

November 26, 2018
File: PE4486-LET.01

GBA Development and Project Management
204-1339 Wellington Street West
Ottawa, Ontario
K1Y 3B8

Attention: **Mr. Aidan Kennedy**

Subject: **Designated Substance Survey**
139 and 143 Balsam Street
Ottawa, Ontario

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Canada, K2E 7J5
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Geotechnical Engineering
Environmental Engineering
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Dear Sir,

Further to your request and authorization, Paterson Group (Paterson) conducted a Designated Substance Survey (DSS) for two (2) residential buildings located at 139 and 143 Balsam Street, in the City of Ottawa, Ontario. This letter report summarizes our findings and results of the DSS.

1.0 BACKGROUND

The subject buildings are situated at west end of Balsam Street approximately 97 m west of Preston Street, in the City of Ottawa, Ontario. The property is currently owned by Preston Hardware who are planning to redevelop the land in the future. Both structures are residential dwellings and are currently occupied.

The purpose of this investigation was to identify any potential designated substances within the subject structures prior to any demolition work. The building at 139 Balsam Street is a two (2) storey building with a full basement level. The building at 143 Balsam Street is also a two (2) storey building but also has a storage addition at the rear of the building that is currently being used to store merchandise from Preston Hardware. It is our understanding that the original buildings were constructed in the early 1900s.

2.0 SITE INSPECTION AND OBSERVATIONS

A Paterson Group representative conducted a site visit on November 14, 2018. During the course of the site visit, a visual inspection for sources or materials containing the following designated substances: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, vinyl chloride, and the following substances: ozone depleting substances (ODSs) and polychlorinated biphenyls (PCBs) was carried out.

It should be noted that the rear apartment unit of 139 Balsam Street and the second floor unit of 143 Balsam Street were inaccessible on the day of the visit.

2.1 Acrylonitrile

Acrylonitrile is prescribed as a designated substance under Ontario Regulation (O.Reg.) 490/09 of the Occupational Health and Safety Act. It is a volatile, flammable liquid that is used to make many chemicals such as plastics, rubber and synthetic fibres. Acrylonitrile may be present in stable form in surface coatings (eg. paints), building material adhesives and plastics. Common adhesives observed in the buildings include applications for vinyl floor tiles and mouldings. The above noted products are not considered to pose a concern provided they are not subjected to extreme heat, such as a torch. Exposure to acrylonitrile is unlikely and not suspected within the subject building.

2.2 Arsenic

Arsenic is prescribed as a designated substance under O.Reg. 490/09 of the Occupational Health and Safety Act. Arsenic has many industrial uses such as hardening of copper and lead alloys and in older lead-based paints. Similar to acrylonitrile, arsenic may also be present in stable form in building material adhesives and some metal alloys. Based on the limited quantity of potentially arsenic containing materials within the subject building, it is not expected that the arsenic concentration in the air will exceed its maximum allowable Time Weighted Average Exposure Value (TWAEV).

2.3 Asbestos

Asbestos is prescribed as a designated substance under O.Reg. 490/09 of the Occupational Health and Safety Act. Asbestos-containing materials (ACMs) are defined under O. Reg. 278/05 of the Occupational Health and Safety Act as having a concentration of 0.5% or more by dry weight of fibrous asbestos (i.e. chrysotile, amosite, crocidolite and/or other amphiboles). Asbestos was commonly used in residential and commercial construction between 1930 and 1980.

A total of forty-six (46) bulk samples of potentially asbestos containing materials were obtained from the two (2) subject buildings during the sampling event and were submitted to Paracel Laboratories in Ottawa, Ontario for analysis. The potential asbestos containing materials were analyzed to determine the presence, type and content of asbestos, as shown in Table 1. The sample locations can be found in Table 1. The laboratory certificates of analysis are appended to this letter.

Table 1 - Summary of Asbestos Testing 139 & 143 Balsam Street - November 14, 2018				
Sample No.	Description	Location	Fibrous Asbestos Content	Other Materials
DWJC1	Drywall joint compound	139 Balsam – Ground floor kitchen	None	100% Non-Fibers
DWJC2		139 Balsam – Ground floor entranceway	None	100% Non-Fibers
DWJC3		139 Balsam – Ground floor bathroom	None	100% Non-Fibers
DWJC4		139 Balsam – Second floor apartment	None	100% Non-Fibers
DWJC5		139 Balsam – Second floor apartment	None	100% Non-Fibers
DWJC6	Drywall joint compound	143 Balsam – Second floor rear bathroom	1% Chrysotile	99% Non-Fibers
DWJC7		143 Balsam – Second floor rear bathroom	1% Chrysotile	99% Non-Fibers
DWJC8		143 Balsam – Ground floor kitchen	1% Chrysotile	99% Non-Fibers
DWJC9		143 Balsam – Ground floor bedroom	1% Chrysotile	99% Non-Fibers
DWJC10		143 Balsam – Ground floor living room	1% Chrysotile	99% Non-Fibers
STIP1	Ceiling stipple	139 Balsam – Ground floor kitchen	None	100% Non-Fibers
STIP2		139 Balsam – Ground floor living room	None	100% Non-Fibers
STIP3		139 Balsam – Ground floor entranceway	None	100% Non-Fibers
Notes: Bold – Asbestos containing material as defined under O.Reg. 278/05 as having a concentration of 0.5% or more by dry weight fibrous asbestos. MMVF: Man made vitreous fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool.				

Table 1 (Continued) - Summary of Asbestos Testing 139 & 143 Balsam Street - November 14, 2018				
Sample No.	Description	Location	Fibrous Asbestos Content	Other Materials
STIP4	Ceiling stipple	139 Balsam – Second floor apartment	None	100% Non-Fibers
STIP5		139 Balsam – Second floor apartment	None	100% Non-Fibers
STIP6	Ceiling stipple	143 Balsam – Second floor rear kitchen	None	100% Non-Fibers
STIP7		143 Balsam – Second floor rear bedroom	None	100% Non-Fibers
STIP8		143 Balsam – Ground floor living room	None	100% Non-Fibers
STIP9		143 Balsam – Ground floor living room	None	100% Non-Fibers
STIP10		143 Balsam – Ground floor living room	None	100% Non-Fibers
STUC1	Stucco	143 Balsam – Exterior wall	None	100% Non-Fibers
STUC2		143 Balsam – Exterior wall	None	100% Non-Fibers
STUC3		143 Balsam – Exterior wall	None	100% Non-Fibers
STUC4		143 Balsam – Exterior wall	None	100% Non-Fibers
STUC5		143 Balsam – Exterior wall	None	100% Non-Fibers
PRG1	Parging	143 Balsam – Exterior wall	None	100% Non-Fibers
PRG2		143 Balsam – Exterior wall	None	100% Non-Fibers
PRG3		143 Balsam – Exterior wall	None	100% Non-Fibers
Notes: Bold – Asbestos containing material as defined under O.Reg. 278/05 as having a concentration of 0.5% or more by dry weight fibrous asbestos. MMVF: Man made vitreous fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool.				

Table 1 (Continued) - Summary of Asbestos Testing 139 & 143 Balsam Street - November 14, 2018				
Sample No.	Description	Location	Fibrous Asbestos Content	Other Materials
PRG4	Parging	139 Balsam – Exterior wall	None	100% Non-Fibers
PRG5		139 Balsam – Exterior wall	None	100% Non-Fibers
PRG6		139 Balsam – Exterior wall	None	100% Non-Fibers
SUSP1	Suspended ceiling tiles 2" x 4" Smooth white finish	143 Balsam – Ground floor apartment entranceway	None	90% Cellulose 10% Non-Fibers
SUSP2		143 Balsam – Ground floor apartment entranceway	None	90% Cellulose 10% Non-Fibers
SUSP3		143 Balsam – Ground floor apartment entranceway	None	90% Cellulose 10% Non-Fibers
SUSP4	Suspended ceiling tiles 2" x 4" White with pinholes	143 Balsam – Ground floor kitchen area	None	40% Cellulose 30% MMVF 30% Non-Fibers
SUSP5		143 Balsam – Ground floor kitchen area	None	40% Cellulose 30% MMVF 30% Non-Fibers
SUSP6		143 Balsam – Ground floor kitchen area	None	40% Cellulose 30% MMVF 30% Non-Fibers
LIN1	Linoleum flooring White square pattern	143 Balsam – Second floor bathroom in rear storage area	25% Chrysotile	5% Cellulose 70 % Non-Fibers
LIN2		143 Balsam – Second floor bathroom in rear storage area	Not analysed (positive stop)	
LIN3		143 Balsam – Second floor bathroom in rear storage area		
Notes: Bold – Asbestos containing material as defined under O.Reg. 278/05 as having a concentration of 0.5% or more by dry weight fibrous asbestos. MMVF: Man made vitreous fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool.				

Table 1 (Continued) - Summary of Asbestos Testing 139 & 143 Balsam Street - November 14, 2018				
Sample No.	Description	Location	Fibrous Asbestos Content	Other Materials
LIN4	Linoleum flooring White	143 Balsam – Ground floor kitchen area	None	25% Cellulose 2% MMVF 68% Non-Fibers 5% Other fibers
LIN5		143 Balsam – Ground floor kitchen area	None	25% Cellulose 2% MMVF 68% Non-Fibers 5% Other fibers
LIN6		143 Balsam – Ground floor kitchen area	None	25% Cellulose 2% MMVF 68% Non-Fibers 5% Other fibers
VFT1	Vinyl floor tile 12" x 12" Dark brown	143 Balsam – Ground floor kitchen area	None	100% Non-Fibers
VFT2		143 Balsam – Ground floor kitchen area	None	100% Non-Fibers
VFT3		143 Balsam – Ground floor kitchen area	None	100% Non-Fibers
Notes: Bold – Asbestos containing material as defined under O.Reg. 278/05 as having a concentration of 0.5% or more by dry weight fibrous asbestos. MMVF: Man made vitreous fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool.				

Drywall Joint Compound

Drywall Joint Compound was present throughout all floors of each building. Five (5) samples of the drywall joint compound from each house were collected and submitted for analysis, for a total of ten (10) samples. Based on the analytical test results, the drywall joint compound in 139 Balsam Street does not contain asbestos however, the drywall joint compound in 143 Balsam Street contains **1% Chrysotile asbestos**. **The drywall joint compound present in the building located 143 Balsam Street is considered to be an asbestos containing material.**

Ceiling Stipple

Ceiling stipple was observed throughout all floors of the buildings. Five (5) samples of the ceiling stipple from each house were collected and submitted for analysis, for a total of ten (10) samples. Based on the analytical test results, the ceiling stipple throughout the two (2) buildings does not contain asbestos.

Stucco

Stucco was observed on the exterior façades of 143 Balsam Street. Five (5) samples of the stucco were collected and submitted for analysis. Based on the analytical test results, the exterior stucco on the exterior façades of 143 Balsam Street does not contain asbestos.

Parging

Parging was observed on the exterior foundation of both buildings. Three (3) samples were collected from each house were collected and submitted for analysis, for a total of six (6) samples. Based on the analytical test results, the parging on the exterior foundation of both buildings does not contain asbestos.

Suspended Ceiling tiles

Suspended ceiling tiles were observed in the kitchen and entranceway of 143 Balsam Street. A total of six (6) samples of two (2) different types of ceiling tiles were collected and submitted for analysis. Based on the analytical results, the two (2) different types of ceiling tiles do not contain asbestos.

Linoleum

Linoleum flooring was observed in the ground floor kitchen and second floor bathroom of the storage area in the building located at 143 Balsam Street. A total of six (6) samples of two (2) different types of linoleum flooring material were collected and submitted for analysis. Based on the analytical test results, the linoleum flooring in the ground floor kitchen does not contain asbestos however, the linoleum flooring in the bathroom of the second floor storage area contains **25% Chrysotile asbestos. The linoleum flooring present in the bathroom of the second floor storage area is considered to be an asbestos containing material.**

Vinyl Floor Tiles

Vinyl floor tiles were observed in the ground floor kitchen at 143 Balsam Street. Three (3) samples of the vinyl floor tiles were collected and submitted for analysis. Based on the analytical test results, the vinyl floor tiles in the ground floor kitchen do not contain asbestos.

Insulation

No potential asbestos containing insulation material was identified during the inspection of the building. However, it should be noted that no wall or ceiling cavities could be inspected at the time of our site visit due to limited access. It was noted that fiberglass insulation was present in the storage area at the rear of 143 Balsam Street.

2.4 Benzene

Benzene is prescribed as a designated substance under O.Reg 490/09 of the Occupational Health and Safety Act. Benzene is used in the manufacturing of many products including plastics, rubbers, resins and synthetic fibres. It is also used as a solvent in printing and paints as well as in petroleum products such as gasoline and diesel. Benzene may be present in older paints, sealants and roofing materials, some of which may be present in the subject buildings.

Benzene is not considered to be a concern, since it typically vaporizes rapidly from most products shortly after manufacturing or application, however, the above noted materials should not be subjected to extreme heat without proper worker respiratory protection.

2.5 Coke Oven Emissions

Coke oven emissions are prescribed as a designated substance under O.Reg. 490/09 of the Occupational Health and Safety Act. Coke Oven emissions are not typically found outside the metal extraction industry. No sources of coke oven emissions are suspected or were observed with respect to the subject buildings.

2.6 Ethylene Oxide

Ethylene oxide is prescribed as a designated substance under Ontario Regulation 490/09 of the Occupational Health and Safety Act. Ethylene oxide is used in large volumes as a chemical intermediate in the manufacturing of many industrial products including textiles, detergents, foam, antifreeze, solvents and adhesives.

Based on the limited quantity of potentially ethylene oxide containing materials within the subject buildings, ethylene oxide is not considered to pose a concern.

2.7 Isocyanates

Isocyanates are prescribed as a designated substance under O.Reg. 490/09 of the Occupational Health and Safety Act. Isocyanates are the raw materials from which all polyurethane products are made. They are used widely in the manufacturing of foams, plastics, adhesives, synthetic fibres and coatings such as paints and varnishes, some of which are present in the subject buildings. Over time, isocyanates will volatilize out of these materials but will only be present in trace amounts and are not expected to reach hazardous air concentrations. As a result, isocyanates are not considered to pose a concern.

2.8 Lead

Lead is prescribed as a designated substance under O.Reg. 490/09 of the Occupational Health and Safety Act. For the purposes of this report, the commonly used value of 90 ppm [Surface Coatings Material Regulation (SOR/2005-109) – October 2010] will serve as the lead-containing definable limit. Lead concentrations will be categorized into three (3) classes, lead-based (greater than 5000 ppm), lead-containing (between 90 ppm and 5000 ppm) and non-lead containing (less than 90 ppm).

Lead may be present in older paints, plastics, lead caulking in bell joints for cast iron piping systems, electrical equipment, ceramics and lead solder in copper piping systems observed. Painted surfaces on the interior and exterior of the subject buildings were observed. Three (3) paint samples were obtained (one (1) sample from 139 Balsam Street and two (2) from 143 Balsam Street) to determine lead concentrations. The samples were submitted to Paracel for lead content analysis. The sample locations and lead content can be found in Table 2. The laboratory certificate of analysis is appended to this letter.

Table 2 - Summary of Lead Testing 139 & 143 Balsam Street - November 14, 2018				
Sample No.	Location	Colour	Lead-Containing Definable Limit (µg/g)	Lead Content (µg/g)
PT1	139 Balsam – Second floor unit	Beige	90	<20
PT2	143 Balsam – Storage area – Old exterior wall	White	90	94700
PT3	143 Balsam – Ground floor living room	Beige	90	<20
Notes: Bold - Results exceed the lead-containing definable limit.				

Based on the laboratory results, all paint samples analysed from the subject buildings were determined to have non-detectable lead concentrations with the exception of the paint sample collected from the storage area of 143 Balsam Street. The white paint on the former exterior wall of the original building inside the storage area of 143 Balsam Street is considered to be a lead-based paint. This white paint is expected to only be encountered on exterior wood framing of the original building.

2.9 Mercury

Mercury is prescribed as a designated substance under O.Reg. 490/09 of the Occupational Health and Safety Act. Mercury may be present in thermostats (which were not identified within the subject building), barometers and hydrometers along with other laboratory measuring devices. It may also be present in older lead-based paints and many types of lights including fluorescent tubes (which were not observed in this building).

Any mercury containing equipment must be disposed of according to Ontario Regulation 347 as amended by O. Reg. 558, if it is being decommissioned.

2.10 Vinyl Chloride

Vinyl chloride is prescribed as a designated substance under O.Reg. 490/09 of the Occupational Health and Safety Act. Vinyl chloride is the parent compound of polyvinyl chloride (PVC) which is used in many consumer and industrial plastic products. It is also used extensively in the glass, rubber and paper industries. Vinyl chloride may be present, in stable form, in pipes, plastics, vinyl's and interior finishes such as paints and varnishes throughout the subject buildings. The health hazard associated with vinyl chloride comes primarily from the inhalation of fumes. In most applications vinyl chloride is considered to be stable as long as it is not subjected to extreme heat. As a result, vinyl chloride is not expected to be a concern as long as materials are not subjected to extreme heat.

2.11 Silica

Silica is prescribed as a designated substance under O.Reg. 490/09 of the Occupational Health and Safety Act. Silica or silicon dioxide is the basic component of sand, quartz and granite rock. Silica is expected to be present in concrete and cement parging. Typical procedures including wetting materials prior to, and during, any demolition activities are required to control dust.

2.12 Ozone Depleting Substances (ODSs)

Potentially ODS containing equipment such as refrigerators and fire extinguishers were observed during the site visits. These appliances should be repaired or decommissioned by certified technicians.

2.13 Polychlorinated Biphenyls (PCBs)

No potential sources of PCBs were observed during the site visit.

3.0 SURVEY SUMMARY AND RECOMMENDATIONS

Based on our survey, none of the building materials analysed from 139 Balsam Street were determined to be asbestos containing however, two (2) of the analysed building materials collected from 143 Balsam Street were determined to contain asbestos and one (1) paint was determined to be lead-based. The possible presence of limited quantities of acrylonitrile, arsenic, benzene, ethylene oxide, isocyanates and silica in the aforementioned building materials do not pose a concern, provided precautionary measures are followed during future proposed demolition works.

Asbestos

Based on the observations made during the site visit, combined with the analytical test results, the following ACMs were identified in 143 Balsam Street:

- ☐ **Drywall joint compound throughout the building at 143 Balsam Street.**
- ☐ **Linoleum flooring in the second floor bathroom of the storage area at the rear of 143 Balsam Street.**

All ACMs must be removed if they are to be disturbed as part of the proposed redevelopment. A visual inspection of wall and ceiling cavities was not included as part of this survey due to the limited accessibility. No potential asbestos containing insulation was observed elsewhere in the two (2) buildings. If any insulation materials are encountered in the wall and ceiling cavities and are suspected to be asbestos containing, we request that we be notified.

The removal, disturbance or encapsulation of identified ACMs throughout the building must be done in accordance with the procedures outlined in Ontario Regulation 278/05 and conducted by a contractor specialized in this type of work.

A full copy of O.Reg. 278/05 made under the Occupational Health and Safety Act can be found at http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_050278_e.htm.

Lead

Lead may be present in the solder used in copper piping observed throughout the buildings. Lead based white paint was also identified on the former exterior wall of the original building inside of the storage area of 143 Balsam Street. During renovations/demolition, precautions must be taken to protect the workers. When potential lead containing materials (as identified in this report) are to be disturbed, precautions should be taken to minimize dust creation (wetting surfaces) and protect workers, such as providing appropriate dust masks. Further information can be obtained from the document entitled “Guideline – Lead on Construction Projects” (April 2011), prepared by the Occupational Health and Safety Branch of the Ministry of Labour.

Silica

Silica is expected to be present in various building materials, including concrete and cement parging. When potential silica containing materials (as identified in this report) are to be disturbed, precautions should be taken to minimize dust creation (wetting surfaces) and protect workers, such as providing appropriate dust masks. Further information can be obtained from the document entitled “Guideline – Silica on Construction Projects” (April 2011), prepared by the Occupational Health and Safety Branch of the Ontario Ministry of Labour.

4.0 STATEMENT OF LIMITATIONS

A designated substance survey was completed for the residential buildings located at 139 and 143 Balsam Street in the City of Ottawa, Ontario. The results of the survey are based on our visual observations made at the time of the site visit. It should be noted that these buildings were occupied at the time of the visit and no access was available to the basement and two (2) storey rear apartment of 139 Balsam Street, and to the upstairs apartment of 143 Balsam Street. Should any conditions be encountered at the subject site that differ from our findings, we request that we be notified immediately in order to allow for a reassessment

This report was prepared for the sole use of GBA Development and Project Management. Permission and notification from GBA Development and Project Management and this firm will be required to release this report to any other party.

We trust that this submission will satisfy your present requirements. If you have any questions regarding this report, please contact our office.

Paterson Group Inc.



Mark St Pierre, B.Eng.



Mark D'Arcy, P.Eng.

Report Distribution:

- ☐ GBA Development and Project Management (2 hard copies)
- ☐ Paterson Group Inc. (1 copy)

Attachments:

- ☐ Laboratory Certificates of Analysis

Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Rd South
Nepean, ON K2E 7J5
Attn: Mark St. Pierre

Client PO: 25562

Project: PE4486

Custody: 31392/31393/31394/31395

Report Date: 21-Nov-2018

Order Date: 15-Nov-2018

Order #: 1846486

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1846486-01	VFT1
1846486-02	VFT2
1846486-03	VFT3
1846486-04	LIN1
1846486-05	LIN2
1846486-06	LIN3
1846486-07	LIN4
1846486-08	LIN5
1846486-09	LIN6
1846486-10	STUC1
1846486-11	STUC2
1846486-12	STUC3
1846486-13	STUC4
1846486-14	STUC5
1846486-15	PRG1
1846486-16	PRG2
1846486-17	PRG3
1846486-18	PRG4
1846486-19	PRG5
1846486-20	PRG6
1846486-21	DWJC1
1846486-22	DWJC2
1846486-23	DWJC3
1846486-24	DWJC4
1846486-25	DWJC5
1846486-26	DWJC6

Approved By:



Emma Diaz

Senior Analyst

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 25562

Report Date: 21-Nov-2018

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Project Description: PE4486

1846486-27	DWJC7
1846486-28	DWJC8
1846486-29	DWJC9
1846486-30	DWJC10
1846486-31	SUSP1
1846486-32	SUSP2
1846486-33	SUSP3
1846486-34	SUSP4
1846486-35	SUSP5
1846486-36	SUSP6
1846486-37	STIP1
1846486-38	STIP2
1846486-39	STIP3
1846486-40	STIP4
1846486-41	STIP5
1846486-42	STIP6
1846486-43	STIP7
1846486-44	STIP8
1846486-45	STIP9
1846486-46	STIP10

Certificate of Analysis

Client: Paterson Group Consulting Engineers

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Order Date: 15-Nov-2018

Project Description: PE4486

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1846486-01	14-Nov-18	sample homogenized	Grey	Vinyl Floor Tile	No	Client ID: VFT1 Non-Fibers	100
1846486-02	14-Nov-18	sample homogenized	Grey	Vinyl Floor Tile	No	Client ID: VFT2 Non-Fibers	100
1846486-03	14-Nov-18	sample homogenized	Grey	Vinyl Floor Tile	No	Client ID: VFT3 Non-Fibers	100
1846486-04	14-Nov-18	sample homogenized	Tan	Linoleum Flooring	Yes	Client ID: LIN1 Chrysotile Cellulose Non-Fibers	25 5 70
1846486-05	14-Nov-18					Client ID: LIN2 not analyzed	
1846486-06	14-Nov-18					Client ID: LIN3 not analyzed	
1846486-07	14-Nov-18	sample homogenized	White	Linoleum Flooring	No	Client ID: LIN4 [Z-01a] Cellulose MMVF Non-Fibers Other fibers	25 2 68 5
1846486-08	14-Nov-18	sample homogenized	White	Linoleum Flooring	No	Client ID: LIN5 Cellulose MMVF Non-Fibers Other fibers	25 2 68 5
1846486-09	14-Nov-18	sample homogenized	White	Linoleum Flooring	No	Client ID: LIN6 [Z-01a] Cellulose MMVF Non-Fibers Other fibers	25 2 68 5
1846486-10	14-Nov-18	sample homogenized	White	Stucco	No	Client ID: STUC1 Non-Fibers	100
1846486-11	14-Nov-18	sample homogenized	White	Stucco	No	Client ID: STUC2 Non-Fibers	100
1846486-12	14-Nov-18	sample homogenized	Tan	Stucco	No	Client ID: STUC3 Non-Fibers	100

Certificate of Analysis

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Asbestos, PLM Visual Estimation **MDL - 0.5%**

<i>Paracel I.D.</i>	<i>Sample Dat</i>	<i>Layers Analyzed</i>	<i>Colour</i>	<i>Description</i>	<i>Asbestos Detected:</i>	<i>Material Identification</i>	<i>% Content</i>
1846486-13	14-Nov-18	sample homogenized	Tan/White	Stucco	No	Client ID: STUC4 Non-Fibers	100
1846486-14	14-Nov-18	sample homogenized	White/Tan	Stucco	No	Client ID: STUC5 Non-Fibers	100
1846486-15	14-Nov-18	sample homogenized	Grey	Parging	No	Client ID: PRG1 Non-Fibers	100
1846486-16	14-Nov-18	sample homogenized	Grey	Parging	No	Client ID: PRG2 Non-Fibers	100
1846486-17	14-Nov-18	sample homogenized	Grey	Parging	No	Client ID: PRG3 Non-Fibers	100
1846486-18	14-Nov-18	sample homogenized	Grey	Parging	No	Client ID: PRG4 Non-Fibers	100
1846486-19	14-Nov-18	sample homogenized	Grey	Parging	No	Client ID: PRG5 Non-Fibers	100
1846486-20	14-Nov-18	sample homogenized	Grey	Parging	No	Client ID: PRG6 Non-Fibers	100
1846486-21	14-Nov-18	sample homogenized	White/Grey	Drywall Joint Compound	No	Client ID: DWJC1 Non-Fibers	100 [ASLYR]
1846486-22	14-Nov-18	sample homogenized	White/Grey	Drywall Joint Compound	No	Client ID: DWJC2 Non-Fibers	100 [ASLYR]
1846486-23	14-Nov-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: DWJC3 Non-Fibers	100
1846486-24	14-Nov-18	sample homogenized	Grey	Drywall Joint Compound	No	Client ID: DWJC4 Non-Fibers	100
1846486-25	14-Nov-18	sample homogenized	Grey	Drywall Joint Compound	No	Client ID: DWJC5 Non-Fibers	100
1846486-26	14-Nov-18	sample homogenized	Tan/White	Drywall Joint Compound	Yes	Client ID: DWJC6 Chrysotile Non-Fibers	1 99 [Z-01]
1846486-27	14-Nov-18	sample homogenized	Off-white	Drywall Joint Compound	Yes	Client ID: DWJC7 Chrysotile Non-Fibers	1 99
1846486-28	14-Nov-18	sample homogenized	Grey	Drywall Joint Compound	Yes	Client ID: DWJC8 Chrysotile Non-Fibers	1 99

Certificate of Analysis

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Project Description: **PE4486**

Asbestos, PLM Visual Estimation **MDL - 0.5%**

<i>Paracel I.D.</i>	<i>Sample Dat</i>	<i>Layers Analyzed</i>	<i>Colour</i>	<i>Description</i>	<i>Asbestos Detected:</i>	<i>Material Identification</i>	<i>% Content</i>
1846486-29	14-Nov-18	sample homogenized	Grey	Drywall Joint Compound	Yes	Client ID: DW/C9	
						Chrysotile	1
						Non-Fibers	99
1846486-30	14-Nov-18	sample homogenized	Tan	Drywall Joint Compound	Yes	Client ID: DW/C10	
						Chrysotile	1
						Non-Fibers	99
1846486-31	14-Nov-18	sample homogenized	White/Brown	Ceiling Tile	No	Client ID: SUSP1	[AS-PRE]
						Cellulose	90
						Non-Fibers	10
1846486-32	14-Nov-18	sample homogenized	White/Brown	Ceiling Tile	No	Client ID: SUSP2	[AS-PRE]
						Cellulose	90
						Non-Fibers	10
1846486-33	14-Nov-18	sample homogenized	White/Brown	Ceiling Tile	No	Client ID: SUSP3	[AS-PRE]
						Cellulose	90
						Non-Fibers	10
1846486-34	14-Nov-18	sample homogenized	White/Grey	Ceiling Tile	No	Client ID: SUSP4	
						Cellulose	40
						MMVF	30
						Non-Fibers	30
1846486-35	14-Nov-18	sample homogenized	White/Grey	Ceiling Tile	No	Client ID: SUSP5	
						Cellulose	40
						MMVF	30
						Non-Fibers	30
1846486-36	14-Nov-18	sample homogenized	White/Grey	Ceiling Tile	No	Client ID: SUSP6	
						Cellulose	40
						MMVF	30
						Non-Fibers	30
1846486-37	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP1	
						Non-Fibers	100
1846486-38	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP2	
						Non-Fibers	100
1846486-39	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP3	
						Non-Fibers	100
1846486-40	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP4	
						Non-Fibers	100

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 25562

Report Date: 21-Nov-2018

Order Date: 15-Nov-2018

Project Description: PE4486

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel I.D.	Sample Dat	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1846486-41	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP5 Non-Fibers	100
1846486-42	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP6 Non-Fibers	100
1846486-43	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP7 Non-Fibers	100
1846486-44	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP8 Non-Fibers	100
1846486-45	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP9 Non-Fibers	100
1846486-46	14-Nov-18	sample homogenized	White	Stipple Plaster	No	Client ID: STIP10 Non-Fibers	100

* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

** Analytes in bold indicate asbestos mineral content.

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code	*	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	2 - Ottawa West Lab	200812-0		21-Nov-18

* Reference to the NVLAP term does not permit the user of this report to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Qualifier Notes

Sample Qualifiers :

ASLYR: Layers were noted for this sample, however, the entire sample was homogenized per client request.

AS-PRE: Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis

Z-01: Inseperable tan and white layers

Z-01a: Sample bag contains a second linoleum that appears to be the same as Lin1. Result is for white linoleum only.

Work Order Revisions / Comments

None



Client Name: <u>Patersen Group</u>	Project Reference: <u>PE 4486</u>	Turnaround Time: <input type="checkbox"/> Immediate <input type="checkbox"/> 1 Day <input type="checkbox"/> 4 Hour <input type="checkbox"/> 2 Day <input type="checkbox"/> 8 Hour <input type="checkbox"/> 3 Day <input checked="" type="checkbox"/> Regular
Contact Name: <u>Mark St Pierre</u>	Quote #:	
Address: <u>154 Colomade Rd Sth</u>	PO #: <u>25562</u>	
Telephone: <u>613-226-7381</u>	Email Address: <u>mstpierre@patersengroup.ca</u>	
		Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other Regulatory Guideline: ☒ ON ☐ QC ☐ AB ☐ SK ☐ Other: _____

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Analyses: <input type="checkbox"/> Microscopic Mold <input type="checkbox"/> Culturable Mold <input type="checkbox"/> Bacteria Growth				Asbestos - Bulk			
Paracel Order Number: <u>1846486</u>		Sampling Date	Air Volume (L)	Analysis Required	Identify Distinct Building Materials to Be Analyzed	Combine Identified Materials?	Positive Stop?
Sample ID					* see below	**see below	
1	VFT1	<u>Nov 14, 18</u>		<u>PLM</u>	<u>Vinyl Floor Tile</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	VFT2 } Group				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
3	VFT3 } Group				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4	LIN1				<u>Linoleum Flooring</u>	<input type="checkbox"/> Grp	<input checked="" type="checkbox"/>
5	LIN2 } Group				<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6	LIN3 } Group				<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7	LIN4				↓	<input type="checkbox"/> Grp	<input checked="" type="checkbox"/>
8	LIN5 } Group				<input type="checkbox"/>	<input checked="" type="checkbox"/>	
9	LIN6 } Group				<input type="checkbox"/>	<input checked="" type="checkbox"/>	
10	STUC1				<u>Stucco</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11	STUC2				<input checked="" type="checkbox"/>	<input type="checkbox"/>	
12	STUC3				<input checked="" type="checkbox"/>	<input type="checkbox"/>	

* If left blank, Paracel will analyze all materials identified during analysis ** If left blank, Paracel will analyze all materials as individual samples (at additional cost) per EPA 600/R-93/116

Comments:

Method of Delivery:

Paracel Courier

Relinquished By (Sign): <u>[Signature]</u>	Received at Depot: <u>[Signature]</u>	Received at Lab: <u>Karen Cull</u>	Verified By: <u>Karen Cull</u>
Relinquished By (Print): <u>Mark St Pierre</u>	Date/Time: <u>15/11/18 3:40 PM</u>	Date/Time: <u>Nov 16/18 3:12</u>	Date/Time: _____



Client Name: <u>Paterson Group</u>	Project Reference: <u>PE4486</u>	Turnaround Time: <input type="checkbox"/> Immediate <input type="checkbox"/> 1 Day <input type="checkbox"/> 4 Hour <input type="checkbox"/> 2 Day <input type="checkbox"/> 8 Hour <input type="checkbox"/> 3 Day <input checked="" type="checkbox"/> Regular
Contact Name: <u>Mark St Pierre</u>	Quote #:	
Address: <u>154 Colonnade Rd. Stn</u>	PO #: <u>25562</u>	
Telephone: <u>613-226-7381</u>	Email Address: <u>mstpierre@patersongroup.ca</u>	
		Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other Regulatory Guideline: ☒ ON ☐ QC ☐ AB ☐ SK ☐ Other: _____

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number:				Asbestos - Bulk		
1846486				Identify Distinct Building Materials to Be Analyzed	Combine Identified Materials? **see below	Positive Stop?
Sample ID						
		Sampling Date	Air Volume (L)	Analysis Required	* see below	
1	STUC4	Nov. 14. 18		PLM	Stucco	<input checked="" type="checkbox"/>
2	STUC5				↓	<input checked="" type="checkbox"/>
3	PRG1				Parging	<input type="checkbox"/>
4	PRG2				↓	<input type="checkbox"/>
5	PRG3				↓	<input type="checkbox"/>
6	PRG4				↓	<input type="checkbox"/>
7	PRG5				↓	<input type="checkbox"/>
8	PRG6				↓	<input type="checkbox"/>
9	DWJC1				Drywall Joint Compound	<input checked="" type="checkbox"/>
10	DWJC2				↓	<input checked="" type="checkbox"/>
11	DWJC3				↓	<input checked="" type="checkbox"/>
12	DWJC4				↓	<input checked="" type="checkbox"/>

* If left blank, Paracel will analyze all materials identified during analysis ** If left blank, Paracel will analyze all materials as individual samples (at additional cost) per EPA 600/R-93/116

Comments:		Method of Delivery: <u>Paracel Courier</u>	
Relinquished By (Sign): <u>[Signature]</u>	Received at Depot: <u>A. Drouse</u>	Received at Lab: <u>Karen Cull</u>	Verified By: _____
Relinquished By (Print): <u>Mark St Pierre</u>	Date/Time: <u>15/11/18 3:40 PM</u>	Date/Time: <u>Nov 16/18 2:12</u>	Date/Time: _____



Client Name: <u>Paterson Group</u>	Project Reference: <u>PE 4486</u>	Turnaround Time: <input type="checkbox"/> Immediate <input type="checkbox"/> 1 Day <input type="checkbox"/> 4 Hour <input type="checkbox"/> 2 Day <input type="checkbox"/> 8 Hour <input type="checkbox"/> 3 Day <input checked="" type="checkbox"/> Regular
Contact Name: <u>Mark St Pierre</u>	Quote #:	
Address: <u>154 Colonnade Rd. Sth.</u>	PO #: <u>25562</u>	
Telephone: <u>613-226-7381</u>	Email Address:	
		Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other Regulatory Guideline: ☒ ON ☐ QC ☐ AB ☐ SK ☐ Other: _____

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number:		Asbestos - Bulk				
Sample ID		Sampling Date	Air Volume (L)	Analysis Required	Identify Distinct Building Materials to Be Analyzed * see below	Combine Identified Materials? **see below
1 DWJC 5		Nov 14/18		PLM	Drywall Joint Compound	<input type="checkbox"/>
2 DWJC 6						<input type="checkbox"/>
3 DWJC 7						<input type="checkbox"/>
4 DWJC 8						<input type="checkbox"/>
5 DWJC 9						<input type="checkbox"/>
6 DWJC 10						<input type="checkbox"/>
7 SUSP 1					Ceiling Tile	<input type="checkbox"/>
8 SUSP 2						<input type="checkbox"/>
9 SUSP 3						<input type="checkbox"/>
10 SUSP 4						<input type="checkbox"/>
11 SUSP 5						<input type="checkbox"/>
12 SUSP 6						<input type="checkbox"/>

* If left blank, Paracel will analyze all materials identified during analysis ** If left blank, Paracel will analyze all materials as individual samples (at additional cost) per EPA 600/R-93/116

Comments:		Method of Delivery: <u>Paracel Courier</u>	
Relinquished By (Sign): <u>[Signature]</u>	Received at Depot: <u>M. DELOUSE</u>	Received at Lab: <u>Karen Cull</u>	Verified By:
Relinquished By (Print): <u>Mark St Pierre</u>	Date/Time: <u>15/11/18 3:40 PM</u>	Date/Time: <u>Nov 16/18 2:12</u>	Date/Time:

TRE

Paracel ID: 1846486



aurent Blvd.
o K1G 4J8
947
racellabs.com

Chain of Custody

(Lab Use Only)

№ 31395

Page 4 of 4

Client Name: Patterson Group	Project Reference: PE4486	Turnaround Time: <input type="checkbox"/> Immediate <input type="checkbox"/> 1 Day <input type="checkbox"/> 4 Hour <input type="checkbox"/> 2 Day <input type="checkbox"/> 8 Hour <input type="checkbox"/> 3 Day <input checked="" type="checkbox"/> Regular
Contact Name: Mark StPierre	Quote #:	
Address: 154 Colonnade Rd. Stn.	PO #: 25562	
Telephone: 613-226-7381	Email Address: mstpierre@pattersongroup.ca	
		Date Required: _____


ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other Regulatory Guideline: ☒ ON ☐ QC ☐ AB ☐ SK ☐ Other: _____

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Parcel Order Number: 1846486		Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk		
Sample ID	Identify Distinct Building Materials to Be Analyzed * see below				Combine Identified Materials? **see below	Positive Stop?	
1	STIP1	Nov 14, 18		PM	Stipple Plaster	<input type="checkbox"/>	<input type="checkbox"/>
2	STIP2					<input type="checkbox"/>	<input type="checkbox"/>
3	STIP3					<input type="checkbox"/>	<input type="checkbox"/>
4	STIP4					<input type="checkbox"/>	<input type="checkbox"/>
5	STIP5					<input type="checkbox"/>	<input type="checkbox"/>
6	STIP6					<input type="checkbox"/>	<input type="checkbox"/>
7	STIP7					<input type="checkbox"/>	<input type="checkbox"/>
8	STIP8					<input type="checkbox"/>	<input type="checkbox"/>
9	STIP9					<input type="checkbox"/>	<input type="checkbox"/>
10	STIP10					<input type="checkbox"/>	<input type="checkbox"/>
11						<input type="checkbox"/>	<input type="checkbox"/>
12						<input type="checkbox"/>	<input type="checkbox"/>

* If left blank, Paracel will analyze all materials identified during analysis ** If left blank, Paracel will analyze all materials as individual samples (at additional cost) per EPA 600/R-93/116

Comments:		Method of Delivery:	
		Parcel Courier	
Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
	A. St Gerse	Karen Cull	
Relinquished By (Print):	Date/Time:	Date/Time:	Date/Time:
Mark St Gerse	15/11/18 3:40 PM	Nov 16/18 2:12	

Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Rd South
Nepean, ON K2E 7J5
Attn: Mark St. Pierre

Client PO: 25562
Project: PE4486
Custody: 119367

Report Date: 19-Nov-2018
Order Date: 15-Nov-2018

Order #: 1846462

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
------------	-----------

1846462-01	PT1
1846462-02	PT2
1846462-03	PT3

Approved By:



Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 25562

Report Date: 19-Nov-2018

Order Date: 15-Nov-2018

Project Description: PE4486

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	16-Nov-18	16-Nov-18

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 25562

Report Date: 19-Nov-2018
Order Date: 15-Nov-2018
Project Description: PE4486

Sample Results

Lead				Matrix: Paint
				Sample Date: 14-Nov-18
Paracel ID	Client ID	Units	MDL	Result
1846462-01	PT1	ug/g	20	<20
1846462-02	PT2	ug/g	20	94700
1846462-03	PT3	ug/g	20	<20

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	ND	20	ug/g						
Matrix Duplicate									
Lead	210	20	ug/g	203			3.3	30	
Matrix Spike									
Lead	312		ug/L	102	84.3	70-130			

PARACEL
LABORATORIES LTD.



Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

№ 119367

Page 1 of 1

Client Name: Paterson Group	Project Reference: PE 4486	Turnaround Time: <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Regular Date Required:
Contact Name: Mark St Pierre	Quote #	
Address: 154 Colonnade Road South	PO # 25562	
Telephone: 613-226-7381	Email Address: mstpierre@patersongroup.ca	

Criteria: ☐ O. Reg. 153/04 (As Amended) Table ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: ☐ Other:

Matrix Type: S (Soil/Seal) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses





Paracel Order Number:

[illegible]

Comments:

Method of Delivery:	
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Parace

Relinquished By (Sign): 	Received by Driver/Depot: 	Received at Lab:  pon mai	Verified By: 
Relinquished By (Print): Mark St Pierre	Date/Time: 15/11/18 3:40	Date/Time: Nov 15, 2018 05:05	Date/Time: Nov 15/18 5:49
Date/Time:	Temperature: °C 74	Temperature: °C	pH Verified By: