PRIVATE AND CONFIDENTIAL

April 4, 2023

The Town of Newmarket Public Work Services, Operation Centre
1275 Maple Hill Court
Newmarket, ON L3Y 9E8

Via email: bwhite@newmarket.ca

Attention: **Bill White, Project Management Leader**

Re: **Mould Assessment**
Mulock Estate
16780 Yonge Street, Newmarket, Ontario
ECOH Project No.: 27579-07

1. INTRODUCTION

ECOH Management Inc. (ECOH) was retained by the Town of Newmarket (the "Client") to conduct a mould assessment, asbestos bulk sampling and lead bulk sampling within select locations of the Mulock Estate at 16780 Yonge Street, Newmarket (herein referred to as the "Project Area"). ECOH understands that the mould assessment was requested following discovery of suspect staining on the hardwood floor beneath the carpet in library and historical leaks in the attic. The objective of the assessment was to address the mould-affected and/or water-damaged building materials within the Project Area as well as collect bulk samples for analysis of lead and asbestos content.

Ms. Michelle Mendoza and Mackenzie Ruffo, of ECOH performed the assessment on March 21, 2023, and March 28. The assessment included a visual inspection for the presence of mould-growth and moisture intrusion, as well as the collection of moisture measurements to identify damp/wet building materials. Bulk tape-lift were also collected for laboratory analysis. Based on the *Assessment of Designated Substances and Hazardous Materials* Report prepared by ECOH on February 27, 2023, the subject building was built circa 1878 and contain asbestos in building materials. A review of the report indicated the asbestos-containing parging cement fittings and aircell pipe insulation are present within the Project Area.

The following report includes a description of the assessment methodology, investigation findings, conclusions, and recommendations from the assessment. The laboratory Certificates of Analysis for the collected samples and the Site Photographs collected at the time of our assessment are provided at the end of the report as Attachment 1 and 2, respectively. Attachment 3 provides a description of mould and its possible health effects. It should be noted that the current condition within the Project Area may differ from the observations recorded by ECOH during the mould assessment on March 21, 2023 and March 28, 2023.

2. ASSESSMENT METHODOLOGY

The assessment was conducted in accordance with standard industry practice for a visual assessment as set out in the Canadian Construction Association (CCA) Mould Guidelines for the Canadian Construction Industry. Although there are no regulatory requirements or guidelines in Ontario for such an assessment, the CCA and similar guidelines have been accepted as the industry standard by most experts, consultants, and regulatory agencies.

2.1 Visual Inspection

The visual component of the assessment entailed visual identification of mould growth (suspect or confirmed), as well as sources of moisture infiltration that may promote mould growth. The visual assessment was limited to the hardwood floor under removed carpet in the library and suspect water damage located on the structure of the attic as reported by the Client. The assessment did not include intrusive investigation (i.e. test cuts) to determine the presence of hidden mould and water damage behind fixed building systems (e.g. inside walls, above fixed ceilings, or below floors).

2.2 Moisture Measurements

As mould requires moisture and a food source (e.g. drywall, wood) to grow, moisture measurements were obtained to determine areas of potential mould growth. Moisture measurements were made using a Delmhorst TechCheck Plus digital moisture meter (penetrating type) at various suspect locations or areas of concern. Elevated moisture measurements are considered to be those exceeding the equivalent of a 15% moisture content for wood [commonly referred to as the 'wood moisture equivalent' (WME)], 0.5% moisture content for drywall and 280 on a relative scale for plaster and concrete.

2.3 Mould Tape-Lift Sampling

Each tape-lift sample was taken by pressing a Bio-Tape® self-adhesive plastic slide onto the suspected area and removing a part of the suspect material. The Bio-Tape® was then placed and sealed in a Bio-Tape® container and sent to an accredited laboratory for analysis by microscopic examination.

The tape-lift samples were analyzed by EMC Scientific Inc. (EMC), an independent environmental microbiology laboratory that participates in the American Industrial Hygiene Association (AIHA) Environmental Microbiology Proficiency Analytical Testing (EMPAT) program (identification #174080) and is staffed with experienced and trained mycologists.

2.4 Asbestos Bulk Sampling

Three (3) bulk samples were collected and submitted for analysis of asbestos content to EMSL Analytical Inc., an independent commercial laboratory. Samples were collected as per the requirements of Ontario Regulation 278/05; multiple samples (ranging from 1 to 7 depending on quantity and type of material) are required to confirm the absence of asbestos. Only one positive result (i.e. confirming the presence of asbestos) is required to classify a material as

asbestos-containing. Therefore, ECOH's sampling strategy involves the collection of sufficient numbers of samples to meet regulatory requirements, followed by instructions to the laboratory to cease analysis when one sample within a series has already proven positive for asbestos. Sampling required a small volume of material to be removed either from a damaged section of suspect material or cut from intact material and then repaired by sealing with tape to prevent fibre release. The collected samples were placed in plastic bags and sealed during shipment to an independent laboratory. A formal chain of custody procedure was maintained between ECOH and the sub-contract laboratory during sample transport. Samples were then analysed following the analytical procedure prescribed by the Regulation 278/05 U.S. Environmental Protection Agency Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June 1993. Although not required by provincial regulation, all laboratories used by ECOH are accredited under the U.S. National Voluntary Laboratory Accreditation Program (NVLAP) to ensure consistent, accurate and defensible results.

Materials confirmed to be asbestos-containing during any previous assessments of the facility (if applicable) were not re-sampled for this survey. Additionally, samples were not collected of materials that were previously confirmed to be non-asbestos per the requirements of Ontario Regulation 278/05.

2.5 Lead Bulk Sampling

Although no regulations exist in Ontario, guidelines indicate that paints and surface coatings that contain 0.5% lead concentration by dry weight (i.e., concentrations of lead at or above 0.5%, or 5000 parts per million (ppm) is considered to be a "lead-based paint or surface coating". Paints or surface coatings that contain concentrations of lead greater than 0.1% by dry weight (1000 ppm), and less than 0.5% by dry weight (5000 ppm), is considered to be a "lead-containing paint or surface coating". Paints or surface coatings that contain concentrations of lead at, or below, 0.1% by dry weight (1000 ppm) is considered to be a "low-level lead paint or surface coating".

No major sources of lead or lead-containing products were observed during this assessment. However, the following should be noted.

- Lead may be present in wiring connectors and electric cable sheathing, and
- Lead may be present in solder joints on copper piping.

3. OBSERVATIONS

The following was noted during the assessment on March 21 2023:

- Visible suspected staining was observed in the Library and Attic at the time of the assessment.

- Approximately 20 square feet (ft^2) of black staining on wood floors was observed in the library near fireplace. No active leaks/sources of moisture were observed during the survey. Please refer to Photo 1 in Attachment 1.
- Approximately 8 ft^2 of black staining on wood floors was observed in the library near west entrance. No active leaks/sources of moisture were observed during the survey. Please refer to Photo 2 in Attachment 1.
- Three parging cement fittings present were observed above the library ceiling. Parging cement has been previously sampled and determined by laboratory analysis to be **asbestos-containing** (60% chrysotile). Please refer to Photo 8 in Attachment 1.
- Approximately 40 linear feet (ft) of brown wrap pipe insulation was present above the ceiling of the library. Representative samples of the brown pipe wrap were collected (27579-07-ASB-01A to 01C) and laboratory analysis determined this to be non-asbestos containing.
- Approximately 25 ft^2 of water damage and black staining on wooden structure was observed in the Attic, near ladder access to the left upon entry. No active leaks were observed during the survey. Please refer to Photo 3 in Attachment 1.
- Approximately 40 ft^2 of water damage and black staining on wooden structure was observed in the Attic on the northeast section of rafters. No active leaks were observed during the survey. Please refer to Photo 4 in Attachment 1.
- Approximately 20 ft^2 of water damage and black staining on wooden structure was observed in the Attic on the south section of rafters. No active leaks were observed during the survey. Please refer to Photo 5 in Attachment 1.
- Approximately 25 ft^2 of water damage and black staining on wooden structure was observed in the Attic, to the left of the windows. No active leaks were observed during the survey. Please refer to Photo 6 in Attachment 1.
- Approximately 25 ft^2 of water damage and black staining on wooden structure was observed in the Attic, to the right of the windows. No active leaks were observed during the survey. Please refer to Photo 7 in Attachment 1.

4. MOULD SAMPLING RESULTS

- Two (2) tape-lift samples were taken for the identification of mould growth from representative mould-affected/water-stained sections of suspect materials in the Project Area. Table 1 summarizes the sample collection information and results from the mould tape-lift sampling. Refer to Attachment 2 for the laboratory analytical report and Attachment 2 for site photographs.

Table 1: Mould Tape-Lift Samples – Analytical Laboratory Results			
Sample Number	**Sample Location**	**Sample Description**	**Mould Growth**
27579-07-TL-01	Library – on Wood Floor	Black Suspect Mould – Wood Floor	None
27579-07-TL-02	Attic – on Wood Structure	Black Suspect Mould – Wood Structure	None

5. ASBESTOS BULK SAMPLING

The following materials within the Project Area were sampled and analyzed for asbestos content. Refer to Attachment 3 for the laboratory analytical report.

Table 2: Asbestos Bulk Sampling – Analytical Laboratory Results			
Sample Number	**Sample Location**	**Sample Description**	**Asbestos Content**
27579-07-ASB-01A	Library, above ceiling	Brown Pipe Insulation	None Detected
27579-07-ASB-01B	Library, above ceiling	Brown Pipe Insulation	None Detected
27579-07-ASB-01C	Library, above ceiling	Brown Pipe Insulation	None Detected
	Shading indicate samples positive for asbestos (if appliable)		

The following materials within the Project Area were sampled and analyzed for lead content. Refer to Attachment 4 for the laboratory analytical report.

Table 3: Lead Bulk Sampling – Analytical Laboratory Results			
Sample Number	**Sample Location**	**Sample Description**	**Lead Content**
27579-07-PB-01	Exterior, Roof	Green Paint on Roof Tile	**8800 ppm**
	Shading indicate samples positive for lead (if appliable)		

Laboratory analysis of green paint on roof tile confirmed the paint is lead-based.

6. CONCLUSIONS

Visual inspection and mould-tape lift sampling indicated water-damaged building materials present in within the Project Area however no mould growth was identified.

Previously identified asbestos-containing materials (i.e. parging cement fittings) are present in the Library however bulk sampling of the brown pipe insulation in the Library was identified as non-asbestos containing.

Lead- based paint were identified within the Project Area (green roof tiles) at the time of the assessment.

7. RECOMMENDATIONS

The following recommendations meet requirements of the Occupational Health and Safety Act. Asbestos recommendations meet the requirements of the Designated Substance – Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, Ontario Regulation 278/05. Based upon the observations of this assessment, ECOH offers the following. for your consideration:

1. As asbestos-containing materials (ACM) are present within the Project Areas (i.e. parging cement fittings), ECOH recommends that all workers have asbestos awareness and respirator training before commencing work. Asbestos awareness training will provide on-site workers; the understanding of asbestos-related health and safety issues; the ability to recognize ACM and any situation that may present a potential asbestos exposure, and; the ability to respond appropriately to an inadvertent disturbance of ACM in the work area.
   a) If required, the removal or disturbance of one (1) square meter or less of asbestos-containing friable material (i.e. parging cement fittings) should be performed utilizing Type 2 Glove Bag asbestos safety precautions.
2. Demolition, renovation or maintenance activities involving materials found NOT to contain asbestos, or not suspected of containing asbestos (i.e. brown pipe insulation above the Library ceiling), should implement general health and safety precautions including, in part, the use of dust suppression techniques and appropriate respiratory protection.
3. During work of the project, if additional materials are revealed beyond what are described in this report, and historic reports referenced herein (i.e. materials not identified or materials that are not homogenous to those identified or materials that become revealed during the work), additional testing for asbestos-content should be completed immediately and prior to disturbance of the material. Alternatively, these materials can be assumed to contain asbestos and the appropriate level of asbestos safety precautions must be implemented.
4. Any work involving the disturbance of “lead-based” paints or building materials assumed to contain lead (e.g. wiring connectors, ceramic tiles or electric cable sheathing), should be conducted following recommendations detailed within the Ministry of Labour document Guideline - Lead on Construction Projects, dated April 2011, and the Environmental Abatement Council of Ontario (EACO) Lead Guideline, dated October 2014. Work shall be classified as follows, as per the EACO Lead Guideline:

- Removal of lead-containing or lead-based paints and surface coatings with a chemical gel/stripper or paste is a Type 1 lead operation.
- Removal of lead-containing or lead-based paints and surface coatings with a heat gun is a Type 1 lead operation.
- Removal of materials coated with lead-containing or lead-based paints and surface coatings, using non-powered hand tools, where the material remains chiefly intact and is not crumbled, pulverized or powdered is a Type 1 lead operation.
- Removal of lead-containing coatings or materials using a power tool that has an effective dust collection system equipped with a HEPA filter is a Type 2a lead operation,
- Removal of lead-containing or lead-based paints or materials by scraping or sanding using non-powered hand tools is a Type 2a lead operation,
- Manual demolition of lead-painted plaster walls (or similar building components that will crumble, pulverize, or powder) when striking with a sledgehammer or similar tool is a Type 2a lead operation,
- Removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter is a Type 3a lead operation,
- Abrasive blasting of lead-containing coatings or materials is a Type 3b lead operation.

5. Removal of black staining identified in the library may be completed following general health and safety precautions, which would include dust suppression methods, proper respiratory protection (minimum of a 1/2-face respirator) and protective clothing, as is appropriate for the work being completed.
6. All the surfaces adjoining or near the water-damaged areas (i.e. library floor, attic rafters) should be wiped down/cleaned with an anti-microbial solution.
7. Regularly monitor the affected areas for potential leaks that may support mould growth. If leaks develop, investigate and address cause(s).
8. Should additional concerns be raised, further investigations should be conducted by a qualified environmental consultant such as ECOH.

8. LIMITATIONS

Due to the nature of building construction, and on-going building activities, some limitations exist to the thoroughness of a building assessment. The field observations, measurements and analysis are considered sufficient in detail and scope to form a reasonable basis for the findings and conclusions presented in this report. The observations, results and conclusions drawn by ECOH Management Inc. (ECOH) are limited to the specific scope of work for which ECOH was retained and are based solely on information generated because of the specific scope of work authorized by Bill White. Only those items that are capable of being observed and are

reasonably obvious to ECOH personnel or have been identified to ECOH by other parties, can be reported. ECOH has exercised a degree of thoroughness and competence that is consistent with the profession during the execution of this assessment. ECOH considers the opinions and information as they are presented in this report to be factual at the time of the assessment. The conclusions are limited to the specific locations where testing and/or observations were completed during the assessment.

It is important to note that work was completed with the utmost care and our extensive expertise in carrying out assessments. ECOH believes that the information collected during the assessment concerning the work area is reliable. No other warranties are implied or expressed. ECOH, to the best of its knowledge, believes this report to be accurate, however, ECOH cannot guarantee the completeness or accuracy of information supplied to ECOH by third parties. It should also be noted that any investigation regarding the presence of hazardous materials in the work area is based on interpretation of conditions determined at specific sampling locations, and conditions may vary between sampling locations.

ECOH is an Environmental Consulting Company and as such any results or conclusions presented in this report should not be construed as legal advice. The material in this report reflects ECOH's professional interpretation of information available at the time of report preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ECOH accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. Should additional information become available that suggests other environmental issues of concern beyond that described in this report, ECOH retains the right to review this information and modify conclusions and recommendations presented in this report accordingly.

We trust that this report meets your requirements, and we thank you for the opportunity to be of service. Should you have any questions, please do not hesitate to contact us at (905) 795-2800.

ECOH
Environmental Consulting &
Occupational Health

Prepared by:

Mackenzie Ruffo, M.E.S, B.Sc.
Environmental Scientist

Reviewed by:

Michelle Mendoza, CRSP, CIH
Senior Occupational Hygienist

Attachment 1: Site Photographs

Attachment 2: Laboratory Certificates of Analysis

SITE PHOTOGRAPHS

APPENDIX II

Client Name:	**Site Location:**	**Project No.:**
Town of Newmarket	Mulock Estate, 16780 Yonge Street, Newmarket, ON	27579-07

Photo No. 1. **Date: March 21, 2023** **Description:** Library near fireplace Representative view of black staining on wood floors near library fireplace.	

Photo No. 2. **Date: March 21, 2023** **Description:** Library Representative view of black staining on wood floors in library near west entrance.	

Client Name:	**Site Location:**	**Project No.:**
Town of Newmarket	Mulock Estate, 16780 Yonge Street, Newmarket, ON	27579-07

Photo No. 3. **Date: March 21, 2023** **Description:** Attic Representative view of water damage on wooden structure was observed in the Attic, near ladder access to the left upon entry.	

Photo No. 4. **Date: March 21, 2023** **Description:** Attic Representative view of water damage on wooden structure was observed in the Attic, northeast section of rafters.	

Client Name:	**Site Location:**	**Project No.:**
Town of Newmarket	Mulock Estate, 16780 Yonge Street, Newmarket, ON	27579-07

Photo No. 5.

Date: March 21, 2023

Description:

Library

Representative view of non-asbestos brown pipe (2759-07-ASB-01A to 01C) (left arrow) and previously sampled **asbestos-containing** parging cement fittings (60% Chrysotile) (right arrow) above ceiling.

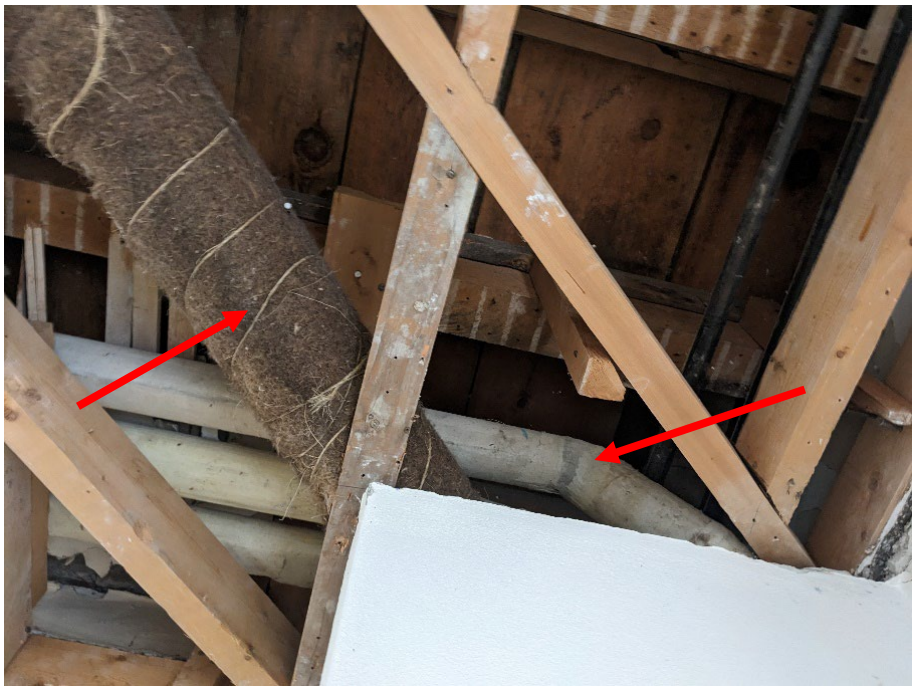

Photo No. 6.

Date: March 28, 2023

Description:

Exterior

Representative view of roof tile with **lead-based** green paint (8800 ppm)

emcscientific
INCORPORATED

Laboratory Analysis Report

To:

Mackenzie Ruffo
ECOH Management Inc.
75 Courtneypark Drive West, Unit 1
Mississauga, Ontario
L5W 0E3

EMC LAB REPORT NUMBER: 89342
Job/Project Name: Mulock Estate, Mould Assessment
Job/Project No: 27579-07 **No. of Samples:** 2
Sample Type: Tape Lift **Date Received:** Mar 21/23
Analysis Method(s): Direct Microscopic Examination
Date Analyzed: Mar 24/23 **Date Reported:** Mar 24/23
Analyst: Fajun Chen, Ph.D., *Principal Mycologist*

Client's Sample ID	Lab Sample No.	Date Sampled	Description/Location	Mould Identified, in Rank Order	Mould Growth
25827-313-TL-01	379564	Mar 21/23	Black suspect mould – library on wood floor	*Cladosporium* (a few spores)	None
25827-313-TL-02	379565	Mar 21/23	Black suspect mould – attic on wood structure	*Cladosporium* (a few spores)	None

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

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3

Tel/Fax: (289) 997-4602 / (289) 997-4607

http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order: 552304696
Customer ID: 55ECOH45
Customer PO: 27579-07
Project ID:

Attention: Michelle Mendoza
ECOH Management, Inc.
75 Courtneypark Drive West
Unit 1
Mississauga, ON L5W 0E3
Project: 27579-07

Phone: (905) 795-2800
Fax: (905) 795-2870
Received Date: 03/28/2023 1:17 PM
Analysis Date: 04/03/2023 - 04/04/2023
Collected Date:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
27579-ASB-01A *552304696-0001*	Library - Brown Pipe Wrap	Brown/White Fibrous Homogeneous	40% Cellulose 40% Hair	20% Non-fibrous (Other)	None Detected
27579-ASB-01B *552304696-0002*	Library - Brown Pipe Wrap	Brown/White Fibrous Homogeneous	40% Cellulose 40% Hair	20% Non-fibrous (Other)	None Detected
27579-ASB-01C *552304696-0003*	Library - Brown Pipe Wrap	Brown/Beige Fibrous Homogeneous	30% Cellulose 45% Hair	25% Non-fibrous (Other)	None Detected

Analyst(s)

Kira Ramphal (1)
Marzan Regaspi (2)

Matthew Davis or other approved signatory
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 “Interim Method”) but augmented with procedures outlined in the 1993 (”final”) version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 04/04/2023 11:06:09

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EMSL Canada Or	552304698
CustomerID:	55ECOH45
CustomerPO:	27579
ProjectID:	

Attn: **Michelle Mendoza**
ECOH Management, Inc.
75 Courtneypark Drive West
Unit 1
Mississauga, ON L5W 0E3

Phone: (905) 795-2800
Fax: (905) 795-2870
Received: 3/28/2023 01:18 PM
Collected: 3/28/2023

Project: **27579**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample	*Description*	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead* **Concentration**
27579-PB-01		3/28/2023	3/29/2023	0.1227 g	330 ppm	8800 ppm
552304698-0001	Site: Exterior Roof Green Paint Chip					

Rowena Fanto, Lead Supervisor
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
* Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA LAP, LLC-ELLAP Accredited #196142

Initial report from 04/04/2023 08:56:09