



Designated Substances Report
177 & 179 Armstrong Street, Ottawa, Ontario
BCE PROJECT NUMBER **18-277**

September 23rd, 2018



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EXECUTIVE SUMMARY

Buller Crichton Environmental Inc. (“BCE”) was retained by Danic Holdings (“Client”), to complete a Pre-Demolition Designated Substance Survey & Report (DSR) at 177 and 179 Armstrong Street in Ottawa, Ontario (“Site”). The survey was completed by BCE on September 4th, 2018.

The DSR included an assessment and sampling for eleven designated substances, as defined in Ontario Regulation 490/09: *Designated Substances* (“O. Reg. 490/09”) made under the Ontario *Occupational Health and Safety Act*, R.S.O. 1990 Chapter O.1, as amended, (“OH&S Act”). Substances surveyed included:

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

This report was prepared for the Client to fulfill the Duty of project owner’s requirement under Section 30 (1) of the OH&S Act, and the requirements of Section 10 of Ontario Regulation 278/05: *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*, as amended (“O. Reg. 278/05”). This report must be provided to contractors prior to demolition work at the Site.

For complete information and findings, as well as the limitations, the reader should read the complete report.

See **Appendix A** for analytical results. See **Appendix B** for photo references.

Asbestos

Based on the results of visual assessment and sample analysis, asbestos-containing materials (“ACMs”) were identified in the following building materials at **179 Armstrong Street**:

- Duct wrap paper identified on the main and second floor, but suspected on ductwork behind walls and ceilings throughout;
- Plaster walls and ceilings throughout the main and second floor;
- Sheet vinyl flooring beneath layers of other non-asbestos flooring materials in the Bathroom on the main floor;
- Window glazing from third floor windows;
- Exterior black caulking; and
- Exterior grey caulking around windows.

Based on the results of visual assessment and sample analysis, asbestos-containing materials (“ACMs”) were identified in the following building materials at **177 Armstrong Street**:

- Plaster with stone inclusions over cinder block on the North, East and West facades of the building exterior; and
- Cement board behind the chip board sign on the building exterior.

Lead

Five (5) samples of primary paint finishes were collected from the **179 Armstrong** with lead identified in all samples. High concentrations were found in the exterior white paint around windows. Low concentrations were identified in interior white, grey and cream paints on walls and ceilings as well as yellow paint in the entrance way and second floor hallway and rooms.

Samples (2) samples of primary paint finishes were collected from the **177 Armstrong** and neither sampled was identified as lead containing.

Based on the results and to be compliant with regulations outlined in the Occupational Health and Safety Act and MOL requirements, protection of workers will be required during any renovation or demolition work taking place at **179 Armstrong**.

Elemental lead is expected in in solder on copper piping and in cast iron bell fittings.

Mercury

Mercury exists in fluorescent light tubes observed within the basement of **179 Armstrong only**. Caution should be exercised to ensure light tubes are not broken during renovations, releasing droplets of mercury.

All mercury-containing fixtures and equipment must be disposed of as prescribed by Ontario Regulation 558/00 – *General - Waste Management*.

Silica

Suspected silica-containing materials were not physically sampled during the DSR as they are known to be present in drywall, concrete, plaster and any other aggregates present at both **177 and 179 Armstrong**.

Other Designated Substances

No other designated substances, as defined in O. Reg. 490/09 under the OH&S Act, were observed at either 177 or 179 Armstrong Street.

Although BCE assessed all physically accessible areas, including destructive techniques, the possibility still exists that concealed materials may be found during any renovation or demolition process.

In the event any additional suspect designated substances are encountered during renovation or demolition activities, work on those materials must stop immediately and remain undisturbed until testing confirms the presence or absence of asbestos or other designated substances.

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1 INTRODUCTION

Buller Crichton Environmental Inc. (“BCE”) was retained by Danic Holdings (“Client”), to complete a Pre-Demolition Designated Substance Survey & Report (DSR) at 177 and 179 Armstrong Street in Ottawa, Ontario (“Site”). The survey was completed by BCE on September 4th, 2018.

The focus of the DSR was the eleven designated substances, as defined in Ontario Regulation 490/09: Designated Substances (“O. Reg. 490/09”) made under the Ontario *Occupational Health and Safety Act*, R.S.O. 1990 Chapter O.1, as amended, (“OH&S Act”). Substances surveyed included acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride.

2 SITE DESCRIPTIONS

179 Armstrong is a three-storey brick structure that is currently unoccupied following a fire. The following describes the structure:

- The roof is a center peaked roof with asphalt shingles;
- The exterior walls are made of brick;
- Flooring includes a mix wood boards on the third floor, hard wood and ceramic tile on the second floor, hardwood, sheet vinyl flooring and vinyl tile on the main floor and concrete in the basement;
- Interior walls are a mix of plaster, wood veneer paneling, wallpaper and painted drywall;
- Ceilings are a mix of open wooden joist work, plaster, wooden boards and drywall; and
- The basement floor is concrete.

177 Armstrong is a one-storey structure that is currently unoccupied. The following describes the structure:

- The roof is a flat roof with rolled shingles over a tar base;
- The exterior walls are made of cinder block coated with a plaster product with stone inclusions on the North, East and West façade and stucco on the South Facade;
- Flooring includes a mixture of hardwood and plywood with bare concrete in the basement;
- Interior walls are drywall and basement walls are open; and
- Ceilings are a combination of drywall and 1 X 1 ceiling tiles.

3 SCOPE OF WORK

BCE’s scope of services was limited to the following:

1. Reviewing both 177 and 179 Armstrong Street to identify any building materials suspected of containing designated substances prior to renovation.
2. Collecting samples of accessible building materials that area suspected to contain asbestos and lead for laboratory analysis by an independent, third party accredited laboratory.
3. Providing a comprehensive summary report of designated substances identified at the Site with recommendations for removal and/or management as required.

4 REGULATIONS and GUIDELINES

4.1 Designated Substances - OH&S Act, R.S.O. 1990, c. O.1

Section 30 of the *Occupational Health & Safety Act* (OH&S Act) requires that a document summarizing the presence of these designated substances must be available to contractors and subcontractors requesting tenders, prior to beginning a construction project (including building renovation or demolition). This report serves that purpose. *However, scaled drawings and contract specifications are still required should this job be tendered to multiple contractors.*

4.1.1 Asbestos

Ontario Regulation 278/05 – Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations and made under the OH&S Act, outlines specific procedures for identifying asbestos in buildings and on construction sites. In addition, it outlines requirements for their removal and / or re-assessment and management depending on whether any identified materials are to remain in the building. ACM in good condition can remain in the building if it is managed as prescribed in this regulation, including but not limited to implementation of an Asbestos Management Plan (AMP), annual condition assessment, notification to tenants and training for specified workers. However, any asbestos-containing materials (ACM) must be removed prior to disturbance as a result of renovations and / or demolition of the Site.

R.R.O. 2000, *Regulation 558 General – Waste Management* as amended (“Reg. 558”), made under the *Ontario Environmental Protection Act*, R.S.O. 1990, Chapter E.19, as amended (“EPA”) sets out requirements for general waste management including ACM. This regulation requires the disposal of asbestos waste in double sealed containers (e.g. a six-mil polyethylene bag or hard plastic barrel), properly labelled and free of cuts, tears or punctures. The waste must be disposed of in a licensed waste facility which has been properly notified of the presence of asbestos waste.

4.1.2 Lead

Ontario Regulation 490/09 – Designated Substances (O. Reg. 490/09), as amended regulates lead exposure in the work environment. Apart from construction sites, this regulation is enforceable at all work sites in Ontario. Lead on construction sites is regulated through *Ontario Regulation 833 – Control of Exposure to Biological or Chemical Exposure (O. Reg 833)* as well as through the Ministry of Labour (MOL) Guideline – *Lead on Construction Projects* (revised in April 2011) and enforceable through section 25 (2) (h) of the OH&S Act.

The MOL does not recognize a criteria or threshold above which a paint is considered lead-containing. As a result, the MOL and BCE considers the presence of any detectable concentration of lead in a paint or coating as a lead-containing material (“LCM”).

Disposal of lead must be conducted in accordance with the requirements of *Reg. 558 General – Waste Management*.

4.1.3 Mercury

Ontario Regulation 490/09 – Designated Substances (O. Reg. 490/09), as amended regulates mercury exposure in the work environment. Except for construction sites, this regulation is enforceable at all work sites in Ontario. Mercury on construction sites is regulated through Ontario Regulation 833 – Control of Exposure to Biological or Chemical Exposure (O. Reg 833).

Disposal of materials containing mercury shall be done in accordance with Reg. 558 General – Waste Management.

4.1.4 Silica

Ontario Regulation 490/09 – Designated Substances (O. Reg. 490/09), as amended regulates silica exposure in the work environment. Except for construction sites, this regulation is enforceable at all work sites in Ontario. Exposure to silica on construction sites can happen through the inhalation of dust created from the disturbance of concrete, drywall, ceiling tiles, mortars etc. As a result, airborne exposure to silica on construction sites is regulated through Ontario Regulation 833 – Control of Exposure to Biological and Chemical Agents (O.Reg 833). In addition, the Ministry of Labour (MOL) Guideline – Silica on Construction Projects (revised in April 2011) outlines ways to reduce exposure and protect workers on construction sites. This guideline is enforceable through section 25 (2) (h) of the OH&S Act.

Further to the above, in Ontario, the Ministry of Labour (MOL) recognized this and in September of 2000 issued an alert regarding mould titled “Mould in Workplace Buildings”. This alert outlined potential health effects caused by mould exposure, causes of mould growth in buildings and the need to properly remediate mould-contaminated building materials. The requirement for employers to provide a safe and healthy workplace for all employees was indicated by the MOL within this alert by citing section 25(2)(h) of the Occupational Health and Safety Act, which states that employers are required to take every precaution reasonable in the circumstances for the protection of workers. This includes protecting workers from mould in workplace buildings.

4.2 Waste Management

The disposal of designated substances is regulated under the *Ontario Environmental Protection Act*, specifically O. Reg. 558/00, *General – Waste Management*, as amended. Regulation 558 is part of the Environmental Protection Act (EPA), an Ontario provincial legislation. The regulation focuses on waste management as a way to protect public health and safety by tracking disposal of hazardous and non-hazardous waste. It covers *waste generator* (the company that produces the waste), *carrier* (the company that transports the waste) and *receiver* (the company that takes the waste) requirements.

5 METHODOLOGY

Site sampling and assessment was completed on September 4th, 2018 by Jeremy Rhoades and James Crichton of BCE.

5.1 Designated Substances

5.1.1 Asbestos

5.1.1.1 Friability

O. Reg 278/05 requires that asbestos-containing materials (ACMs) be classified according to their friability. The classification is either designated as friable or non-friable. Friable products are those which can easily be crumbled by hand and release asbestos fibres into the air presenting a risk of inhalation exposure to those around. Non-friable products are not easily crumbled by hand and as a result less likely to release airborne asbestos fibres. However, precautions are important as non-friable ACMs can still release fibres when sanded, cut, abraded or drilled, especially with power tools.

5.1.1.2 Homogeneous Materials

Homogenous materials are those that are uniform in colour and texture. Homogeneous materials were assumed to be similar in content. Samples were randomly collected to be representative of each suspect asbestos containing material and then assigned a homogenous material number accordingly.

5.1.1.3 Sampling and Analysis

Building materials suspected of containing asbestos were sampled in a manner to ensure that adequate sample volume was collected. Locations of materials sampled were documented and an indication of whether the material was friable or not was documented.

The number of samples collected for each suspect material was completed as prescribed by O. Reg. 278/05 and detailed below in Table 1 – Material Sampling Requirements.

Table 1: Material Sampling Requirements – O. Reg 278/05

Type of Material	Size of Area of Homogeneous Material	Minimum Number of Samples
Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise. Examples include acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 m ² (969 ft ²)	3
	90 or more m ² , but less than 450 m ² (4,844 ft ²)	5
	450 or more m ² (more than 4,844 ft ²)	7
Thermal insulation, except as described below	Any size	3
Thermal insulation patch	Less than 2 linear meters (6.6 ft.) or 0.5 m ² (approximately 5.4 ft ²)	1
Any other material	Any size	3

Samples of suspected ACMs were submitted to an independent accredited laboratory (Paracel Laboratories Inc.) of Ottawa, Ontario for asbestos content analysis. Paracel is a fully accredited facility

for asbestos analysis. Polarized Light Microscopy was completed in accordance with U.S. Environmental Protection Agency (“EPA”) methodologies and dispersion staining techniques (EPA 600/R-93/116).

Materials are defined as asbestos-containing if they are more than 0.5% asbestos by dry weight. Less than this amount is not considered to be an asbestos-containing material in the province of Ontario.

5.1.2 Lead

Samples of the primary interior finishes was collected using destructive means (i.e. a razor scraper) to ensure that adequate sample volume was collected. In addition, any suspected lead products that could not be sampled were visually assessed and documented (e.g. lead in pipe solder, lead in cast-iron pipe fittings and lead in emergency lighting batteries).

The Occupational Exposure Limit – Time Weighted Average (OEL-TWA) of a worker to lead dust is to be maintained at the lowest practical level with a view to achieving an ambient air concentration lower than 0.05 mg/m³.

5.1.3 Mercury

Mercury was not physically sampled as part of the assessment but was visually assessed and documented where noted. In a building environment, this typically includes mercury vials in older thermostats, mercury vapour in fluorescent light tubes and metal halide lamps. The elemental mercury in the thermostat vials and light tubes presents an occupational exposure risk to workers when the glass is broken and the liquid and / or vapour is released.

5.1.4 Silica

Silica is ubiquitous in our environment and present in numerous building products including, but not limited to, concrete, drywall, plaster, ceiling tiles, and mortar. The silica in these products is confined within the substrate of the material and therefore does not pose a hazard unless released and inhaled by an individual. As a result, it is not possible to sample the silica without causing a significant amount of disturbance. Therefore, BCE visually assessed and documented these materials where noted.

The Occupational Exposure Limit – Time Weighted Average (OEL-TWA) of a worker to silica dust is to be maintained at the lowest practical level with a view to achieving an ambient air concentration lower than 0.10 mg/m³ of air for quartz and Tripoli, and 0.05 mg/m³ of air for cristobalite and tridymite.

6 RESULTS AND DISCUSSION

Based on the visual assessment and sampling, the following is a summary of the results.

6.1 Designated Substances

6.1.1 Asbestos-Containing Materials

A total of twenty-seven (27) homogenous building materials were sampled from accessible building materials at both properties for a total of eighty-six (86) samples and submitted for asbestos content analysis.

6.1.2 Friable Asbestos-Containing Materials

Friable ACMs were identified, as follows:

- 1) Duct wrap paper on the main and second floor, but suspected throughout the building, at **179 Armstrong Street** was identified to contain 60% Chrysotile asbestos;
- 2) Paper backing behind sheet vinyl flooring in the main floor bathroom at **179 Armstrong Street** was identified to contain 2% Chrysotile asbestos.
 - a. This paper backing behind sheet vinyl flooring is beneath a top layer of non-asbestos containing sheet flooring.

6.1.3 Non-Friable Asbestos-Containing Materials

Non-friable ACMs were identified, as follows:

- 1) Plaster walls and ceilings throughout the main and second floor of **179 Armstrong Street** were identified to contain 1% Chrysotile asbestos.
- 2) Window glazing from third floor windows of **179 Armstrong Street** was identified to contain 1% Chrysotile asbestos.
- 3) Exterior black caulking from **179 Armstrong Street** was identified to contain 15% Chrysotile asbestos.
- 4) Exterior grey caulking around windows at **179 Armstrong Street** was identified to contain 15% Chrysotile asbestos.
- 5) Exterior cement board behind the chipboard sign at **177 Armstrong Street** was identified to contain 20% Chrysotile asbestos.
- 6) Exterior plaster with stone inclusions over cinder block walls on the North, East and West facades at **177 Armstrong Street** was identified to contain 1% Chrysotile asbestos.

6.1.4 Presumed Asbestos-Containing Materials

- 1) Cast Iron Bell Fitting Rope Caulking
 - a. A presumed asbestos-containing material (PACM) in the form of cast iron bell fitting rope caulking was identified throughout the basement of **both 177 & 179 Armstrong Street**. The noted material could not be sampled as sampling may break the joint seal. The noted material is known to contain >0.5% Amosite asbestos and must be treated as an ACM.
 - i. Approximately six (6) large and nine (9) small bell fittings at **177 Armstrong** and twenty-one (21) small bell fittings at **179 Armstrong** were identified.

A summary of the materials analyzed for this survey are presented in Table 2 below. Shaded rows identify locations with asbestos containing materials.

Table 2: Results of Bulk Material Asbestos Analysis for Both 177 & 179 Armstrong Street

Sample Reference	Material Description / Location	Results	Friable (Y/N)
179 Armstrong Street			
AS-01A	Duct Wrap Paper / Observed in Main & Second Floor – Suspected Throughout	60% CHRYSOTILE	Y
AS-02A	Plaster (base and skim coat combined) / Walls and Ceilings Throughout	1% CHRYSOTILE	N
AS-03A	Sheet Vinyl Flooring Material Beneath Layers of Floor/ Second Floor Bathroom	2% CHRYSOTILE	N
AS-04A-04C	Sheet Vinyl Flooring & Black Mastic / Kitchen	No asbestos detected in samples	N/A
AS-05A-05E	Mortar Bed for Ceramic Tile / Second Floor Bathroom	No asbestos detected in samples	N/A
AS-06A-06B	Window Glazing / Third Floor Windows	No asbestos detected in samples	N
AS-07A-07C	Pressed Wallpaper / Second Floor Bathroom	No asbestos detected in samples	N
AS-08A	Black Caulking / Exterior	15% CHRYSOTILE	N
AS-09A	Grey Caulking / Exterior Side of Windows	15% CHRYSOTILE	N
AS-10A-10C	Textured Plaster / Second Floor Living Room	No asbestos detected in samples	N/A
AS-11A-11C	Tar Paper – Beneath Wood Siding at Rear	No asbestos detected in samples	N/A
AS-12A-12C	Brick Mortar / Exterior	No asbestos detected in samples	N/A
AS-13A-13C	Stone Mortar / Exterior	No asbestos detected in samples	N/A
AS-14A-14C	Mixed Foundation Mortar / Exterior	No asbestos detected in samples	N/A
AS-15A-15C	Fibrous Furnace Panel Gasket / Furnace	No asbestos detected in samples	N/A
AS-25A-25C	Brown Roof Shingles / Exterior	No asbestos detected in samples	N/A
AS-26A-26C	Brown Caulking / Exterior	No asbestos detected in samples	N/A
177 Armstrong Street			
AS-16A-16C	1 X 1 Ceiling Tile / Main Room – Ground Floor	No asbestos detected in samples	N/A
AS-17A-17C	Drywall Joint Compound / Walls & Ceilings	No asbestos detected in samples	N/A

AS-18A-18C	Ceramic Tile Mortar - Grout Bed / Tile on Landing to Basement	No asbestos detected in samples	N/A
AS-19A-19C	Base and Top Coat Stucco / Exterior South Facade	No asbestos detected in samples	N/A
AS-20A-20C	Plaster with Stone Inclusions Over Cinder Block / Exterior North, East & West Facade	1% CHRYSOTILE	N
AS-21A-21C	Rolled Shingle Roof / Exterior Roof	No asbestos detected in samples	N/A
AS-22A-22C	Tar Beneath Rolled Shingle Roof / Exterior Roof	No asbestos detected in samples	N/A
AS-23A-23C	Cement Board / Exterior Behind Painted Chipboard Sign	20% CHRYSOTILE	N
AS-24A-24C	Various Caulking / Exterior	No asbestos detected in samples	N/A
AS-27-A-27C	Black Caulking / Roof - Exterior	No asbestos detected in samples	N/A

NA = Not applicable as material is not asbestos-containing

MDL = Method Detection Limit

Laboratory analytical reports are included within **Appendix A**.

Note: If additional materials suspected to contain designated substances that were not previously visible / uncovered are encountered during the demolition activities that are not included in this report, work must be stopped, and further investigation be conducted at that time. In the case that suspected ACMs cannot be tested, they must be treated as ACMs until proven otherwise.

6.1.5 Lead-Containing Materials

Seven (7) samples of primary interior paint finishes were collected from the building with lead identified in all samples. High concentrations were found in the exterior paints. Medium concentrations were found in three of the interior paints on the main level. A summary of the materials analyzed for this survey is presented in Table 3 below. Shaded rows identify locations with lead containing paints.

Table 3: Results of Bulk Material Lead Analysis

Sample Reference	Material Description / Location	Results ug/g
179 Armstrong Street		
LS – 01	White Paint / Third Floor Window Sill	384,000
LS – 02	White Paint / Third Floor Interior	91
LS – 03	Grey Paint / Second Floor	582
LS – 04	Yellow Paint / Entry Area & Second Floor Hall / Bedrooms	1,720
LS – 05	Cream Paint / Throughout	863
177 Armstrong Street		
LS – 06	White Paint / Interior Throughout	<20
LS – 07	Orange Paint / Interior Throughout	<20

Five (5) samples of primary paint finishes were collected from the **179 Armstrong** with lead identified in all samples. High concentrations were found in the exterior white paint around windows. Low concentrations were identified in interior white, grey and cream paints on walls and ceilings as well as yellow paint in the entrance way and second floor hallway and rooms.

Samples (2) samples of primary paint finishes were collected from the **177 Armstrong** and neither sampled was identified as lead containing.

Based on the results and to be compliant with regulations outlined in the Occupational Health and Safety Act and MOL requirements, protection of workers will be required during any renovation or demolition work taking place at **179 Armstrong**.

Lead may be present in solder on copper piping and is expected present in cast iron bell fittings.

6.1.6 Mercury

Mercury exists in fluorescent light tubes observed on the basement of **179 Armstrong Street**. Caution should be exercised to ensure light tubes are not broken during renovations, releasing droplets of mercury.

All mercury-containing fixtures and equipment must be disposed of as prescribed by Ontario Regulation 558 – *General - Waste Management*.

6.1.7 Silica

Silica was not physically sampled during the assessment as it would cause damage to either site. Silica is presumed to be present in the concrete and other such aggregates used to construct the Site. Silica-containing materials were observed to be in good condition at the time of the assessment.

6.1.8 Other Designated Substances

No other designated substances, as defined in O. Reg. 490/09 under the OH&S Act, were observed at the Site.

7 RECOMMENDATIONS

7.1 General Recommendations

Based on the findings, the **general recommendations** are:

1. This report must be provided to contractors prior to conducting demolition or renovation work at the Site. A copy of the survey must be immediately available at the Site whenever workers are present. Further, contractors shall have an exposure control plan in place for each designated substance identified in this report as being in way of the planned work.
2. Work must STOP if additional suspect materials are encountered during renovations and/or demolition activities. These suspect materials must be left undisturbed until testing determines the presence or absence of asbestos or other hazardous materials. In addition, work must also STOP in the event these suspect materials are disturbed inadvertently.

Based on the findings, the **designated substance specific recommendations** are:

7.2 Designated Substances

7.2.1 Asbestos

Prior to demolition, all ACMs must be removed from the Site following procedures as prescribed in Ontario Regulation 278 / 05 – Designated Substance – Asbestos on Construction Sites and in Buildings and Repair Operations (O. Reg. 278 / 05).

If removed, material specific recommendations are detailed in **Table 4 – Asbestos Containing Materials Removal Recommendations**.

Table 4: ACMs – Removal Recommendations

Prior to demolition, the following recommendations, as outlined in Ontario Regulation 278/05 apply:

Asbestos Containing Material	Material Location	Recommendations (per O. Reg 278/05)
179 Armstrong		
1) Duct Paper Wrap	Observed in Main & Second Floor – Suspected Throughout	1) Type 2 precautions if completed with HEPA equipped power tools or hand tools OR 2) Type 3 precautions if removed with power tools without HEPA attachments.

2) Plaster (base and skim coat combined)	Walls and Ceilings Throughout	1) Type 2 precautions if completed with HEPA equipped power tools or hand tools OR 2) Type 3 precautions if removed with power tools without HEPA attachments.
3) Paper Backing Beneath Sheet Vinyl Flooring	Beneath Layers of Floor/ Second Floor Bathroom	1) Type 2 precautions if completed with HEPA equipped power tools or hand tools OR 2) Type 3 precautions if removed with power tools without HEPA attachments.
4) Black Caulking	Exterior	1) Type 1 precautions if completed with hand tools OR 2) Type 2 precautions if completed with HEPA equipped power tools OR 3) Type 3 precautions if removed with power tools without HEPA attachments.
5) Grey Caulking	Exterior Side of Windows	1) Type 1 precautions if completed with hand tools OR 2) Type 2 precautions if completed with HEPA equipped power tools OR 3) Type 3 precautions if removed with power tools without HEPA attachments.
177 Armstrong		
6) Plaster with Stone Inclusions Over Cinder Block	Exterior North, East & West Facade	1) Type 2 precautions if completed with HEPA equipped power tools or hand tools OR 2) Type 3 precautions if removed with power tools without HEPA attachments.
7) Cement Board	Exterior Behind Painted Chipboard Sign	1) Remove following Type 1 precautions if completed with hand tools OR 2) Type 2 precautions if completed with HEPA equipped power tools OR 3) Type 3 precautions if removed with power tools without HEPA attachments.
8) Bell Fittings	Viewed from Basement / Likely in a Few Locations Behind Walls	1) Cut on either side of fitting following Type 1 precautions and dispose of entire fitting as asbestos containing waste.

7.2.2 Mercury

Best management practices dictate that the mercury containing tubes, fixtures and equipment must be returned to a participating recycling centre or picked up and disposed of by a licensed hazardous materials contractor.

7.2.3 Lead & Silica Exposure

Silica is expected to be present in plaster, bricks, mortars, drywall, ceiling tiles and concrete throughout the Site and can become airborne during renovation or demolition activities. Lead was identified in five (5) various paint finishes at **179 Armstrong Street** and is expected present in pipe

solder and cast-iron fittings. The following recommendations are made with respect to silica and lead during demolition activities.

- 1) All work should be completed with procedures as described in the Ministry of Labour Guidelines – *Silica on Construction Projects, 2011* and *Lead on Construction Projects, 2011*.
- 2) All workers present on site during demolition activities should be trained against the hazards of silica and lead exposure and provided with a respirator with P-100 High Efficiency Particulate Air (HEPA) filtration that is personally fit tested to the worker wearing it.
- 3) Water and ventilation should be used to keep dust levels to a minimum.
- 4) The work area should be isolated with banner tape warning of the hazards of silica and lead exposure. Workers within this isolated work area should be wearing the required personal protective equipment.
- 5) No dry sweeping or use of compressed air should be use during clean-up activities. Instead, HEPA filtered vacuums and wet sweeping should be used.
- 6) Workers should wash their hands and face prior to leaving Site to avoid the spread of silica and lead dust and continued inhalation when not on Site.

7.2.4 Other Designated Substances

The following Designated Substances do not require any action and are not addressed in this section:

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

8 LIMITATIONS

This report was prepared for the exclusive use of the Client. This report is based on data and information collected during the Site visit conducted September 4th, 2018 by BCE Inc. as described in this report.

The conclusions and recommendations contained in this report are based upon professional opinions regarding the subject matter. These opinions are in accordance with currently accepted environmental assessment standards and practices applicable to these locations and are subject to the following inherent limitations:

The data and findings presented in this report are valid as of the date of the investigation. The passage of time, manifestation of latent conditions or occurrence of future events may warrant

further exploration at the properties, analysis of the data, and re-evaluation of the findings, observations, and conclusions expressed in this report.

The findings, observations and conclusions expressed by BCE in this report are not, and should not be considered, an opinion concerning compliance of any past or present owner or operator of the building with any federal, provincial or local laws or regulations.

Additional Designated Substances not identified in this report may become evident during demolition activities. Should additional information become available, BCE requests that this information be brought to our attention so that we may re-assess the conclusions presented herein. All quantities contained in this report are approximate and based on visual observations made in accessible areas.

Although effort was made to expose and sample potential designated substances, there is a possibility that additional concealed substances/materials may be present beneath existing flooring, behind wall cavities, roof systems, above ceilings, and any other inaccessible areas such as pipe chases at the Site.

Should further designated substances be encountered during any renovation or demolition activities, those materials must be managed in accordance with applicable regulations.

9 CLOSURE

If you have any questions or require any further information, please feel free to contact the undersigned. Thank you for the opportunity to be of service. We look forward to working with you again.

BULLER CRICHTON ENVIRONMENTAL INC.

Completed by:



Jeremy Rhoades,
Environmental Health and
Safety Technician



James Crichton HBSc., CIH
Partner

Appendix A:

Laboratory Results

Certificate of Analysis

Buller Crichton Environmental Inc.

61 Rosemount Avenue
Ottawa, ON K1Y 1P3
Attn: Jeremy Rhoades

Client PO: 18-277

Project: 18-277

Custody: 29454

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Order #: 1836223

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

Paracel ID	Client ID
1836223-01	AS-01A
1836223-02	AS-01B
1836223-03	AS-01C
1836223-04	AS-02A
1836223-05	AS-02B
1836223-06	AS-02C
1836223-07	AS-02D
1836223-08	AS-02E
1836223-09	AS-03A
1836223-10	AS-03B
1836223-11	AS-03C
1836223-12	AS-04A
1836223-13	AS-04B
1836223-14	AS-04C
1836223-15	AS-04A
1836223-16	AS-04B
1836223-17	AS-04C
1836223-18	AS-05A
1836223-19	AS-05B
1836223-20	AS-05C
1836223-21	AS-06A
1836223-22	AS-06B
1836223-23	AS-06C
1836223-24	AS-07A
1836223-25	AS-07B
1836223-26	AS-07C

Approved By:



Heather S.H. McGregor, BSc

Laboratory Director - Microbiology

Certificate of Analysis

Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

1836223-27	AS-08A
1836223-28	AS-08B
1836223-29	AS-08C
1836223-30	AS-09A
1836223-31	AS-09B
1836223-32	AS-09C
1836223-33	AS-10A
1836223-34	AS-10B
1836223-35	AS-10C
1836223-36	AS-11A
1836223-37	AS-11B
1836223-38	AS-11C
1836223-39	AS-12A
1836223-40	AS-12B
1836223-41	AS-12C
1836223-42	AS-13A
1836223-43	AS-13B
1836223-44	AS-13C
1836223-45	AS-14A
1836223-46	AS-14B
1836223-47	AS-14C
1836223-48	AS-15A
1836223-49	AS-15B
1836223-50	AS-15C
1836223-51	AS-16A
1836223-52	AS-16B
1836223-53	AS-16C
1836223-54	AS-17A
1836223-55	AS-17B
1836223-56	AS-17C
1836223-57	AS-18A
1836223-58	AS-18B
1836223-59	AS-18C
1836223-60	AS-19A
1836223-61	AS-19B
1836223-62	AS-19C
1836223-63	AS-20A
1836223-64	AS-20B
1836223-65	AS-20C
1836223-66	AS-21A
1836223-67	AS-21B
1836223-68	AS-21C
1836223-69	AS-22A
1836223-70	AS-22B

Certificate of Analysis

Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

1836223-71	AS-22C
1836223-72	AS-23A
1836223-73	AS-23B
1836223-74	AS-23C
1836223-75	AS-24A
1836223-76	AS-24B
1836223-77	AS-24C
1836223-78	AS-25A
1836223-79	AS-25B
1836223-80	AS-25C
1836223-81	AS-26A
1836223-82	AS-26B
1836223-83	AS-26C
1836223-84	AS-27A
1836223-85	AS-27B
1836223-86	AS-27C

Certificate of Analysis

Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

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

<i>Paracel I.D.</i>	<i>Sample Date</i>	<i>Layers Analyzed</i>	<i>Colour</i>	<i>Description</i>	<i>Asbestos Detected:</i>	<i>Material Identification</i>	<i>% Content</i>
1836223-01	04-Sep-18	sample homogenized	Grey	Duct Wrap Paper	Yes	Client ID: AS-01A	
						Chrysotile	60
						Cellulose	20
						Non-Fibers	20
1836223-02	04-Sep-18					Client ID: AS-01B	
						not analyzed	
1836223-03	04-Sep-18					Client ID: AS-01C	
						not analyzed	
1836223-04	04-Sep-18	sample homogenized	White/Grey	Plaster- Base + Skim	Yes	Client ID: AS-02A	[ASLYR]
						Chrysotile	1
						Cellulose	1
						Non-Fibers	98
1836223-05	04-Sep-18					Client ID: AS-02B	
						not analyzed	
1836223-06	04-Sep-18					Client ID: AS-02C	
						not analyzed	
1836223-07	04-Sep-18					Client ID: AS-02D	
						not analyzed	
1836223-08	04-Sep-18					Client ID: AS-02E	
						not analyzed	
1836223-09	04-Sep-18	sample homogenized	y/White/Yellow/	Combined Vinyl Flooring	Yes	Client ID: AS-03A	[ASLYR]
						Chrysotile	2
						Cellulose	15
						Non-Fibers	83
1836223-10	04-Sep-18					Client ID: AS-03B	
						not analyzed	
1836223-11	04-Sep-18					Client ID: AS-03C	
						not analyzed	
1836223-12	04-Sep-18	sample homogenized	Grey	Sheet Vinyl Flooring	No	Client ID: AS-04A	
						Cellulose	30
						Non-Fibers	70
1836223-13	04-Sep-18	sample homogenized	Grey	Sheet Vinyl Flooring	No	Client ID: AS-04B	
						Cellulose	30
						Non-Fibers	70

Certificate of Analysis

Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

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

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1836223-14	04-Sep-18	sample homogenized	Grey	Sheet Vinyl Flooring	No	Client ID: AS-04C	
						Cellulose	30
						Non-Fibers	70
1836223-15	04-Sep-18	sample homogenized	Black	Mastic	No	Client ID: AS-04A	
						Non-Fibers	100
1836223-16	04-Sep-18	sample homogenized	Black	Mastic	No	Client ID: AS-04B	
						Non-Fibers	100
1836223-17	04-Sep-18	sample homogenized	Black	Mastic	No	Client ID: AS-04C	
						Non-Fibers	100
1836223-18	04-Sep-18	sample homogenized	Grey	Mortar Bed for Ceramic Tile	No	Client ID: AS-05A	
						Non-Fibers	100
1836223-19	04-Sep-18	sample homogenized	Grey	Mortar Bed for Ceramic Tile	No	Client ID: AS-05B	
						Non-Fibers	100
1836223-20	04-Sep-18	sample homogenized	Grey	Mortar Bed for Ceramic Tile	No	Client ID: AS-05C	
						Non-Fibers	100
1836223-21	04-Sep-18	sample homogenized	Off-white	Window Glazing	No	Client ID: AS-06A	
						Non-Fibers	100
1836223-22	04-Sep-18	sample homogenized	White	Window Glazing	Yes	Client ID: AS-06B	
						Chrysotile	1
						Non-Fibers	99
1836223-23	04-Sep-18					Client ID: AS-06C	
						not analyzed	
1836223-24	04-Sep-18	sample homogenized	Blue	Pressed Wallpaper	No	Client ID: AS-07A	
						Cellulose	75
						Non-Fibers	25
1836223-25	04-Sep-18	sample homogenized	Blue	Pressed Wallpaper	No	Client ID: AS-07B	
						Cellulose	75
						Non-Fibers	25
1836223-26	04-Sep-18	sample homogenized	Blue	Pressed Wallpaper	No	Client ID: AS-07C	
						Cellulose	75
						Non-Fibers	25
1836223-27	04-Sep-18	sample homogenized	Black	Caulking	Yes	Client ID: AS-08A	
						Chrysotile	15
						Non-Fibers	85

Certificate of Analysis

Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

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

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1836223-28	04-Sep-18					Client ID: AS-08B not analyzed	
1836223-29	04-Sep-18					Client ID: AS-08C not analyzed	
1836223-30	04-Sep-18	sample homogenized	Grey	Caulking	Yes	Client ID: AS-09A Chrysotile Non-Fibers	15 85
1836223-31	04-Sep-18					Client ID: AS-09B not analyzed	
1836223-32	04-Sep-18					Client ID: AS-09C not analyzed	
1836223-33	04-Sep-18	sample homogenized	White/Grey	Textured Plaster	No	Client ID: AS-10A [ASLYR] Non-Fibers Other fibers	98 2
1836223-34	04-Sep-18	sample homogenized	White/Grey	Textured Plaster	No	Client ID: AS-10B [ASLYR] Non-Fibers Other fibers	98 2
1836223-35	04-Sep-18	sample homogenized	White/Grey	Textured Plaster	No	Client ID: AS-10C [ASLYR] Non-Fibers Other fibers	98 2
1836223-36	04-Sep-18	sample homogenized	Black	Tar Paper	No	Client ID: AS-11A Cellulose Non-Fibers Other fibers	30 65 5
1836223-37	04-Sep-18	sample homogenized	Black	Tar Paper	No	Client ID: AS-11B Cellulose Non-Fibers Other fibers	30 65 5
1836223-38	04-Sep-18	sample homogenized	Black	Tar Paper	No	Client ID: AS-11C Cellulose Non-Fibers Other fibers	30 65 5
1836223-39	04-Sep-18	sample homogenized	Grey	Brick Mortar	No	Client ID: AS-12A Non-Fibers	100

Certificate of Analysis
Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

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

<i>Parcel I.D.</i>	<i>Sample Date</i>	<i>Layers Analyzed</i>	<i>Colour</i>	<i>Description</i>	<i>Asbestos Detected:</i>	<i>Material Identification</i>	<i>% Content</i>
1836223-40	04-Sep-18	sample homogenized	Grey	Brick Mortar	No	Client ID: AS-12B	
						Non-Fibers	100
1836223-41	04-Sep-18	sample homogenized	Grey	Brick Mortar	No	Client ID: AS-12C	
						Non-Fibers	100
1836223-42	04-Sep-18	sample homogenized	Cream	Foundation Stone Mortar	No	Client ID: AS-13A	
						Non-Fibers	100
1836223-43	04-Sep-18	sample homogenized	Cream	Foundation Stone Mortar	No	Client ID: AS-13B	
						Non-Fibers	100
1836223-44	04-Sep-18	sample homogenized	Cream	Foundation Stone Mortar	No	Client ID: AS-13C	
						Non-Fibers	100
1836223-45	04-Sep-18	sample homogenized	Grey	Mixed Foundation Stone Mortar	No	Client ID: AS-14A	
						Non-Fibers	100
1836223-46	04-Sep-18	sample homogenized	Grey	Mixed Foundation Stone Mortar	No	Client ID: AS-14B	
						Non-Fibers	100
1836223-47	04-Sep-18	sample homogenized	Grey	Mixed Foundation Stone Mortar	No	Client ID: AS-14C	
						Non-Fibers	100
1836223-48	04-Sep-18	sample homogenized	Brown	Fibrous Furnace Panel Gasket	No	Client ID: AS-15A	
						MMVF	85
						Non-Fibers	15
1836223-49	04-Sep-18	sample homogenized	Brown	Fibrous Furnace Panel Gasket	No	Client ID: AS-15B	
						MMVF	85
						Non-Fibers	15
1836223-50	04-Sep-18	sample homogenized	Brown	Fibrous Furnace Panel Gasket	No	Client ID: AS-15C	
						MMVF	85
						Non-Fibers	15
1836223-51	04-Sep-18	sample homogenized	White	Ceiling Tile	No	Client ID: AS-16A	[AS-PRE]
						Cellulose	90
						Non-Fibers	10
1836223-52	04-Sep-18	sample homogenized	White	Ceiling Tile	No	Client ID: AS-16B	[AS-PRE]
						Cellulose	90
						Non-Fibers	10
1836223-53	04-Sep-18	sample homogenized	White	Ceiling Tile	No	Client ID: AS-16C	[AS-PRE]
						Cellulose	90
						Non-Fibers	10

Certificate of Analysis
Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

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

<i>Paracel I.D.</i>	<i>Sample Date</i>	<i>Layers Analyzed</i>	<i>Colour</i>	<i>Description</i>	<i>Asbestos Detected:</i>	<i>Material Identification</i>	<i>% Content</i>
1836223-54	04-Sep-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: AS-17A	
						Non-Fibers	100
1836223-55	04-Sep-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: AS-17B	
						Non-Fibers	100
1836223-56	04-Sep-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: AS-17C	
						Non-Fibers	100
1836223-57	04-Sep-18	sample homogenized	Brown/Grey	Ceramic Tile Mortar/Grout	No	Client ID: AS-18A	[ASLYR]
						Non-Fibers	100
1836223-58	04-Sep-18	sample homogenized	Brown/Grey	Ceramic Tile Mortar/Grout	No	Client ID: AS-18B	[ASLYR]
						Non-Fibers	100
1836223-59	04-Sep-18	sample homogenized	Brown/Grey	Ceramic Tile Mortar/Grout	No	Client ID: AS-18C	[ASLYR]
						Non-Fibers	100
1836223-60	04-Sep-18	sample homogenized	Grey/White	Base/Topcoat Stucco	No	Client ID: AS-19A	[ASLYR]
						Non-Fibers	100
1836223-61	04-Sep-18	sample homogenized	Grey/White	Base/Topcoat Stucco	No	Client ID: AS-19B	[ASLYR]
						Non-Fibers	100
1836223-62	04-Sep-18	sample homogenized	Grey/White	Base/Topcoat Stucco	No	Client ID: AS-19C	[ASLYR]
						Non-Fibers	100
1836223-63	04-Sep-18	sample homogenized	Grey	Plaster	Yes	Client ID: AS-20A	
						Chrysotile	1
						Non-Fibers	99
1836223-64	04-Sep-18	sample homogenized	Grey	Plaster	Yes	Client ID: AS-20B	
						Chrysotile	1
						Non-Fibers	99
1836223-65	04-Sep-18	sample homogenized	Grey	Plaster	Yes	Client ID: AS-20C	
						Chrysotile	1
						Non-Fibers	99
1836223-66	04-Sep-18	sample homogenized	Black	Tar Roll Roofing	No	Client ID: AS-21A	[AS-PRE]
						Non-Fibers	80
						Other fibers	20
1836223-67	04-Sep-18	sample homogenized	Black	Tar Roll Roofing	No	Client ID: AS-21B	[AS-PRE]
						Non-Fibers	80
						Other fibers	20

Certificate of Analysis

Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

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

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1836223-68	04-Sep-18	sample homogenized	Black	Tar Roll Roofing	No	Client ID: AS-21C [AS-PRE] Non-Fibers Other fibers	80 20
1836223-69	04-Sep-18	sample homogenized	Black	Roofing Tar	No	Client ID: AS-22A [AS-PRE] MMVF Non-Fibers	<MDL 100
1836223-70	04-Sep-18	sample homogenized	Black	Roofing Tar	No	Client ID: AS-22B [AS-PRE] MMVF Non-Fibers	<MDL 100
1836223-71	04-Sep-18	sample homogenized	Black	Roofing Tar	No	Client ID: AS-22C [AS-PRE] MMVF Non-Fibers	<MDL 100
1836223-72	04-Sep-18	sample homogenized	Grey	Cement Board	Yes	Client ID: AS-23A Chrysotile Non-Fibers	20 80
1836223-73	04-Sep-18	sample homogenized	Grey	Cement Board	Yes	Client ID: AS-23B Chrysotile Non-Fibers	20 80
1836223-74	04-Sep-18	sample homogenized	Grey	Cement Board	Yes	Client ID: AS-23C Chrysotile Non-Fibers	20 80
1836223-75	04-Sep-18	sample homogenized	White/Grey/Brown	Various Exterior Caulkings	No	Client ID: AS-24A [ASLYR] Non-Fibers	100
1836223-76	04-Sep-18	sample homogenized	White/Grey/Brown	Various Exterior Caulkings	No	Client ID: AS-24B [ASLYR] Non-Fibers	100
1836223-77	04-Sep-18	sample homogenized	Grey/White/Brown	Various Exterior Caulkings	No	Client ID: AS-24C [ASLYR] Non-Fibers	100
1836223-78	04-Sep-18	sample homogenized	Black	Tar Roofing Shingle	No	Client ID: AS-25A MMVF Non-Fibers	20 80
1836223-79	04-Sep-18	sample homogenized	Black	Tar Roofing Shingle	No	Client ID: AS-25B MMVF Non-Fibers	20 80

Certificate of Analysis
Client: Buller Crichton Environmental Inc.

Client PO: 18-277

Report Date: 11-Sep-2018

Order Date: 5-Sep-2018

Project Description: 18-277

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

<i>Paracel I.D.</i>	<i>Sample Date</i>	<i>Layers Analyzed</i>	<i>Colour</i>	<i>Description</i>	<i>Asbestos Detected:</i>	<i>Material Identification</i>	<i>% Content</i>
1836223-80	04-Sep-18	sample homogenized	Black	Tar Roofing Shingle	No	Client ID: AS-25C	
						MMVF	20
						Non-Fibers	80
1836223-81	04-Sep-18	sample homogenized	Brown	Exterior Caulking	No	Client ID: AS-26A	
						Non-Fibers	100
1836223-82	04-Sep-18	sample homogenized	Brown	Exterior Caulking	No	Client ID: AS-26B	
						Non-Fibers	100
1836223-83	04-Sep-18	sample homogenized	Brown	Exterior Caulking	No	Client ID: AS-26C	
						Non-Fibers	100
1836223-84	04-Sep-18	sample homogenized	Black	Roof Caulking	No	Client ID: AS-27A	[AS-PRE]
						Non-Fibers	100
1836223-85	04-Sep-18	sample homogenized	Black	Roof Caulking	No	Client ID: AS-27B	[AS-PRE]
						Non-Fibers	100
1836223-86	04-Sep-18	sample homogenized	Black	Roof Caulking	No	Client ID: AS-27C	[AS-PRE]
						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		11-Sep-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

Work Order Revisions / Comments

None



Client Name: BULLER CRICHTON ENV	Project Reference: 18-277	Turnaround Time: ☐ Immediate ☐ 1 Day ☐ 4 Hour ☐ 2 Day ☐ 8 Hour ☐ 3 Day ☒ Regular
Contact Name: Jeremy Rhoades	Quote #: 17-590	
Address: 61 Rosemount Ave. Ottawa ON	PO #: 18-277	
Telephone: 613 404 5178	Email Address: jeremy@bullercrihton.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

Paracel Order Number:		Asbestos - Bulk				
1836223		2018	Air	Analysis	Identify Distinct Building Materials to Be Analyzed	
		Sampling	Volume	Required	Combine Identified Materials?	
Sample ID		Date	(L)		**see below	Positive Stop?
1 AS-01 A to C		SEPT. 4	N/A	PLM	Duct wrap paper	☒
2 AS-02 A to E					Plaster - Base + Skin	☒
3 AS-03 A to C					Combined Vinyl Flooring	☒
4 AS-04 A to C					Sheet vinyl flooring + black mastic	☒
5 AS-05 A to C					Mortar bed for ceramic tile	☒
6 AS-06 A to C					Window glazing	☒
7 AS-07 A to C					Pressed wallpaper	☒
8 AS-08 A to C					Black Caulking - Exterior	☒
9 AS-09 A to C					Grey Caulking - Exterior	☒
10 AS-10 A to C					Textured Plaster - Base + Skin	☒
11 AS-11 A to C					Black Tar Paper - Under wood siding, REAK	☒
12 AS-12 A to C					Grey Brick Mortar	☒

* 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: Swift
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Relinquished By (Sign):	Received at Depot:	Received at Lab: Karen Cull	Verified By: Karen Cull
Relinquished By (Print): J. Rhoades			
Date/Time: SEPT 5 2018	Date/Time:	Date/Time: Sept 5/18 3:10	Date/Time: Sept 5/18 4:27



Client Name: <u>Bulle Crichton Env.</u>	Project Reference: <u>18-277</u>	Turnaround Time: ☐ Immediate ☐ 1 Day ☐ 4 Hour ☐ 2 Day ☐ 8 Hour ☐ 3 Day ☐ Regular Date Required: _____
Contact Name:	Quote #: <u>17590</u>	
Address:	PO #: <u>18-277</u>	
Telephone:	Email Address:	

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:		2018 Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk		
Sample ID					Identify Distinct Building Materials to Be Analyzed	Combine Identified Materials?	Positive Stop?
					* see below	**see below	
1	AS-13 A to C	SEPT. 4	N/A	PLM	Cream Foundation Stone Mortar	☐	☒
2	AS-14 A to C				Mixed Foundation Stone Mortar (repairs)	☐	☒
3	AS-15 A to C				Fibrous Furnace Panel Gasket	☐	☒
4	AS-16 A to C				White Ceiling Tile	☐	☒
5	AS-17 A to C				Drywall Joint Compound	☐	☒
6	AS-18 A to C				Ceramic Tile Mortar + Grout	☒	☒
7	AS-19 A to C				Grey Base + White Topcoat Stucco	☒	☒
8	AS-20 A to C					☐	☐
9	AS-21 A to C				Tar Roll Roofing - Black	☐	☒
10	AS-22 A to C				Roofing Tar - Black	☐	☐
11	AS-23 A to C				Cement Board	☐	☐
12	AS-24 A to C				Various Exterior Caulkings	☒	☒

* 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: <u>See Page 1</u>	Method of Delivery: <u>Swift</u>
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Relinquished By (Sign):	Received at Depot:	Received at Lab: <u>Karen Gull</u>	Verified By: <u>Karen Gull</u>
Relinquished By (Print):	Date/Time:	Date/Time: <u>Sept 5/18 3:10</u>	Date/Time: <u>Sept 5/18 4:27</u>



Client Name: <u>Buller Cuckston Env.</u>	Project Reference: <u>18-277</u>	Turnaround Time: ☐ Immediate ☐ 1 Day ☐ 4 Hour ☐ 2 Day ☐ 8 Hour ☐ 3 Day ☐ Regular Date Required: _____
Contact Name:	Quote #: <u>17-590</u>	
Address:	PO #: <u>18-277</u>	
Telephone:	Email Address:	

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		2018 Sampling Date	Air Volume (L)	Analysis Required	Identify Distinct Building Materials to Be Analyzed * see below	Combine Identified Materials? **see below
1836223						
1	AS-25 A to C	Sept. 4	N/A	PLM	Tar Roofing Shingles	☐
2	AS-26 A to C	↓	↓	↓	Brown Exterior Caulking	☐
3	AS-27 A to C	↓	↓	↓	Black Roof Caulking	☐
4						☐
5						☐
6						☐
7						☐
8						☐
9						☐
10						☐
11						☐
12						☐

* 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: See page 1 Method of Delivery: Swift

Relinquished By (Sign):	Received at Depot:	Received at Lab: <u>Karen Cull</u>	Verified By: <u>Karen Cull</u>
Relinquished By (Print):	Date/Time:	Date/Time: <u>Sept 5/18 3:10</u>	Date/Time: <u>Sept 5/18 4:27</u>

Certificate of Analysis

Buller Crichton Environmental Inc.

61 Rosemount Avenue
Ottawa, ON K1Y 1P3
Attn: Jeremy Rhoades

Client PO: 18-277
Project: 18-277
Custody: 29456

Report Date: 11-Sep-2018
Order Date: 5-Sep-2018

Order #: 1836225

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

Paracel ID Client ID

1836225-01	LS-01
1836225-02	LS-02
1836225-03	LS-03
1836225-04	LS-04
1836225-05	LS-05
1836225-06	LS-06
1836225-07	LS-07

Approved By:



Mark Foto, M.Sc.
Lab Supervisor

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: Buller Crichton Environmental Inc.
Client PO: 18-277

Report Date: 11-Sep-2018
Order Date: 5-Sep-2018
Project Description: 18-277

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	10-Sep-18	10-Sep-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: Buller Crichton Environmental Inc.
 Client PO: 18-277

Report Date: 11-Sep-2018
 Order Date: 5-Sep-2018
 Project Description: 18-277

Sample Results

Lead				Matrix: Paint
				Sample Date: 04-Sep-18
Paracel ID	Client ID	Units	MDL	Result
1836225-01	LS-01	ug/g	20	384000
1836225-02	LS-02	ug/g	20	91
1836225-03	LS-03	ug/g	20	582
1836225-04	LS-04	ug/g	20	1720
1836225-05	LS-05	ug/g	20	863
1836225-06	LS-06	ug/g	20	<20
1836225-07	LS-07	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	306	20	ug/g	302			1.2	30	
Matrix Spike									
Lead	381		ug/L	151	91.7	70-130			



Client Name: <u>Buller Crichton Env.</u>	Project Reference: <u>18-277</u>	Turnaround Time: ☐ Immediate ☐ 1 Day ☐ 4 Hour ☐ 2 Day ☐ 8 Hour ☐ 3 Day ☒ Regular Date Required: _____
Contact Name: <u>Jeremy Rhoades</u>	Quote #: <u>17-590</u>	
Address: <u>61 Rosemount Ave</u> <u>Ottawa ON</u>	PO #: <u>18-277</u>	
Telephone: <u>613 404 5178</u>	Email Address: _____	

ASBESTOS & MOLD ANALYSIS

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

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

Paracel Order Number: <u>1836225</u>				Asbestos - Bulk		
Sample ID	2018 Sampling Date	Air Volume (L)	Analysis Required	Identify Distinct Building Materials to Be Analyzed	Combine Identified Materials?	Positive Stop?
				* see below <u>PAINT CHIPS</u>	**see below	
1 <u>LS-01</u>	<u>SEPT 4</u>	<u>N/A</u>	<u>LEAD</u>	<u>WHITE - EXT. TRIM</u>	☐	☐
2 <u>LS-02</u>	<u> </u>	<u> </u>	<u> </u>	<u>WHITE - INT. 3RD FLOOR</u>	☐	☐
3 <u>LS-03</u>	<u> </u>	<u> </u>	<u> </u>	<u>GREY - CEILING 2ND FL.</u>	☐	☐
4 <u>LS-04</u>	<u> </u>	<u> </u>	<u> </u>	<u>YELLOW - ENTRY + 2ND FL.</u>	☐	☐
5 <u>LS-05</u>	<u> </u>	<u> </u>	<u> </u>	<u>CREAM - MAIN FLOOR</u>	☐	☐
6 <u>LS-06</u>	<u> </u>	<u> </u>	<u> </u>	<u>WHITE - INT. THROUGHOUT.</u>	☐	☐
7 <u>LS-07</u>	<u> </u>	<u> </u>	<u> </u>	<u>ORANGE - INT. BACK ROOM</u>	☐	☐
8					☐	☐
9					☐	☐
10					☐	☐
11					☐	☐
12					☐	☐

* 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>Swift</u>
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Relinquished By (Sign): <u>[Signature]</u>	Received at Depot: <u>Karen Aull</u>	Received and/or: <u>[Signature]</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>J. RHODES</u>	Date/Time: <u>Sept 5/18 3:10</u>	Date/Time: <u>SEP 6/18 1:55</u>	Date/Time: <u>SEP 6/18 1:06pm</u>

Appendix B:

Site Photographs

Photo #	Location / Description	Photo
1	Asbestos Containing Plaster on Walls and Ceilings Throughout 179 Armstrong Street	
2	Asbestos Containing Plaster on Walls and Ceilings Throughout 179 Armstrong Street	

Photo #	Location / Description	Photo
3	Asbestos Containing Flooring Materials Beneath Vinyl Floor in Second Floor Bathroom – 179 Armstrong Street	
4	Asbestos Containing Plaster with Stone Inclusions – North, East and West Façade – 177 Armstrong Street	

5	Asbestos Containing Cement Board Behind Sign – 177 Armstrong Street	
6	Lead Containing Paint on Window Frames – 179 Armstrong Street	

7	An Example of a Presumed Asbestos Containing in Bell Fittings	
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