0003	B	12"x12" ceramic tile pattern sheet flooring, Cabin 5, Living Area by Bedroom ND
S	0003	C	12"x12" ceramic tile pattern sheet flooring, Cabin 5, Living Area ND