HAZARDOUS MATERIALS SURVEY AND 2022 REASSESSMENT
559 KING EDWARD AVENUE, OTTAWA, ON

Project No.: 0Z2021101HZ / CCC-230252-00

Prepared for:

University of Ottawa

Prepared by:

McIntosh Perry Limited (MPL)

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Date:

January 10, 2023

McINTOSH PERRY

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REASSESSMENT SURVEY 2022

McIntosh Perry Limited (MPL) was retained by the University of Ottawa, to complete to a hazardous materials survey of Marchand Residence located at 559 King Edward Avenue, Ottawa, Ontario. The survey was conducted on March 25th and 26th, 2020. The reassessment was completed on June 21st, 2022.

The purpose of the reassessment was to evaluate the condition and quantity of previously reported asbestos-containing materials (ACM) and develop corrective action plans as required for the purposes of long-term management.

The assessment and reassessment determined the following findings and recommendations.

Summary of the Reassessment Findings:

- ACM Drywall Joint Compound (DJC) was observed to be in Good and Poor Condition throughout the subject building.
- ACM Plaster Wall finishes were observed to be in Good, Fair, and Poor Condition throughout the subject building.
- ACM Vinyl Floor Tile (VFT) was observed to be in Good Condition in select locations of the subject building.
- ACM Mastic was observed to be in Good Condition in select locations of the subject building.
- No water damaged or mould affected materials were observed during the site survey.

Summary of Recommendations:

- Perform a reassessment of asbestos materials on an annual basis.
- Perform a pre-construction assessment and remove all asbestos-containing materials (ACM) prior to alterations or maintenance work if ACM may be disturbed by the work.
- Follow appropriate safe work procedures when handling or disturbing asbestos.
- Sample any presumed ACM prior to alteration or maintained work if presumed ACM may be disturbed by the work.

EXECUTIVE SUMMARY

McIntosh Perry Limited (MPL) was retained by the University of Ottawa, to complete a hazardous materials survey for the building located at 559 King Edward Avenue. The survey was conducted on March 25th and 26th, 2020. The Reassessment Survey was completed on June 21st, 2022.

The purpose of the survey was to determine the presence of building materials containing Designated Substances and other hazardous materials, as defined under the Ontario Occupational Health and Safety Act. Designated Substances are eleven chemical agents prescribed under Ontario Regulation 490/09.

Based on the assessment conducted by MPL, the following ACMs were identified or suspected to be present in the building:

Table A: Summary of Asbestos-Containing Materials Identified

Material Description	Friable?	Location	Type of Asbestos
Drywall Joint Compound	-	Throughout Building	Chrysotile
Plaster	Friable	Throughout Building	Chrysotile
Vinyl Floor Tiles	Non-Friable	Specific Areas Only	Chrysotile
Mastic	Non-Friable	Specific Areas Only	Chrysotile
Electrical Wire Fabric	-	Specific Areas Only	Suspected
Brick/Stone Mortar	-	Specific Areas Only	Suspected

Note: Please refer to the complete report for specific details and recommendations.

All repairs or removal of asbestos-containing materials must be conducted according to Ontario Regulation 278/05, Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act. Asbestos containing waste must also be handled and disposed of according to Ontario Regulation 347/90 as amended – made under the Environmental Protection Act. Any suspect building materials encountered that were not assessed as part of this survey, should be assumed to contain asbestos until proven otherwise by analytical testing;

Sub-trades working with or in close proximity to asbestos-containing material should be informed of its presence;

Given that asbestos containing materials (ACMs) have been identified and will likely remain in place, an Asbestos Management Plan (AMP) is therefore required and an inventory of ACMs must be kept on site. All ACMs must be routinely inspected to ensure no damage has occurred, and the inventory must be updated once in each 12-month period and as may be required based on expected changing site conditions, abatement and/or renovation activities.

Based on the assessment conducted by MPL, the following Designated Substances were identified or suspected to be present in the building:

Table B: Summary of Designated Substances & Hazardous Materials Identified

Material Description	Location
Lead Paint	Specific Areas Only
Lead Acid Batteries	Specific Equipment
PCB's	Specific Equipment
Ozone Depleting Substances	Specific Equipment
Mercury Vapour	Specific Equipment
Silica	Throughout Building

Note: Please refer to the complete report for specific details and recommendations.

Designated Substances area regulated under Ontario Regulation 490/09 — Designated Substances, made under the Ontario Health and Safety Act, which applies to controlling designated substances in the workplace.

In addition to Ontario Regulation 490/09, the following guidelines must also be adhered to when conducting work activities that that involve disturbance of the above-mentioned materials:

- Guideline: Lead on Construction Projects, issued April 2011 by the Occupational Health and Safety branch of the Ministry of Labour
- Guideline: Silica on Construction Projects issued April 2011 by the Occupational Health and Safety branch of the Ministry of Labour.
- Environmental Abatement Council of Canada (EACC) Lead Abatement Guidelines.

Prior to any renovations or demolition activities within building, designated substances must be decommissioned by a licensed contractor such that they are contained and not released to the environment during decommissioning as per O. Reg. 347/09- made under the Environmental Protection Act.

Any suspect building materials encountered that were not assessed as part of this survey, should be assumed to contain designated substances or hazardous materials until proven otherwise by analytical testing.

This report should be made available to contractors tendering on any renovation or demolition work. In turn, all contractors requesting tenders from subcontractors shall furnish this report to subcontractors.

This executive summary is not to be used alone. This report should be reviewed in its entirety.

McINTOSH PERRY

January 10, 2023

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via email: joel.lajeunesse@uottawa.ca

Attention: Joel Lajeunesse, Project Manager

Re: 559 King Edward Avenue, Ottawa, Ontario
Hazardous Materials Survey and 2022 Reassessment
McIntosh Perry Limited Reference No. Z2021101HZ / CCC-230252-00

1.0 INTRODUCTION

In accordance with your instructions, McIntosh Perry Limited (MPL) carried out a Hazardous Materials Survey at the former residential building located at 559 King Edward Avenue, Ottawa, Ontario. The site is situated on the eastern side of King Edward Avenue, between King Edward Avenue and Somerset Street East. The survey of the building was conducted on March 25th and 26th, 2020. The Reassessment Survey was completed on June 21st, 2022.

The purpose of the survey was to determine the presence of building materials containing Designated Substances and other hazardous materials, as defined under the Ontario Occupational Health and Safety Act. Designated Substances are eleven chemical agents prescribed under Ontario Regulation 490/09. In addition, a visual assessment was conducted for the presence of polychlorinated biphenyls (PCBs), radioactive materials, ozone depleting substances (ODSs), other halocarbons and mould.

MPL completed the following,

- Visual review of the building to identify materials which could contain Designated Substances and hazardous materials;
- Bulk sampling and analysis of building materials suspected of containing asbestos (if required);
- Bulk sampling and analysis of representative paints and finishes suspected of containing lead (if required);
- Review of previously completed Hazardous Materials Survey(s) and historical building record(s); and,
- Recommendations for appropriate action where required.

2.0 PROPERTY DESCRIPTION

The subject building is a two-storey residential unit, built in 1920 and approximately 6,824 square feet. The subject building was observed to be constructed with a stone and mortar foundation. The exterior walls are finished with brick, and the roof is composed of asphalt shingles. Within the subject building, interior walls and ceilings were observed to be mainly plaster with some drywall. The floors were generally vinyl floor tile and carpet.

3.0 FINDINGS & RECOMMENDATIONS

Designated Substances

3.1 Asbestos

Findings

A total of fifty-three (53) bulk samples were collected during the survey and sent to an accredited laboratory for analysis. A summary of potential asbestos-containing samples collected along with the sample location, type and friability are presented in Table 1.

Laboratory certificates of analysis for asbestos are included in Appendix C.

Table 1:

Asbestos Laboratory Results

Sample ID	Location	Material	Type and Content	Friability
BS 1.1	Room 100	Wall Plaster (Skim Coat)	None Detected	N/A
		Wall Plaster (Base Coat)	None Detected	Friable
BS 1.2	Room 101	Ceiling Plaster (Skim Coat)	None Detected	Friable
		Ceiling Plaster (Base Coat)	None Detected	Friable
BS 1.3	Room 200	Wall Plaster (Skim Coat)	None Detected	N/A
		Wall Plaster (Base Coat)	None Detected	Friable
BS1.4	Room 200	Ceiling Plaster (Skim Coat)	None Detected	N/A
		Ceiling Plaster (Base Coat)	None Detected	Friable
BS 1.5	Room 200	Wall Plaster (Skim Coat)	None Detected	N/A
		Wall Plaster (Base Coat)	None Detected	Friable
BS 1.6	Room 213	Ceiling Plaster (Skim Coat)	None Detected	N/A
		Ceiling Plaster (Base Coat)	2% Chrysotile	Friable
BS 1.7	Room 302	Ceiling Plaster (Skim Coat)	None Detected	N/A
		Ceiling Plaster (Base Coat)	None Detected	Friable
BS 2.1	Room 205	Drywall Joint Compound	2% Chrysotile	-

Sample ID	Location	Material	Type and Content	Friability
BS 2.2	Room 209	Drywall Joint Compound	Stop Positive - Sample Not Analyzed	-
BS 2.3	Room 101	Drywall Joint Compound	Stop Positive - Sample Not Analyzed	-
BS 2.4	Room 100	Drywall Joint Compound	Stop Positive - Sample Not Analyzed	-
BS 2.5	Room B5	Drywall Joint Compound	Stop Positive - Sample Not Analyzed	-
BS 2.6	Room 302	Drywall Joint Compound	Stop Positive - Sample Not Analyzed	-
BS 2.7	Room 307A	Drywall Joint Compound	Stop Positive - Sample Not Analyzed	-
BS 3.1	Room B6	Ceiling Plaster (Grey)	None Detected	N/A
BS 3.2	Room B6	Ceiling Plaster (Grey)	None Detected	N/A
BS 3.3	Room B6	Ceiling Plaster (Grey)	None Detected	N/A
BS 4.1	Room 101	Wall Skim Coat	None Detected	N/A
		Wallpaper (Top Layer)	None Detected	N/A
BS 4.2	Room 101	Wall Skim Coat	None Detected	N/A
		Wallpaper (Top Layer)	None Detected	N/A
BS 4.3	Room 101	Wallpaper (Top Layer)	None Detected	N/A
BS 4.4	Room 214	Wallpaper (Top Layer)	None Detected	N/A
BS 4.5	Room 214	Wall Skim Coat	None Detected	N/A
BS 4.6	Room 300	Wall Skim Coat	None Detected	N/A
		Wallpaper (Top Layer)	None Detected	N/A
BS 4.7	Room 300	Wall Skim Coat	None Detected	N/A
		Wallpaper (Top Layer)	None Detected	N/A
BS 5.1	Room 101	Wallpaper (2^{nd} Layer)	None Detected	N/A
BS 5.2	Room 101	Wallpaper (2^{nd} Layer)	None Detected	N/A
BS 5.3	Room 300	Wallpaper (2^{nd} Layer)	None Detected	N/A
BS 6.1	Room B5	Paper Insulation (Grey)	50% Chrysotile	Friable

Sample ID	Location	Material	Type and Content	Friability
BS 6.2	Room B5	Paper Insulation (Grey)	Stop Positive - Sample Not Analyzed	Friable
BS 6.3	Room B5	Paper Insulation (Grey)	Stop Positive - Sample Not Analyzed	Friable
BS 7.1	Room B5	Paper Insulation (Beige)	50% Chrysotile	Friable
BS 7.2	Room B5	Paper Insulation (Beige)	Stop Positive - Sample Not Analyzed	Friable
BS 7.3	Room B5	Paper Insulation (Beige)	Stop Positive - Sample Not Analyzed	Friable
BS 8.1	Room 103	Carpet Mastic (Yellow)	None Detected	N/A
BS 8.2	Room 103	Carpet Mastic (Yellow)	None Detected	N/A
BS 8.3	Room 104	Carpet Mastic (Yellow)	None Detected	N/A
BS 9.1	Room 101	VFT (12” x 12”- Dark Grey with White Flakes)	2% Chrysotile	Non-Friable
		Mastic (Black)	1% Chrysotile	Non-Friable
BS 9.2	Room 101	VFT (12” x 12”- Dark Grey with White Flakes)	Stop Positive - Sample Not Analyzed	Non-Friable
		Mastic (Black)	Stop Positive - Sample Not Analyzed	Non-Friable
BS 9.3	Room 101	VFT (12” x 12”- Dark Grey with White Flakes)	Stop Positive - Sample Not Analyzed	Non-Friable
		Mastic (Black)	Stop Positive - Sample Not Analyzed	Non-Friable

N/A – Not Applicable
VFT – Vinyl Floor Tiles
Stop Positive – Material considered being asbestos-containing as per O. Reg. 278/05.

Please refer to Appendix E – Asbestos-Containing Materials Checklist for material conditions, quantities (where applicable), and recommended actions.

The following building materials (if present) were investigated for asbestos content:

3.1.1 Fireproofing

No fireproofing was observed in the subject building.

3.1.2 Mechanical Pipe Insulation

3.1.2.1 Mechanical Pipe Straight Insulation

No mechanical pipe straight insulation was observed in the subject building.

3.1.2.2 Mechanical Piping Elbows/Fittings Insulation

No mechanical pipe elbows/fittings insulation was observed in the subject building.

3.1.2.3 Mechanical Piping Hangers Insulation

No mechanical pipe hanger insulation was observed in the subject building.

3.1.2.4 HVAC Duct Insulation

No HVAC duct insulation was observed in the subject building.

3.1.2.5 Other Mechanical Insulation

Previously identified asbestos-containing boiler tank insulation (parging cement) was observed in Room B5. This material contains 15% Chrysotile asbestos. During the 2022 Reassessment, this material was observed to have been removed.

3.1.3 Flexible Duct Connector

No flexible duct connectors were observed in the subject building.

3.1.4 Heat Shield or Heat Shield Insulation

No potential asbestos-containing heat shield insulation were observed in the subject building.

3.1.5 Texture Finishes

No texture finishes were observed in the subject building.

3.1.6 Plaster

Several different types of plaster were observed and sampled within the building as follows:

- Wall and ceiling plaster was observed and sampled throughout the subject building. The laboratory analytical results indicate that the base coat contains 2% Chrysotile asbestos while the skim coat does not contain asbestos. Since plaster is a homogeneous material, all areas must be treated as asbestos-containing unless additional bulk sampling and analysis proves otherwise. This material was observed in good condition, with the exception of select areas which were observed in fair and poor condition during the 2022 Reassessment.

- Ceiling plaster (Grey) was observed and sampled in Room B6. The laboratory analytical results indicate that this material does not contain asbestos.

3.1.7 Drywall Joint Compound

Drywall joint compound was observed and sampled throughout the subject building. The laboratory analytical results indicate that this material contains 2% Chrysotile asbestos. Since drywall joint compound is a homogeneous material, all areas must be treated as asbestos-containing unless additional bulk sampling and analysis proves otherwise. This material was observed in good condition, with the exception of select locations observed to be in poor condition during the 2022 Reassessment.

3.1.8 Ceiling Tiles

No ceiling tiles were observed in the subject building.

3.1.9 Vinyl Floor Tiles

Several different types of vinyl floor tiles were observed and sampled within the building as follows:

- Vinyl floor tiles (12" x 12"- Dark Grey with White Flakes) were observed and sampled in Room 101. The laboratory analytical results of the vinyl floor tile samples collected indicate that this material contains 2% Chrysotile asbestos. The associated mastic (Black) was found to contain 1% Chrysotile asbestos. This material is considered non-friable and were observed in good condition during the 2022 Reassessment. This material was also observed to be enclosed underneath carpet in select areas of the building.

- Previously identified asbestos-containing vinyl floor tiles (Green) were observed throughout the subject building. This material contains 16.5% Chrysotile asbestos. This material is considered to be non-friable and was observed in good condition, with the exception of select areas which were observed in poor condition.

3.1.10 Vinyl Sheet Flooring

No vinyl sheet flooring was observed in the subject building.

3.1.11 Brick/Stone Mortar

To avoid damage and compromising the integrity of the structure, no bulk samples of the brick/stone mortar were collected. Prior to renovation/demolition, brick mortar should be examined and tested for asbestos content. Brick/stone mortar should therefore be considered to contain asbestos until bulk samples and analysis proves otherwise.

3.1.12 Concrete Block Mortar

No concrete block mortar was observed in the subject building.

3.1.13 Ceramic Wall / Floor Tile Grout

No ceramic wall/floor tile grout was observed in the subject building.

3.1.14 Transite (Asbestos Cement)

No transite materials were observed in the subject building.

3.1.15 Electrical Wires

MPL identified electrical wires with a woven fabric (Dark Green and Brown) throughout Room B5. This material is suspected to be asbestos-containing. The woven fabric was not sampled as it could not be readily or safely disassembled.

3.1.16 Caulking

No caulking materials were observed in the subject building.

3.1.17 Mastic

Carpet mastic (Yellow) was observed and sampled in Room 103 and 104. The laboratory analytical results indicate that this material does not contain asbestos.

3.1.18 Wallpaper

Several different types of wallpaper were observed and sampled within the building as follows:

- Wallpaper (Top Layer) was observed and sampled throughout the subject building. The laboratory analytical results indicate that this material does not contain asbestos. The associated skim coat (White) was also determined not to contain asbestos.
- Wallpaper (2nd Layer) was observed and sampled throughout the subject building. The laboratory analytical results indicate that this material does not contain asbestos.

3.1.19 Cementitious Coating

No cementitious coating finishes were observed in the subject building.

3.1.20 Paper Insulation

Several different types of paper insulation were observed and sampled within the building as follows:

- Paper insulation (Grey) was observed and sampled from the ceiling in Room B5. The laboratory analytical results indicate that this material contains 50% Chrysotile asbestos. During the 2022 Reassessment, this material was observed to have been removed.
- Paper insulation (Beige) was observed and sampled from the ceiling in Room B5. The laboratory analytical results indicate that this material contains 50% Chrysotile asbestos. During the 2022 Reassessment, this material was observed to have been removed.

3.1.21 Fire Doors

No fire doors were observed within the subject building.

3.1.22 Roofing Material

Roofing material (Shingles & Tar) was previously sampled in the subject building. The laboratory analytical results indicated that these materials do not contain asbestos.

Recommendations

- Asbestos-containing materials identified to be in poor condition must be repaired/removed immediately, following Type 1/2/3 asbestos abatement work procedures as detailed in O. Reg. 278/05 and disposed of as asbestos waste under O. Reg. 347;
- Asbestos-containing materials that have been identified to be in fair condition should be either repaired (where possible) and/or closely monitored for signs of further deterioration. Depending on type of material and location, these materials should be scheduled for removal if there is potential risk of exposure to worker and/or occupants;
- Materials identified to contain asbestos that are in good condition and do not pose a risk to workers or occupants can be managed in place. Prior to renovation/demolition activities that may disturb the ACMs, these materials must be removed following appropriate Type 1/2/3 asbestos abatement work procedures as detailed in O. Reg. 278/05 and disposed of as asbestos waste under O. Reg. 347;
- Please refer to Appendix E – Asbestos-Containing Materials Checklist for material conditions, quantities (where applicable), and recommended actions;
- Prior to renovation/demolition of materials which are assumed to be asbestos-containing (suspect materials which were not sampled, i.e., brick/stone mortar, and electrical wire fabric covers), these materials must either be tested for asbestos content or removed following appropriate asbestos abatement work procedures (Type 1/2/3) as detailed in O. Reg. 278/05 and disposed of as asbestos waste under O. Reg. 347;
- All repairs or removal of asbestos-containing materials must be conducted according to Ontario Regulation 278/05, Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act. Asbestos containing waste must also be handled and disposed of according to Ontario Regulation 347/90 as amended – made under the Environmental Protection Act. Any suspect building materials encountered that were not assessed as part of this survey, should be assumed to contain asbestos until proven otherwise by analytical testing;
- Sub-trades working with or in close proximity to asbestos-containing material should be informed of its presence; and

- Given that asbestos containing materials (ACMs) have been identified and will likely remain in place, an Asbestos Management Plan (AMP) is therefore required and an inventory of ACMs must be kept on site. All ACMs must be routinely inspected to ensure no damage has occurred, and the inventory must be updated once in each 12-month period and as may be required based on expected changing site conditions, abatement and/or renovation activities.

3.2 Lead

Findings

3.2.1 Paint Finishes

A total of six (6) paint samples from the subject building were collected and analyzed for lead content. Results of bulk sampling testing are summarized in Table 2 and the laboratory certificate of analysis can be found in Appendix C.

Table 2:

Lead Sampling Locations and Laboratory Results

Sample I.D.	Location	Material	Colour	Lead Concentration Weight by Conc. (%)
Pb 1	Room 101	Door Paint	Light Pink	7.7
Pb 2	Room 102B	Door Paint	Orange	4.8
Pb 3	Room 103	Wall Paint	Green	<0.0080
Pb 4	Room 214B	Wall Paint	Dark Yellow	0.044
Pb 5	Room 302	Wall Paint	White	5.9
Pb 6	Room 307A	Ceiling Paint	Cream	0.042
Previously Identified Lead Paint				
219-G-LBP-051707-06	Room 100	Wall, Trim, Frame and Railing Paint	White	0.05
219-G-LBP-051707-07	Room 108	Door, Trim and Frame Paint	Peach	8.1
219-G-LBP-051707-08	Room 107	Stair, Railing and Door Paint	Grey	8.1
219-G-LBP-051707-09	Room 214	Door Paint	Red	0.41

The paint finishes highlighted in blue in the above table were determined to contain low concentrations of lead which are less than or equal to 0.1%. These paint finishes were observed to be in good condition, with the exception of select areas which were observed in fair and poor condition.

The paint finishes highlighted in pink in the above table are considered lead-containing paints or surface coatings with concentrations greater than 0.1% lead by weight. These paint finishes were observed to be in good condition, with the exception of select areas which were observed in fair and poor condition.

All other paints throughout the subject building that are not mentioned in this report must be considered to be lead-containing unless sampling and analysis proves otherwise.

3.2.2 Battery Packs

MPL identified lead-containing acid battery packs in Room B5. These battery packs were observed on walls within the subject building.

Lead may also be present in the following materials in the building:

- Solder used on copper domestic water lines;
- Solder used in bell fittings for cast iron pipes;
- Solder used in electrical equipment;
- Ceramic tile glaze; and
- Concrete and mortar products, etc.

Recommendations

Paints identified to contain lead that are in poor condition must be immediately repaired and/or stabilized following a minimum Type 1/2 lead abatement procedures as per OMOL "Lead on Construction Project" dated April 2011.

Paints identified to contain lead that are in fair condition should be either repaired (where possible) and/or closely monitored for signs of further deterioration.

Paints identified to contain lead that are in good condition and do not pose a risk to workers or occupants can be managed in place.

Detailed worker protection protocols are outlined in the OMOL Guideline "Lead on Construction Projects" dated April 2011. Generally, the removal of the lead-based paint with the use of a chemical gel or paste, or a power tool equipped with a HEPA filter is considered a Type 1 operation. The removal of lead-based paint by scraping or sanding using non-powered hand tools is considered a Type 2 operation. The removal of lead-based paint using abrasive blasting, or power tools without a HEPA filter, is considered a Type 3 operation, and requires the most stringent worker protection protocols (similar to asbestos); Furthermore, high temperature cutting or welding would also require Type 3 Operations under the Guideline for Lead on Construction Projects. If this type of work is required, it may be prudent to chemically remove the lead paint in selected locations prior to performing any high temperature cutting or welding.

All lead materials that are removed must follow the Ministry of Labour and Environmental Abatement Council of Ontario Lead Guidelines.

Please refer to Appendix F – Hazardous Materials Checklist for material conditions, quantities (where applicable), and recommended actions.

Precautions should be taken as required during major renovations and demolition projects to ensure that workers' exposure levels to airborne lead does not exceed 0.05 mg/m3. This can be achieved by:

- providing workers with proper training;
- providing the workers with respiratory protection;
- wetting the surface of the materials to prevent dust emissions; and,
- providing workers with hygiene facilities to properly wash prior to exiting the work area.

Sub-trades working with or in close proximity to lead based paint should be informed of its presence.

All waste material must be handled and disposed of according to the Revised Regulation of Ontario 347/90 as amended – made under the Environmental Protection Act. Lead waste generated may also be subject to Leachate Criteria (Schedule 4) of this regulation.

3.3 Mercury

Findings

3.3.1 Thermostat Switches

MPL did not observe thermostats containing liquid mercury within the subject building.

3.3.2 Fluorescent Light Tubes

MPL identified fluorescent light fixtures throughout the surveyed area containing 2 to 4 fluorescent light tubes per fixture. Mercury is likely to be present in vapor form in the fluorescent light tubes.

3.3.3 Pressure Gauges and Float Switches

MPL did not identify any pressure gauges or float switches containing liquid mercury throughout the subject building.

Recommendations

Please refer to Appendix F – Hazardous Materials Checklist for equipment conditions, quantities (where applicable), and recommended actions.

3.4 Silica

Findings

Silica is expected to be present in building materials such as concrete, brick, mortar and ceramic tiles located throughout the structures. Free crystalline silica (α-Quartz) may be a component in ceiling tiles and gypsum board. Silica (including free crystalline silica) may also be a component of concrete and brick surfaces noted in the building.

Recommendations

Please refer to Appendix F – Hazardous Materials Checklist for equipment conditions, quantities (where applicable), and recommended actions.

Precautions should be taken as required during major renovations and demolition projects on concrete (i.e. coring through concrete slabs, demolition of masonry, etc.) to ensure that workers' exposure levels to airborne silica does not exceed 0.05 mg/m^3.

This can be achieved by:

- providing workers with proper training;
- providing the workers with respiratory protection;
- wetting the surface of the materials to prevent dust emissions; and,
- providing workers with facilities to properly wash prior to exiting the work area.

Demolition work that is likely to impact silica-containing materials should be carried out in accordance with the requirement detailed in the Ontario Ministry of Labour document entitled "Guideline: Silica on Construction Projects", dated April 2011.

Other Hazardous Materials

3.5 Polychlorinated Biphenyls (PCBs)

Findings

3.5.1 Light Ballasts

The subject building is illuminated by LED and fluorescent lights. MPL assessed representative ballasts in the building, and these ballasts were identified as non-PCBs content. These light ballasts were observed to be manufactured by Sylvania.

Previously suspected PCB-containing light ballasts were observed throughout the subject building. These ballasts were not investigated during the survey as they could not be readily or safely disassembled.

3.5.2 Transformers

MPL did not observe any PCBs containing electrical transformers within the subject building. Transformers that could be assessed were observed to be dry-type and manufactured by Hammond Manufacturing.

3.5.3 Electrical Wires

MPL identified electrical wires with a woven fabric (Dark Green and Brown) throughout Room B5. This material is suspected to be PCB-containing. The woven fabric was not sampled as it could not be readily or safely disassembled.

Recommendations

Please refer to Appendix F – Hazardous Materials Checklist for material conditions, quantities (where applicable) and recommended actions.

Prior to any renovations, all light ballasts and electrical wires containing or suspected of containing PCBs that will be affected by the work, must be decommissioned by a licensed contractor such that PCBs are contained and not released to the environment during decommissioning and properly disposed of in accordance with R.R.O. 1990, Regulation 347 General – Waste Management, made under the Environmental Protection Act.

3.6 Ozone Depleting Substances (ODSs) and Other Halocarbon

Findings

A visual assessment for equipment potentially containing ODSs and other halocarbons was conducted. Equipment containing ODSs or other halocarbons was observed in the subject building.

Recommendations

Please refer to Appendix F – Hazardous Materials Checklist for equipment conditions, approximate quantities (where applicable), and recommended actions.

Under the management of a licensed contractor, equipment containing R-134a does not represent a significant threat to human health or the environment however, a licensed contractor must decommission equipment such that CFCs are contained and not released to the environment during servicing or operation.

3.7 Radioactive Materials

Findings

MPL did not observe any electrical components containing radioactive materials.

Recommendations

Since no radioactive materials were observed or suspected to be present during the site survey, no further action is required.

3.8 Underground and Above Ground Storage Tanks (USTs and ASTs)

Findings

A visual survey of the subject building was conducted to determine if any USTs and ASTs were present. No USTs and ASTs were present within the subject building.

Recommendations

Since no underground and/or above ground storage tanks (USTs and ASTs) were observed or suspected to be present during the site survey, no further action is required.

3.9 Mould

Findings

3.9.1 Mould

A visual survey of the subject building was conducted to determine if any mould was present. MPL did not identify any areas with mould growth.

3.9.2 Water Damage

A visual survey of the subject building was conducted to determine if any water damaged was present. MPL did not identify any areas throughout the subject building, where materials were affected by water damage.

Recommendations

Since no mould or water damaged building materials were observed to be present during the site survey, no further action is required.

This report should be made available to contractors tendering on any renovation or demolition work. In turn, all contractors requesting tenders from subcontractors shall furnish this report to subcontractors

4.0 GENERAL CONSIDERATIONS AND LIMITATIONS

The information presented in this report is based on information provided by others, direct visual observation made by personnel with McIntosh Perry Limited (MPL), and the results of laboratory testing as identified herein.

It should be noted that there might be hazardous materials in locations not visible during our investigation. In the event such material is encountered during demolition operations in the building, this material should be tested and dealt with accordingly.

The findings detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations.

MPL does not certify or warrant the environmental status of the property nor the building on the property.

Please note that the passage of time affects the information provided in the report. Environmental conditions of a site can change. Opinions relating to the site conditions are based upon information that existed at the time that the conclusions were formulated.

The client expressly agrees that it has entered into this agreement with MPL, both on its own behalf and as agent on behalf of its employees and principals.

The client expressly agrees that MPL's employees and principals shall have no personal liability to the client in respect of a claim, whether in contract, tort and/or any other cause of action in law. Accordingly, the client expressly agrees that it will bring no proceedings and take no action in any court of law against any of MPL's employees or principals in their personal capacity.

We trust that we have detailed our findings clearly and that we have satisfactorily addressed the scope of work you require at this time. In the event you wish us to review our findings with you, or require our services further in this regard, please do not hesitate to contact our office.

Yours truly,

MCINTOSH PERRY LIMITED

Lauren Hamilton, B.Eng.
Project Technician
Hazardous Materials/ Environmental Health & Safety

John Tufts, B.Sc.
Project Manager
Hazardous Materials/ Environmental Health & Safety

APPENDIX A

Regulatory Requirements

REGULATORY REQUIREMENTS

In Ontario, there is a total of eleven Designated Substances. These substances have been regulated under Ontario Regulation 490/09 — *Designated Substances*, made under the Ontario Health and Safety Act, which applies to controlling designated substances in the workplace.

In addition to the Ontario Regulation 490/09 noted above, the following were observed for this survey:

Guideline: Lead on Construction Projects, issued April 2011 by the Occupational Health and Safety branch of the Ministry of Labour

Guideline: Silica on Construction Projects issued April 2011 by the Occupational Health and Safety branch of the Ministry of Labour.

The Occupational Health and Safety Act (OHSA), R.S.O. 1990, c.0.1, s.30 (1) specifies that: "Before beginning a project, the owner shall determine whether any Designated Substances are present at the project site and shall prepare a list of all Designated Substances that are present at the site.

Section 30 of The Act requires that the list of Designated Substances be provided to prospective contractors and subcontractors who may do work on a site and come into contact at the site with Designated Substances.

The Ministry of Labour has designated the following substances:

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke Oven Emissions
- Ethylene Oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl Chloride

Ontario Regulation 278/05 (O. Reg. 278/05), the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, made under the Occupational Health and Safety Act (OHSA), requires owners of a building to identify Asbestos-containing Materials (ACMs) prior to potential disturbance of the materials.

In addition, an owner of a building is required to have an Asbestos Management Plan (AMP) if ACMs (friable or non-friable) are present in the building and are to remain in place. An inventory of ACMs must be kept on site. All ACMs must be routinely inspected to ensure no damage has occurred, and the inventory must be updated once in each 12-month period and as may be required based on expected changing site conditions, abatement and/or renovation activities. Removal of all asbestos-containing materials is required prior to building demolition.

In addition to the Designated Substances, the building was also surveyed for the presence of other hazardous materials such as polychlorinated biphenyls (PCBs), radioactive materials, ozone depleting substances (ODSs), other halocarbons, and mould.

We understand that this survey has been conducted to comply with the regulatory requirements of Ontario Regulation 278/05.

APPENDIX B

Survey Methodology & Background Information

SURVEY METHODOLOGY

For the purpose of this survey, not all Designated Substances or suspect hazardous material were sampled. Selective sampling was carried out only for substances that were suspected to be present or those deemed to have a likely source of origin in the survey areas.

Materials that were homogeneous in nature and/or similar in appearance to other materials tested were considered to be of similar composition. The likelihood of ACMs being present in inaccessible areas such as above gypsum board ceilings or behind gypsum wallboards was determined by assessing the presence of asbestos-containing systems in adjacent areas. Equipment such as boilers, motors, blowers, electrical panels, fire doors etc., were not de-energized or disassembled to examine internal components or materials. These items should be considered to contain hazardous materials until proven otherwise.

During the survey, representative samples of suspect building materials were collected and sent to CAELA accredited independent laboratory for analysis. Laboratory Certificate of Analysis are attached in Appendix C.

Other potential hazardous materials were identified by visual observation and/or by reviewing Material Safety Data Sheets (MSDS) and/or safety labels where available.

Investigated Areas

The survey included all accessible areas and ceiling space within 647 King Edward Avenue as required under our scope of work. No destructive investigations were performed as part of this survey. Photographs of the areas investigated can be found in Appendix D.

The assessment was directed on the interior structure and finishes of the building. It did not consider current or past owner or occupant articles within the building (i.e. contents, furniture, etc.) and does not report on possible contaminants in the soil under and surrounding the building, or contents of vessels, drums, etc. that may be concealed.

Sampling and Assessment Methodologies

Sampling was conducted as part of this assessment. Results for asbestos and lead samples can be found in the Findings & Recommendation Section 3.0.

A historical review of previous designated substance survey reports and abatement reports was examined as part of this survey. Due to concerns regarding certain historical analytical results, mainly in 2008 and prior years, confirmatory re-sampling was conducted for selected materials previously identified not to contain asbestos. However, building materials previously identified to be asbestos-containing were not re-sampled. The reports are listed as follows,

- Designated Substance Inventory, 647 King Edward Avenue, Ottawa, Ontario, prepared by Conestoga-Rovers & Associates (dated April 2008, reference # 045870 (50)).

Asbestos

Background Information on Asbestos

Asbestos is a generic name that has been given to a group of naturally occurring fibrous minerals. In the past, asbestos was commonly used as a component in building materials such as insulation, fireproofing and acoustic or decorative panels. Although there are many types of asbestos, the three main forms of commercial importance in Ontario are chrysotile, amosite and crocidolite.

An Asbestos-Containing Material (ACM) is defined by O. Reg. 278/05 as a material that contains 0.5% or more asbestos by dry weight. ACMs are placed into two general classes, "friable" and "non-friable" ACMs. Friable ACMs are those materials that when dry can be crumbled, pulverized and reduced to powder by hand pressure. Typical friable ACMs include acoustical or decorative texture coats, fireproofing and thermal insulation. Non-friable ACMs are much more durable as they are held together by a binder such as cement, vinyl or asphalt. Typical non-friable ACMs include floor tiles, fire blankets, roofing materials and cementitious products such as wallboards, pipes or siding.

It has been recognized that hazardous situations may exist in buildings where asbestos-containing materials are found. This is especially true where asbestos fibres may become airborne as a result of material ageing, physical damage, and water damage or air movement.

In contrast, there is little reason for concern if the asbestos is in good condition, has not been damaged and is not in a location where it is likely to be disturbed.

Asbestos Survey Methodology

The asbestos survey included the identification of potential friable and non-friable asbestos-containing materials within the surveyed areas of the subject building.

The likelihood of ACMs being present in inaccessible areas such as above gypsum wallboard ceilings and walls was determined by assessing the presence of asbestos-containing materials in adjacent areas.

Fiberglass insulation was not submitted for analysis as it can be identified visually as non-asbestos material.

Building materials suspected of containing asbestos were identified and representative sampling and laboratory testing of these materials was conducted. The number of bulk material samples collected from a homogeneous area was in accordance with Table 1. O. Reg. 278/05 s. 3 (3) below. Building materials suspected of containing asbestos were collected using wetting techniques and hand sampling tools.

Table 1 - O. Reg. 278/05 s. 3(3): Minimum Asbestos Bulk Material Sample Requirements

Item	Type of material	Size of area of homogeneous material	Minimum number of bulk material samples to be collected
1.	Surfacing material, including without limitation, material that is applied to surfaces by spraying, by troweling or	Less than 90 square metres	3
		90 or more square metres, but less than 450 square metres	5

	otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	450 or more square metres	7
2.	Thermal insulation, except as described in item 3	any size	3
3.	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
4.	Other material	Any size	3

Preliminary identification of the samples was made using polarized light microscopy (PLM), with confirmation of presence and type of asbestos made by dispersion staining optical microscopy. This analytical procedure follows the U.S. Environmental Protection Agency Test Method EPA/600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials, June 1993.

All bulk samples were analysed for asbestos content by EMSL Canada Inc. (EMSL), an independent laboratory. EMSL is an independent laboratory accredited by National Institute of Standards and Technology/National Voluntary Laboratory Accreditation (NIST/NVLAP) (Lab Code #200877-0).

Vinyl floors tiles were analyzed using the phase light microscopy (PLM) method of analysis. However, given the composition of vinyl floor products, the PLM analysis method may be prone to yielding false negative analytical results. Therefore, prior to removal or replacement, vinyl floor products previously identified to be negative, should undergo additional analysis by Transmission Electron Microscopy (TEM) to confirm asbestos content, if any.

Materials identified to contain asbestos were assessed on the relative possibility of fibre release into the air due to a combination of their condition and accessibility.

Evaluation of ACMs Based on Condition

In evaluating an ACM's condition, the following criteria was applied:

- Good – Material shows no signs of damage and/or is encapsulated. Asbestos-containing material could remain in place until eventual building demolition or major renovation.
- Fair – Material shows signs of minor damage (<5% damage) or otherwise near the end of useful life. This includes minor shrinking, cracking, delamination and/ or other damage. Material should be monitored closely and scheduled to be repaired, encapsulated or removed.
- Poor – Damage is greater than 5% to any ACM material and is highly recommended to be removed, repaired or encapsulated.

Note: The above evaluation criteria was also applied to other hazardous materials where applicable. Please refer to the Asbestos and Hazardous Materials Checklist in Appendix E & F for further details.

Lead

Background Information on Lead

Lead was a common additive in exterior and hard-wearing paint applications. Lead was used to prolong shelf life of paint and to increase its flexibility and durability to wear and weather. Acute exposure to lead by inhalation or ingestion may cause headaches, fatigue, nausea, abdominal cramps and joint pain. Chronic

exposures can cause reduced haemoglobin production and reduced lifespan. It has also been known to impact the body's central and peripheral nervous systems and brain function and has been linked to learning disabilities in children.

Currently in Ontario, there is no regulatory limit that determines what concentration of lead constitutes a "lead containing material". On October 21, 2010, Health Canada, under the *Hazardous Products Act*, stated that the lead content in surface-coating materials, furniture, toys and other articles for children, should not exceed 90 mg/kg (0.009%, 90 ppm). However, this is intended for the importation or sale of products within Canada. Therefore, this is not to be misconstrued as a limit established to define a lead-containing material or a limit with respect to lead on construction projects.

The Environmental Abatement Council of Ontario (EACO) has also developed the "*Lead Guideline for Construction, Renovation, Maintenance or Repair*" dated October 2014, which discusses the classification, handling, disturbance and removal of lead-containing materials. For the purpose of this guideline, paints or surface coatings containing less than or equal to 0.1% lead by weight (1000 mg/kg or 1000 ppm) are considered low-level lead paints or surface coatings. If these materials (and their respective surfaces) are disturbed in a non-aggressive manner and performed using adequate dust control procedures, then worker protection from the inhalation of lead is not required.

Furthermore, paints or surface coatings containing greater than 0.1% lead by weight are considered lead-containing paints or surface coatings. If these materials (and their respective surfaces) are disturbed, appropriate lead abatement procedures must always be followed.

Exposure to lead-containing materials is regulated under Ontario Regulation 490/09, *Designated Substances* - made under the Occupational Health and Safety Act. Care must be taken to prevent lead-containing particles from becoming airborne during the disturbance of lead-containing surfaces (i.e., during renovation or demolition projects). All lead abatement work must follow procedures outlined in the Guideline Lead on Construction Projects, issued in September 2004 (amended in April 2011) by the Occupational Health and Safety branch of the Ministry of Labour (Type 1-3). Similarly, the lead abatement work procedures outlined in the EACO Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014) may also be implemented (Class 1-3).

Lead is known to have been used in solder on copper plumbing fixtures, in lead conduit pipes, in lead-calcium battery plates, ammunition, and in nuclear and X-ray shielding devices. However, these materials were not sampled during this investigation, but were noted where applicable.

To verify lead content in paints, representative bulk samples of paint and finishes suspected of containing lead were collected. Bulk samples were scraped down to the building base structure, with all possible layer's present, placed in sealed plastic bags and labeled; and then submitted to an independent laboratory for analysis. Samples were treated with a dilute nitric acid sample digestion prior to filtration. Analysis utilized for lead detection in filtered samples was inductively coupled plasma optical emission spectrometry (ICP-OES).

Mercury

Background Information on Mercury

Mercury is known to cause poisoning in humans through the inhalation of vapours, ingestion of contaminated materials or skin absorption through direct contact with the liquid.

Precautions must be taken to prevent mercury vapours from becoming airborne during renovations or demolition of the building. Exposure to airborne mercury is regulated under the Revised O. Reg. 490/09 as amended – Regulation respecting Mercury – made under the Occupational Health and Safety Act; and under O. Reg. 558, which amended O. Reg. 347/90 (General - Waste Management), mercury is classified as a Schedule 2(b) Hazardous Waste Chemical. Its hazardous waste number is U151.

Mercury is found in products such as thermostats, temperature and pressure gauges, fluorescent lamps and batteries. Mercury in products can be released to the environment through breakage, or disposal at the end of a product's useful life. Improper disposal of these mercury products poses a health and environmental risk to everyone. In addition, the disposal of mercury-containing products can create wastes that are often classified as hazardous. Wastes that leach mercury in concentrations exceeding Ontario Regulation 347/90 (General - Waste Management) limits are also considered hazardous.

The mercury in thermostats switch contains approximately 3-4 grams of mercury in a glass ampoule, typically attached to a metal coil. Mercury-containing switches have been used in thermostats for over 40 years.

Mercury is an essential component in fluorescent lamps and HID lamps. The mercury is in a vapour form and in the phosphor coating on the lamp tube. Estimates of the mercury content contained in compact, 4 foot, and 8-foot lamps are 10 mg, 23 mg, and 46 mg respectively.

Most fluorescent lamps qualify as hazardous waste when removed from service and are therefore prohibited from disposal in the solid waste stream. Fluorescent lamps would be classified as 146T on your facility Generator Registration Report under O. Reg. 347/90 - General Waste Management, as amended by O. Reg. 558/00. Under this regulation, if the leachate results exceed 0.1 milligrams of mercury per litre for a given waste, then the facility must treat the waste as hazardous waste. Most fluorescent and HID lamps will exceed the leachate toxicity limit; therefore, these wastes must be registered and treated as hazardous waste or sent for recycling.

Silica

Background Information on Silica

Silica is expected to be present in building materials such as concrete, brick, mortar and ceramic tiles located throughout the structures. Free crystalline silica (α-Quartz) may be a component in ceiling tiles and gypsum board. Silica (including free crystalline silica) may also be a component of concrete and brick surfaces noted in the building.

Exposure to airborne silica is regulated under Ontario Regulation 490/09, *Designated Substances* - made under the Occupational Health and Safety Act.

Polychlorinated Biphenyls (PCBs)

Background Information on PCBs

Polychlorinated Biphenyls (PCBs) were commonly used as dielectric insulating fluid in electrical equipment such as transformers and capacitors, and in the fluorescent and HID lamp ballasts. The production of PCBs in the North America started in 1929 and was banned at the beginning of 1979. After 1981, no manufacturers produced fluorescent and HID lamps with PCB-containing ballasts.

PCBs are not a designated substance under the Occupational Health and Safety Act.

PCB Regulations (SOR/2008-273)

The *PCB Regulations* (the Regulations) set specific deadlines for ending the use of PCBs in concentrations at or above 50 mg/kg, eliminating all PCBs and equipment containing PCBs currently in storage and limiting the period of time PCBs can be stored before being destroyed. The Regulations also establish sound practices for the better management of the remaining PCBs in use (i.e. those with content of less than 50 mg/kg), until their eventual elimination, to prevent contamination of dielectric fluids and dispersion of PCBs in small quantities into other liquids.

Ozone Depleting Substances (ODSs) and Other Halocarbons

Background Information on ODSs

Within Ontario, the general use of ozone depleting substances (ODSs) and other halocarbons is controlled through Regulation 463/10 of the Environmental Protection Act. Production of ODSs in the form of hydro chlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs) ceased in Canada in 1993 as a result of their ozone-depleting characteristics. Importation of CFCs into Canada ceased in 1997 and total ban was placed on their use since 2010. The use of these materials is still permitted in existing equipment, but equipment must be serviced by a licensed contractor such that CFCs are contained and not released to the environment during servicing or operation.

Radioactive Materials

There are two types of smoke detectors commonly found in building (residential, institutional, commercial, industrial, etc). Photoelectric-type smoke detectors detect smoke using an optical sensor, whereas ionization-type smoke detectors use an ionization chamber containing radioactive material. The ionization type is cheaper and is particularly common in older buildings. A typical modern detector contains about 1.0 microcurie of the radioactive element americium, a decrease from 3 microcurie in 1978. The use of sealed radioactive material sources in fire detection systems is still permitted and regulated by the Canadian Nuclear Safety Commission (CNSC) and the Canadian Nuclear Safety Act. The radioactive sources in smoke alarms are sealed and contained within a metal case inside the smoke detector and must not be damaged or tampered with.

Mould & Water Damage

Mould growth inside buildings is due to excess moisture caused by leakages, condensation or capillary movement of water into the building. Toxic moulds such as *Stachybotrys chartarum* and some species of *Aspergillus* spp. are greenish-black, wet and slimy moulds that grow on soaking wet cellulose-based materials. They are often found near water leaks or where drying is very slow and can form after flooding if insufficient cleanup and drying occurred. They will generally not occur if materials are kept dry.

MPL conducted a general visual assessment for any obvious signs of visible mould and/or water damage. Based on our visual observations, the following guidelines were used in providing our recommendations for remedial action where required:

- Institute of Inspection Cleaning and Restoration Certification (IICRC) S520 Standard and Reference for Professional Mould Remediation,

- The Canadian Construction Association (CCA) Mould Guidelines for the Canadian construction industry (CCA document 82-2004)
- Environmental Abatement Council of Canada (EACC) Mould Abatement Guidelines.

Other Designated Substances

Select Designated Substances (acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates, benzene, or vinyl chloride) are not expected to be present in the building in matrix or sufficient quantities to cause an exceedance of Ministry of Labour exposure guidelines. As such, no sampling was conducted for these materials.

Vinyl Chloride

Vinyl chloride (monomer) is likely to be present in stable form within poly vinyl-chloride (PVC) piping and conduits and as a component of interior finishes. Such building materials are not considered to be hazardous in their current matrix/composition.

Acrylonitrile

Acrylonitrile or ACN (also known as vinyl cyanide) is an explosive, flammable liquid used in the manufacture of acrylic fibres, rubber-like materials and pesticide fumigants. Acrylonitrile was not noted and would not be expected to be present in the project specific area/surveyed area/subject building.

Arsenic

Arsenic is used in metallurgy for hardening copper, lead and alloys, in pigment production, in the manufacture of certain types of glass, in insecticides, fungicides and rodenticides, as a by-product in the smelting of copper ores, and as a dopant material in semiconductor manufacturing. Arsenic or arsenic compounds were not noted and are not expected to be present in the project specific area/surveyed area/subject building.

Benzene

Benzene or benzol is a colourless liquid. It is used as an intermediate in the production of styrene, phenol, cyclohexane, and other organic chemicals, and in the manufacture of detergents, pesticides, solvents, and paint removers. It is also found in gasoline. Benzene may be present in stable form in roofing materials, paints and adhesives located throughout the subject building. Such building materials are not considered to be hazardous in their current matrix/composition.

Coke Oven Emissions

Coke oven emission is benzene soluble fraction of total particulate matter of the substances emitted into the atmosphere from metallurgical coke ovens.

Ethylene Oxides

Ethylene oxide is a colourless gas liquefying below 12°C. It is used generally as a fumigant and sterilizing agent for medical equipment. It is used generally as a fumigant and sterilizing agent for medical equipment.

Isocyanates

Isocyanates compounds may be present in stable form in paint finishes, varnishes, and polyurethane plastics, synthetic rubbers, foams and adhesives. Such building materials are not considered to be hazardous in their current matrix/composition.

In order to reduce the potential for exposure to workers or occupants, any suspect hazardous building material(s) that are not detailed within this survey due to inaccessibility and/or are discovered during renovation/demolition activities, must be properly assessed and/or tested prior to their disturbance.

APPENDIX C

Laboratory Analytical Reports

EMSL Canada Inc.

22 Antares Drive Suite 102 Ottawa, ON K2E 7Z6
Phone/Fax: (343) 882-6076 / (343) 882-6077
http://www.EMSL.com / ottawalab@EMSL.com

EMSL Canada Order 672000629
Customer ID: 55CTCS25B
Customer PO: 0Z2-021101-HZ
Project ID: Ottawa DSS

Attn: John Tufts
McIntosh Perry Consulting Engineers Ltd
115 Walgreen Rd RR 3
Carp, ON K0A 1L0

Phone: (613) 836-2184
Fax:
Collected: 3/25/2020
Received: 4/02/2020
Analyzed: 4/09/2020

Proj: University of Ottawa 0Z2-021101-HZ (559 King Edward) (Ottawa DSS)

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: BS1.1-Skim Coat ***Lab Sample ID:*** **672000629-0001**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: BS1.1-Base Coat ***Lab Sample ID:*** **672000629-0001A**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray	3.0%	97.0%	None Detected	

Client Sample ID: BS1.2-Skim Coat ***Lab Sample ID:*** **672000629-0002**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: BS1.2-Base Coat ***Lab Sample ID:*** **672000629-0002A**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray	2.0%	98.0%	None Detected	

Client Sample ID: BS1.3-Skim Coat ***Lab Sample ID:*** **672000629-0003**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS1.3-Base Coat ***Lab Sample ID:*** **672000629-0003A**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray	2.0%	98.0%	None Detected	

Client Sample ID: BS1.4-Skim Coat ***Lab Sample ID:*** **672000629-0004**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray/White	0.0%	100.0%	None Detected	

EMSL Canada Inc.

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Phone/Fax: (343) 882-6076 / (343) 882-6077
http://www.EMSL.com / ottawalab@EMSL.com

EMSL Canada Order 672000629
Customer ID: 55CTCS25B
Customer PO: 0Z2-021101-HZ
Project ID: Ottawa DSS

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: BS1.4-Base Coat **Lab Sample ID:** **672000629-0004A**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray	2.0%	98.0%	None Detected	

Client Sample ID: BS1.5-Skim Coat **Lab Sample ID:** **672000629-0005**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS1.5-Base Coat **Lab Sample ID:** **672000629-0005A**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray	2.0%	98.0%	None Detected	

Client Sample ID: BS1.6-Joint Compound **Lab Sample ID:** **672000629-0006**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS1.6-Skim Coat **Lab Sample ID:** **672000629-0006A**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS1.6-Base Coat **Lab Sample ID:** **672000629-0006B**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Gray	0.0%	98.0%	**2% Chrysotile**	

Client Sample ID: BS1.7 **Lab Sample ID:** **672000629-0007**
Sample Description: 559 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS2.1 **Lab Sample ID:** **672000629-0008**
Sample Description: 559 King Edward/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Tan	0.0%	98.0%	**2% Chrysotile**	

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http://www.EMSL.com / ottawalab@EMSL.com

EMSL Canada Order 672000629
Customer ID: 55CTCS25B
Customer PO: 0Z2-021101-HZ
Project ID: Ottawa DSS

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: BS2.2 ***Lab Sample ID:*** **672000629-0009**
Sample Description: 559 King Edward/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/08/2020				Positive Stop (Not Analyzed)	

Client Sample ID: BS2.3 ***Lab Sample ID:*** **672000629-0010**
Sample Description: 559 King Edward/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/08/2020				Positive Stop (Not Analyzed)	

Client Sample ID: BS2.4 ***Lab Sample ID:*** **672000629-0011**
Sample Description: 559 King Edward/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/08/2020				Positive Stop (Not Analyzed)	

Client Sample ID: BS2.5 ***Lab Sample ID:*** **672000629-0012**
Sample Description: 559 King Edward/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/08/2020				Positive Stop (Not Analyzed)	

Client Sample ID: BS2.6 ***Lab Sample ID:*** **672000629-0013**
Sample Description: 559 King Edward/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/08/2020				Positive Stop (Not Analyzed)	

Client Sample ID: BS2.7 ***Lab Sample ID:*** **672000629-0014**
Sample Description: 559 King Edward/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/08/2020				Positive Stop (Not Analyzed)	

Client Sample ID: BS3.1 ***Lab Sample ID:*** **672000629-0015**
Sample Description: 559 King Edward/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS3.2 ***Lab Sample ID:*** **672000629-0016**
Sample Description: 559 King Edward/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Gray	0.0%	100.0%	None Detected	

EMSL Canada Inc.

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EMSL Canada Order 672000629
Customer ID: 55CTCS25B
Customer PO: 0Z2-021101-HZ
Project ID: Ottawa DSS

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: BS3.3 ***Lab Sample ID:*** **672000629-0017**
Sample Description: 559 King Edward/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS4.1-Joint Compound ***Lab Sample ID:*** **672000629-0018**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS4.1-Wallpaper ***Lab Sample ID:*** **672000629-0018A**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2020	Brown	97.0%	3.0%	None Detected	

Client Sample ID: BS4.2-Joint Compound ***Lab Sample ID:*** **672000629-0019**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS4.2-Wallpaper ***Lab Sample ID:*** **672000629-0019A**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	97.0%	3.0%	None Detected	

Client Sample ID: BS4.3-Joint Compound ***Lab Sample ID:*** **672000629-0020**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020				Layer Not Present	

Client Sample ID: BS4.3-Wallpaper ***Lab Sample ID:*** **672000629-0020A**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	97.0%	3.0%	None Detected	

Client Sample ID: BS4.4-Joint Compound ***Lab Sample ID:*** **672000629-0021**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020				Layer Not Present	

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Client Sample ID: BS4.4-Wallpaper ***Lab Sample ID:*** **672000629-0021A**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	97.0%	3.0%	None Detected	

Client Sample ID: BS4.5-Joint Compound ***Lab Sample ID:*** **672000629-0022**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020				Layer Not Present	

Client Sample ID: BS4.5-Wallpaper ***Lab Sample ID:*** **672000629-0022A**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	97.0%	3.0%	None Detected	

Client Sample ID: BS4.6-Joint Compound 1 ***Lab Sample ID:*** **672000629-0023**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS4.6-Joint Compound 2 ***Lab Sample ID:*** **672000629-0023A**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS4.6-Wallpaper ***Lab Sample ID:*** **672000629-0023B**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	97.0%	3.0%	None Detected	

Client Sample ID: BS4.7-Joint Compound ***Lab Sample ID:*** **672000629-0024**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS4.7-Wallpaper ***Lab Sample ID:*** **672000629-0024A**
Sample Description: 559 King Edward/Wall Skim Coat & Wallpaper (top Layer)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	97.0%	3.0%	None Detected	

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Project ID: Ottawa DSS

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: BS5.1 ***Lab Sample ID:*** **672000629-0025**
Sample Description: 559 King Edward/Wallpaper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	97.0%	3.0%	None Detected	

Client Sample ID: BS5.2 ***Lab Sample ID:*** **672000629-0026**
Sample Description: 559 King Edward/Wallpaper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	97.0%	3.0%	None Detected	

Client Sample ID: BS5.3-Wallpaper ***Lab Sample ID:*** **672000629-0027**
Sample Description: 559 King Edward/Wallpaper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Brown	98.0%	2.0%	None Detected	

Client Sample ID: BS5.3-Skim Coat ***Lab Sample ID:*** **672000629-0027A**
Sample Description: 559 King Edward/Wallpaper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS6.1 ***Lab Sample ID:*** **672000629-0028**
Sample Description: 559 King Edward/Paper Insulation (Grey)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Gray	25.0%	25.0%	**50% Chrysotile**	

Client Sample ID: BS6.2 ***Lab Sample ID:*** **672000629-0029**
Sample Description: 559 King Edward/Paper Insulation (Grey)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020				Positive Stop (Not Analyzed)	

Client Sample ID: BS6.3 ***Lab Sample ID:*** **672000629-0030**
Sample Description: 559 King Edward/Paper Insulation (Grey)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020				Positive Stop (Not Analyzed)	

Client Sample ID: BS7.1 ***Lab Sample ID:*** **672000629-0031**
Sample Description: 559 King Edward/Paper Insulation (Beige)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Beige	25.0%	25.0%	**50% Chrysotile**	

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Project ID: Ottawa DSS

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: BS7.2 ***Lab Sample ID:*** **672000629-0032**
Sample Description: 559 King Edward/Paper Insulation (Beige)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020			Positive Stop (Not Analyzed)		

Client Sample ID: BS7.3 ***Lab Sample ID:*** **672000629-0033**
Sample Description: 559 King Edward/Paper Insulation (Beige)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020			Positive Stop (Not Analyzed)		

Client Sample ID: BS8.1 ***Lab Sample ID:*** **672000629-0034**
Sample Description: 559 King Edward/Carpet Mastic (Yellow)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS8.2 ***Lab Sample ID:*** **672000629-0035**
Sample Description: 559 King Edward/Carpet Mastic (Yellow)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS8.3 ***Lab Sample ID:*** **672000629-0036**
Sample Description: 559 King Edward/Carpet Mastic (Yellow)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS9.1-Vinyl Floor Tile ***Lab Sample ID:*** **672000629-0037**
Sample Description: 559 King Edward/VFT 12"x12" Dark Grey w/ White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Gray/White	0.0%	98.0%	**2% Chrysotile**	

Client Sample ID: BS9.1-Mastic ***Lab Sample ID:*** **672000629-0037A**
Sample Description: 559 King Edward/VFT 12"x12" Dark Grey w/ White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020	Black	0.0%	99.0%	**1% Chrysotile**	

Client Sample ID: BS9.2 ***Lab Sample ID:*** **672000629-0038**
Sample Description: 559 King Edward/VFT 12"x12" Dark Grey w/ White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/09/2020			Positive Stop (Not Analyzed)		

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Client Sample ID: BS9.3 ***Lab Sample ID:*** **672000629-0039**

Sample Description: 559 King Edward/VFT 12"x12" Dark Grey w/ White Streaks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/09/2020				Positive Stop (Not Analyzed)	

Analyst(s):

Ewa Krupinska PLM (13)
Simon Parent PLM (28)

Reviewed and approved by:

Simon Parent, Laboratory Manager
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. 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. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government

Samples analyzed by EMSL Canada Inc. Ottawa, ON

Initial report from: 04/09/202015:33:43

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EMSL Canada Or	552003776
CustomerID:	55CTCS25B
CustomerPO:	OZ2021101HZ
ProjectID:	

Attn: **John Tufts**
McIntosh Perry Consulting Engineers Ltd
115 Walgreen Rd RR 3
Carp, ON K0A 1L0

Phone: (613) 836-2184
Fax:
Received: 04/03/20 11:08 AM
Collected: 3/25/2020

Project: **OZ2021101HZ**

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

Client SampleDescription	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead Concentration*
Pb1	3/25/2020	4/7/2020	0.1873 g	0.21 % wt	7.7 % wt
552003776-0002	Site: Room 101 - Light Pink				
Pb2	3/25/2020	4/7/2020	0.0902 g	0.22 % wt	4.8 % wt
552003776-0003	Site: Room 102B - Orange Paint				
Pb3	3/25/2020	4/7/2020	0.2504 g	0.0080 % wt	<0.0080 % wt
552003776-0004	Site: Room 103 - Green Paint				
Pb4	3/25/2020	4/7/2020	0.2511 g	0.0080 % wt	0.044 % wt
552003776-0005	Site: Room 214B - Dark Yellow				
Pb5	3/25/2020	4/7/2020	0.2490 g	0.16 % wt	5.9 % wt
552003776-0006	Site: Room 302 - White w/ Layers				
Pb6	3/25/2020	4/7/2020	0.2468 g	0.0081 % wt	0.042 % wt
552003776-0007	Site: Room 307A - Cream				

Rowena Fanto, Lead Supervisor
or other approved signatory

*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. Unless noted, results in this report are not blank corrected. 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. When the information supplied by the customer can affect the validity of the results, it will be noted on the reoprt. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

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

Report Amended: 04/13/2020 14:48:33 Replaces the Inital Report 04/13/2020 09:29:51. Reason Code: Client-Change to Sample ID

APPENDIX D

Site Photographs

Photo 1: Representative view of the lead-containing light pink door paint identified throughout the first level of subject building in fair condition.

Photo 2: View of the asbestos-containing boiler tank insulation (parging cement) observed in poor condition in Room B5.

Photo 3: View of the removed asbestos-containing boiler tank insulation (parging cement) observed to have been abated from Room B5.

Photo 4: View of the asbestos-containing paper insulation (Grey) observed in poor condition in Room B5.

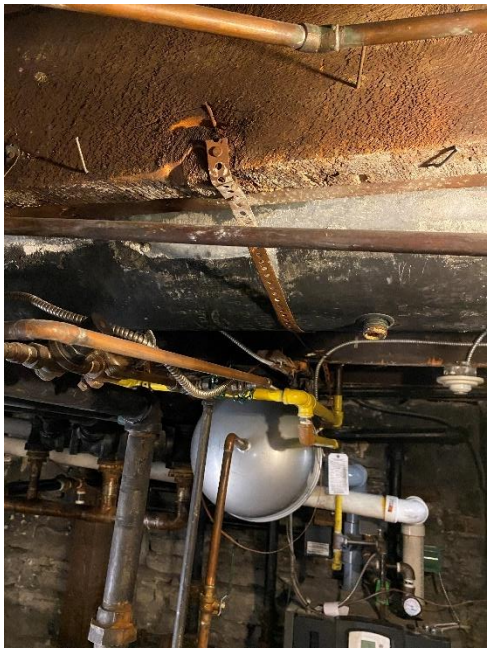


Photo 5: View of the removed asbestos-containing paper insulation (Grey) observed to have been abated from Room B5.

Photo 6: View of the electrical wire fabric cover (Brown) suspected of containing asbestos and PCBs in Room B5.

Photo 7: View of the non-asbestos ceiling plaster (Grey) observed in Room B6.

Photo 8: View of the lead-containing battery packs identified in Room B5.

Photo 9: Representative view of equipment observed to contain ODSs in Room 101.

Photo 10: Representative view of the asbestos-containing vinyl floor tiles (12”x12” – Green) observed in fair condition in Room 101.

Photo 11: Representative view of the asbestos-containing vinyl floor tiles (12”x12” – Green) observed in poor condition in Room 101.

Photo 12: View of the non-asbestos wallpaper (Top Layer) observed throughout the subject building.

Photo 13: View of the lead-containing wall paint (White) observed in poor condition in Room 103 during the 2022 Reassessment.

Photo 14: View of the lead-containing ceiling paint (White) observed in poor condition in Room 110 during the 2022 Reassessment.

Photo 15: Representative view of the asbestos-containing vinyl floor tiles (12”x12” – Green) observed underneath carpet in Room 109.

Photo 16: View of the non-asbestos carpet mastic (Yellow) observed throughout the first level of the subject building.

Photo 17: View of the lead-containing frame paint (Peach) observed in poor condition in Room 108.

Photo 18: View of the asbestos-containing plaster observed in poor condition in Room 100.

Photo 19: Representative view of equipment observed to contain ODSs in Room 211.

Photo 20: Representative view of the lead-containing paint (Dark Yellow) observed in good condition throughout the second floor.

Photo 21: Representative view of the non-PCB light ballasts manufactured by Sylvanna observed throughout the building.

Photo 22: View of the lead-containing window frame paint (White) observed in poor condition in Room 307.

Photo 23: View of the lead-containing ceiling paint (White) observed in poor condition in Room 307C.

Photo 24: View of the lead-containing ceiling paint (White) observed in poor condition in Room 307.

APPENDIX E

Asbestos-Containing Materials Checklists

Floor/Level	Room	ID	Type of ACM	Description	Asbestos Confirmed/ Suspected	Friable/Non-Friable	Damaged/ Deteriorated	Accessibility	Level of Work Near Material	Approx. Quantity	Unit	Recommended Action	Estimated Abatement Cost	Comments
0	Room	B5	Electrical Wire Fabric Cover	Dark Green & Brown	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place		
0	Throughout Level	-	Drywall Joint Compound	White	Confirmed	-	Good Condition	Easy	Low	-	-	Manage in Place		
0	Throughout Level	-	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place		
1	Room	100	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	80	SF	Manage in Place		
1	Room	101	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Poor Condition	Easy	Low	10	SF	Repair or Remove Following Type 1 Abatement Procedures	$ 1,000.00	
1	Room	101	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Difficult	Low	200	SF	Manage in Place		New VFT Observed to be present during 2022 Reassessment, asbestos-containing VFT may be concealed
1	Room	103	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	60	SF	Manage in Place		
1	Room	105	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	35	SF	Manage in Place		
1	Room	105	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Poor Condition	Easy	Low	4	SF	Repair or Remove Following Type 1 Abatement Procedures	$ 500.00	
1	Room	103	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Poor Condition	Easy	Low	13	SF	Repair or Remove Following Type 1 Abatement Procedures	$ 1,000.00	
1	Room	102B	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	10	SF	Manage in Place		
1	Room	110	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Enclosed	Easy	Low	150	SF	Manage in Place		
1	Room	110A	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Enclosed	Difficult	Low	20	SF	Manage in Place		Asbestos-containing VFT present under carpeting
1	Room	110D	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Difficult	Low	40	SF	Manage in Place		Asbestos-containing VFT present under carpeting

Floor/Level	Room	ID	Type of ACM	Description	Asbestos Confirmed/ Suspected	Friable/Non-Friable	Damaged/ Deteriorated	Accessibility	Level of Work Near Material	Approx. Quantity	Unit	Recommended Action	Estimated Abatement Cost	Comments
1	Room	109	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Enclosed	Easy	Low	20	SF	Manage in Place		
1	Room	108	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Enclosed	Difficult	Low	220	SF	Manage in Place		Asbestos-containing VFT present under carpeting
1	Room	101	Wall & Ceiling Plaster	White	Confirmed	Friable	Poor Condition	Easy	Low	4	SF	Repair or Remove Following Minimum Type 2 Abatement Procedures.	$ 250.00	
1	Room	100	Wall & Ceiling Plaster	White	Confirmed	Friable	Poor Condition	Easy	Low	1	SF	Repair or Remove Following Minimum Type 2 Abatement Procedures.	$ 250.00	
1	Room	100	Wall & Ceiling Plaster	White	Confirmed	Friable	Fair Condition	Easy	Low	10	SF	Monitor Condition of Material. Consider Removal or Repair.		
1	Throughout Level	-	Wall & Ceiling Plaster	White	Confirmed	Friable	Good Condition	Easy	Low	-	-	Manage in Place		
1	Throughout Level	-	Drywall Joint Compound	White	Confirmed	-	Good Condition	Easy	Low	-	-	Manage in Place		
1	Throughout Level	-	Mastic	Black	Confirmed	Non-Friable	Good Condition	Easy	Low	-	-	Manage in Place		
1	Throughout Level	-	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place		
2	Room	213	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	50	SF	Manage in Place		
2	Throughout Level	-	Wall & Ceiling Plaster	White	Confirmed	Friable	Good Condition	Easy	Low	-	-	Manage in Place		
2	Throughout Level	-	Drywall Joint Compound	White	Confirmed	-	Good Condition	Easy	Low	-	-	Manage in Place		
2	Throughout Level	-	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place		
3	Room	313	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	60	SF	Manage in Place		
3	Room	303	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	30	SF	Manage in Place		
3	Room	300	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	50	SF	Manage in Place		
3	Room	302	12" x 12" Vinyl Floor Tile	Green	Confirmed	Non-Friable	Good Condition	Easy	Low	25	SF	Manage in Place		

Floor/Level	Room	ID	Type of ACM	Description	Asbestos Confirmed/ Suspected	Friable/Non-Friable	Damaged/ Deteriorated	Accessibility	Level of Work Near Material	Approx. Quantity	Unit	Recommended Action	Estimated Abatement Cost	Comments
3	Room	305	Drywall Joint Compound	Ceiling	Confirmed	Non-Friable	Poor Condition	Moderate	Low	2	SF	Repair or Remove Following Type 1/2 Abatement Procedures	$ 500.00	
3	Throughout Level	-	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place		
3	Throughout Level	-	Wall & Ceiling Plaster	White	Confirmed	Friable	Good Condition	Easy	Low	-	-	Manage in Place		
3	Throughout Level	-	Drywall Joint Compound	White	Confirmed	-	Good Condition	Easy	Low	-	-	Manage in Place		

APPENDIX F

Hazardous Containing Materials Checklists

Floor/Level	Room	ID	DS Type	Component	Colour	Condition	Manufacturer	Approx. Quantity	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatement Cost	Comments
0	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place		
0	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place		
0	Room	B5	Lead	Battery Pack	N/A	Good Condition	Emergi-Lite	2	C	Confirmed	Manage in Place		
0	Room	B5	Polychlorinated Biphenyls (PCBs)	Electrical Wire Fabric Cover	Dark Green &	Good Condition	-	-	-	Suspected	Manage in Place		
0	Room	B1	Polychlorinated Biphenyls (PCBs)	Light Ballast	N/A	Not Accessible	-	-	-	Suspected	Manage in Place		
1	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place		
1	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place		
1	Throughout Level	-	Lead	Door Paint	Light Pink	Fair Condition	-	-	-	Confirmed	Monitor Condition of Material		
1	Throughout Level	-	Lead	Door Paint	Orange	Fair Condition	-	-	-	Confirmed	Monitor Condition of Material		
1	Room	101	Lead	Wall Paint	White	Poor Condition	-	40	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 1,000.00	
1	Room	100	Lead	Wall Paint	White	Fair Condition	-	10	SF	Confirmed	Monitor Condition of Material		
1	Room	100	Lead	Wall Paint	White	Poor Condition	-	1	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 250.00	
1	Throughout Level	-	Lead	Wall Paint	White	Good Condition	-	-	-	Confirmed	Manage in Place		

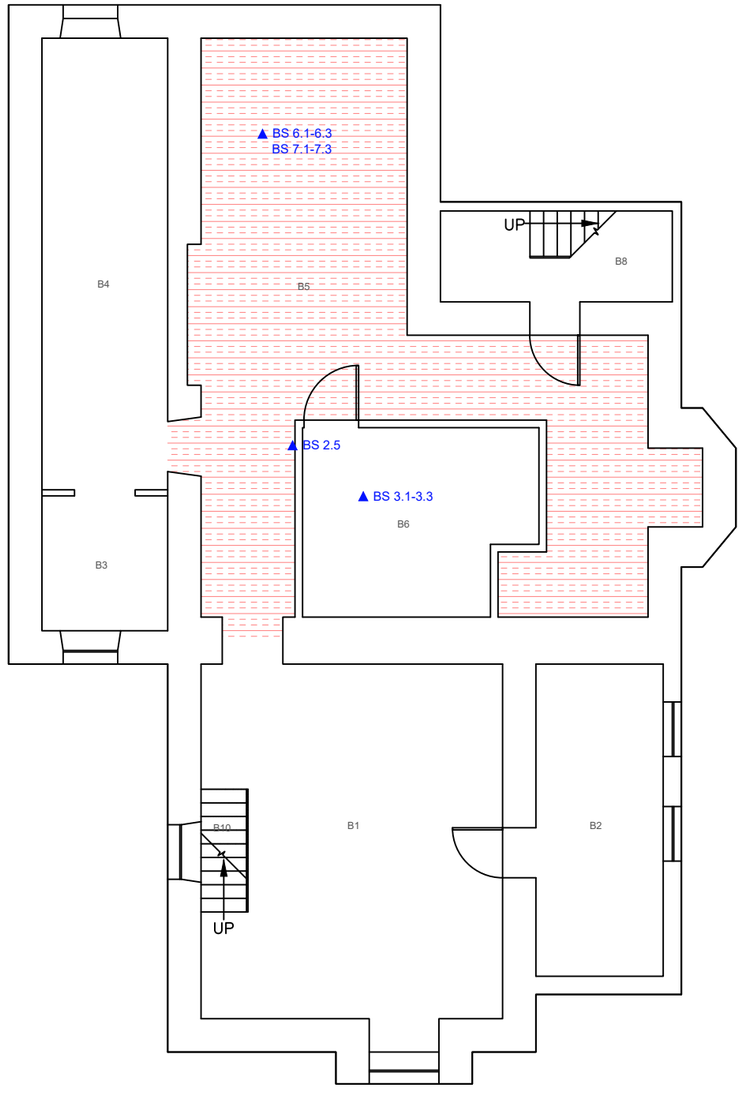
Floor/Level	Room	ID	DS Type	Component	Colour	Condition	Manufacturer	Approx. Quantity	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatement Cost	Comments
1	Room	101	Lead	Ceiling Paint	Cream	Poor Condition	-	4	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 250.00	
1	Room	102	Lead	Wall Paint	White	Poor Condition	-	8	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 500.00	
1	Room	103	Lead	Wall Paint	White	Poor Condition	-	2	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 250.00	
1	Room	110	Lead	Ceiling Paint	Peach	Poor Condition	-	1	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 500.00	
1	Throughout Level	-	Lead	Ceiling Paint	Cream	Good Condition	-	-	-	Confirmed	Manage in Place		
1	Throughout Level	-	Lead	Stair, Railing and Door Paint	Grey	Good Condition	-	-	-	Confirmed	Manage in Place		
1	Throughout Level	-	Lead	Door, Trim and Frame Paint	Peach	Good Condition	-	-	-	Confirmed	Manage in Place		
1	Throughout Level	-	Lead	Trim, Frame and Railing Paint	White	Good Condition	-	-	-	Confirmed	Manage in Place		
1	Room	101	Ozone Depleting Substances (ODS)	Water Fountain	N/A	Good Condition	Aquarius	1	C	Confirmed	Manage in Place		Unknown Refrigerant
1	Room	103	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Friedrich	1	C	Confirmed	Manage in Place		R32

Floor/Level	Room	ID	DS Type	Component	Colour	Condition	Manufacturer	Approx. Quantity	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatement Cost	Comments
1	Room	108	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Friedrich	1	C	Confirmed	Manage in Place		R32
2	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place		
2	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place		
2	Throughout Level	-	Lead	Ceiling Paint	Cream	Good Condition	-	-	-	Confirmed	Manage in Place		
2	Throughout Level	-	Lead	Wall Paint	Dark Yellow	Good Condition	-	-	-	Confirmed	Manage in Place		
2	Throughout Level	-	Lead	Door Paint	Red	Good Condition	-	-	-	Confirmed	Manage in Place		
2	Throughout Level	-	Lead	Wall Paint	White	Good Condition	-	-	-	Confirmed	Manage in Place		
2	Throughout Level	-	Lead	Trim, Frame and Railing Paint	White	Good Condition	-	-	-	Confirmed	Manage in Place		
2	Room	205	Polychlorinated Biphenyls (PCBs)	Light Ballast	N/A	Not Accessible	-	-	-	Suspected	Manage in Place		
2	Room	211	Polychlorinated Biphenyls (PCBs)	Light Ballast	N/A	Not Accessible	-	-	-	Suspected	Manage in Place		
2	Room	209	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Unknown Refrigerant
2	Room	211	Ozone Depleting Substances (ODS)	Water Cooler	N/A	Good Condition	Aqua Terra	1	C	Confirmed	Manage in Place		R134a
2	Room	211	Ozone Depleting Substances (ODS)	Refrigerator	N/A	Good Condition	LG	1	C	Confirmed	Manage in Place		R134a
3	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place		
3	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place		
3	Room	300	Lead	Wall Paint	White	Poor Condition	-	4	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 500.00	

Floor/Level	Room	ID	DS Type	Component	Colour	Condition	Manufacturer	Approx. Quantity	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatement Cost	Comments
3	Room	301	Lead	Trim, Frame and Railing Paint	White	Poor Condition	-	2	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 250.00	
3	Room	307	Lead	Ceiling Paint	White	Poor Condition	-	3	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 250.00	
3	Room	307C	Lead	Ceiling Paint	White	Poor Condition	-	10	SF	Confirmed	Paint must be removed and/or stabilized following Class 1/2 or Type 1/2 lead Procedures as per MOL and EACO	$ 500.00	
3	Throughout Level	-	Lead	Trim, Frame and Railing Paint	White	Good Condition	-	-	-	Confirmed	Manage in Place		
3	Throughout Level	-	Lead	Wall Paint	White	Good Condition	-	-	-	Confirmed	Manage in Place		
3	Throughout Level	-	Lead	Ceiling Paint	Cream	Good Condition	-	-	-	Confirmed	Manage in Place		
3	Room	301	Polychlorinated Biphenyls (PCBs)	Light Ballast	N/A	Not Accessible	-	-	-	Suspected	Manage in Place		
3	Room	305	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Carrier	1	C	Confirmed	Manage in Place		Unknown Refrigerant
3	Room	307	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Bryant	1	C	Confirmed	Manage in Place		R134a
3	Room	307C	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Climette	1	C	Confirmed	Manage in Place		R134a

APPENDIX G

Site Sampling & Location Plans



McINTOSH PERRY
6240 HIGHWAY 7 SUITE 200 WOODBRIDGE ON L4H 4G3
Tel: 905.856.5200 Fax: 905.695.0221
Toll Free: 1.888.348.8991 www.mcintoshperry.com

Legend:

- ▲ Asbestos Bulk Sample
- □ Lead Paint Sample <LOD
- ■ Lead Paint Sample >LOD
- ACM Vinyl floor Tile (VFT)
- ACM Mechanical Insulation

Notes:

ACM plaster and drywall with ACM joint compound is present throughout

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 559 KING EDWARD
HAZARDOUS MATERIALS SURVEY

TITLE: SAMPLE LOCATIONS
BASEMENT

SCALE: 1:100

DATE: JULY 08, 2020

DRAWN: D.B.

CHECKED: M.M.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A0

REV.:

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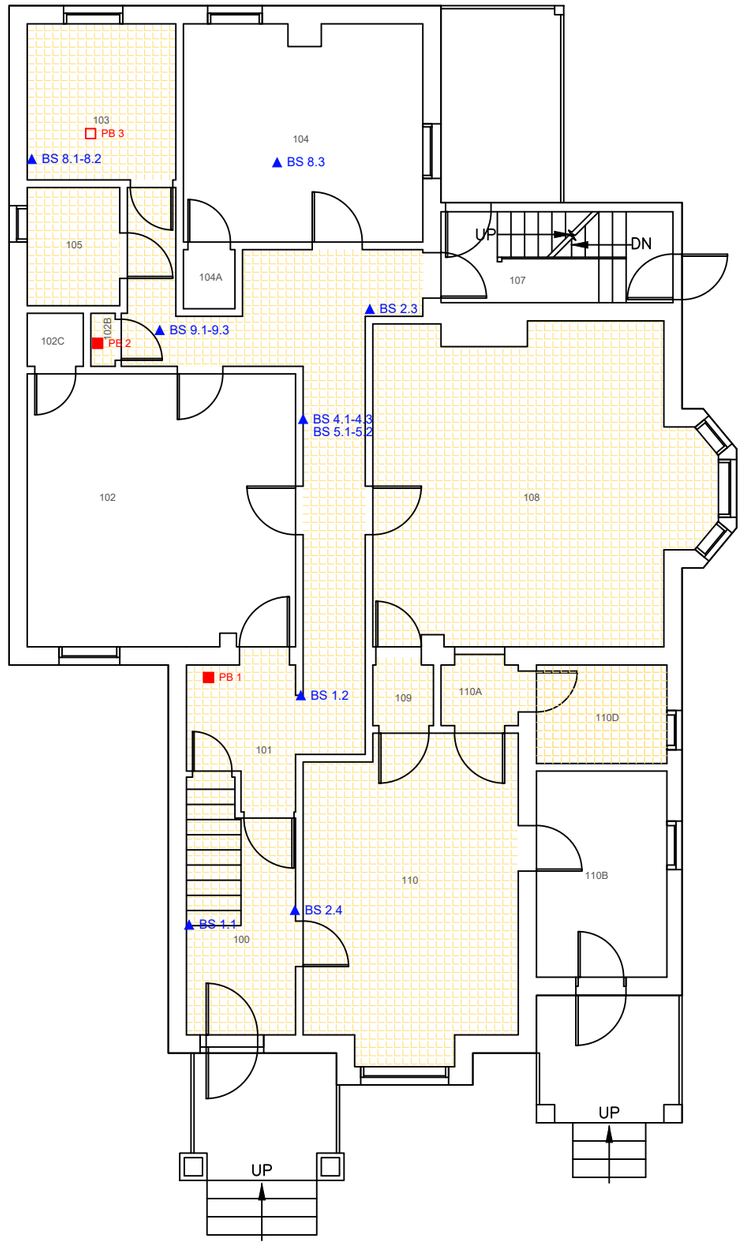

Legend:

- ▲ Asbestos Bulk Sample
- □ Lead Paint Sample <LOD
- ■ Lead Paint Sample >LOD
- ACM Vinyl floor Tile (VFT)
- ACM Mechanical Insulation

Notes:

ACM plaster and drywall with ACM joint compound is present throughout

McINTOSH PERRY
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Tel: 905.856.5200 Fax: 905.695.0221
Toll Free: 1.888.348.8991 www.mcintoshperry.com

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 559 KING EDWARD
HAZARDOUS MATERIALS SURVEY

TITLE: SAMPLE LOCATIONS FIRST FLOOR

SCALE: 1:100

DATE: JULY 08, 2020

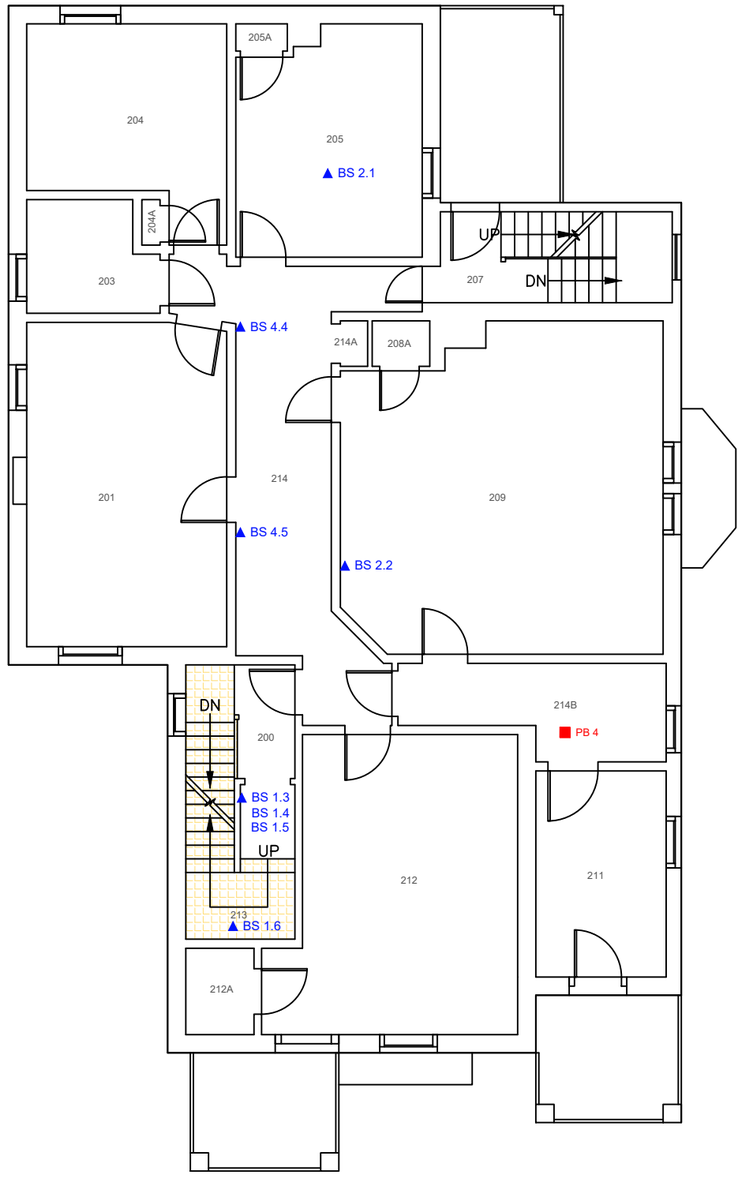
DRAWN: D.B.

CHECKED: M.M.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A1

REV.:



McINTOSH PERRY

6240 HIGHWAY 7 SUITE 200 WOODBRIDGE ON L4H 4G3

Tel: 905.856.5200 Fax: 905.695.0221

Toll Free: 1.888.348.8991 www.mcintoshperry.com

Legend:

- ▲ Asbestos Bulk Sample
- ▢ Lead Paint Sample <LOD
- ■ Lead Paint Sample >LOD
- ACM Vinyl floor Tile (VFT)
- ACM Mechanical Insulation

Notes:

ACM plaster and drywall with ACM joint compound is present throughout

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 559 KING EDWARD
HAZARDOUS MATERIALS SURVEY

TITLE: SAMPLE LOCATIONS
SECOND FLOOR

SCALE: 1:100

DATE: JULY 08, 2020

DRAWN: D.B.

CHECKED: M.M.

DRAWING NUMBER: A2

REV. NO.	DESCRIPTION	DATE	BY	APPD.

REV.:

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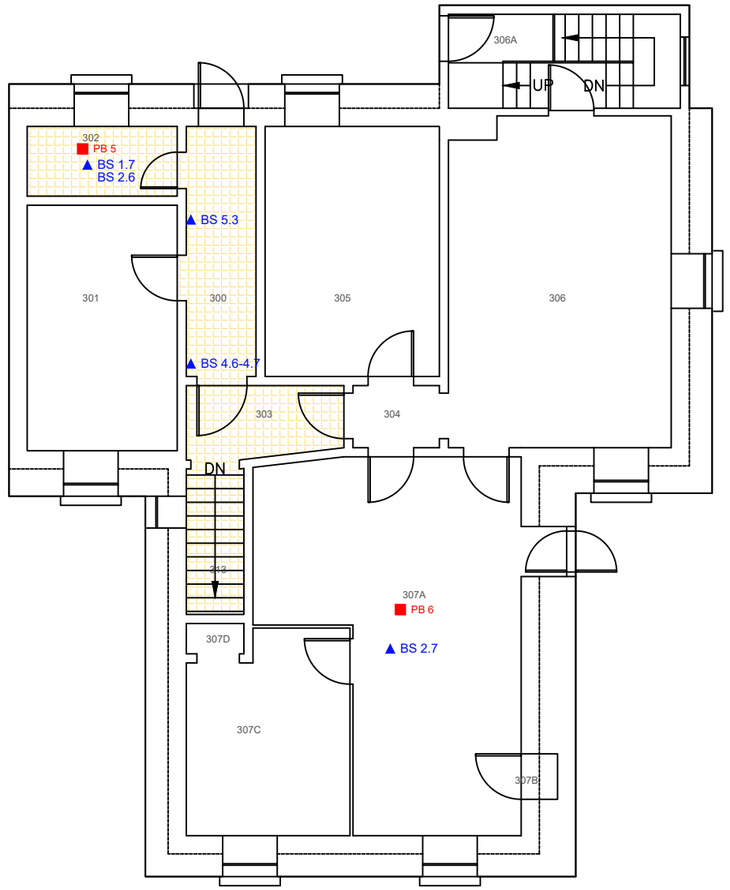

McINTOSH PERRY
6240 HIGHWAY 7 SUITE 200 WOODBRIDGE ON L4H 4G3
Tel: 905.856.5200 Fax: 905.695.0221
Toll Free: 1.888.348.8991 www.mcintoshperry.com

Legend:

- ▲ Asbestos Bulk Sample
- □ Lead Paint Sample <LOD
- ■ Lead Paint Sample >LOD
- ACM Vinyl floor Tile (VFT)
- ACM Mechanical Insulation

Notes:

ACM plaster and drywall with ACM joint compound is present throughout

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 559 KING EDWARD
HAZARDOUS MATERIALS SURVEY

TITLE: SAMPLE LOCATIONS
THIRD FLOOR

SCALE: 1:100

DATE: JULY 08, 2020

DRAWN: D.B.

CHECKED: M.M.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A3

REV.: