# Nantuck Investments Inc

**103 Radley Street, Woodbridge, Ontario L4L 8K4**
**Telephone: 416-417-0379 Fax: 905-856-3442**
**schhangur@hotmail.com**

VIA EMAIL: CLeherbauer@oshawa.ca

February 2, 2021

Clerk, City of Oshawa
and
Conner Lehebauer
Planning Services
City of Oshawa
50 Center Street South
Oshawa, Ontario
L1H 3Z7

Dear Sir/Madam:

Re: 195 Simcoe Street North, Oshawa

Please be advised that it is my intention to demolish the above noted properties in the City of Oshawa and as per the order from Property Standards dated May 27, 2020. (Mcarthan Phelan). I am formally requesting a permit to demolish the said property. Please find attached a copy of the Engineers Report.

Thanking you in anticipation.

Yours truly,

NANTUCK INVESTMENTS INC.

Per:
Sherland Chhangur

-30- Forensic Engineering
40 University Avenue
Suite 800
Toronto, ON
M5J 1T1

Office 416-368-1700
30fe.com

Mr. Sherland Chhangur
103 Radley Street
Woodbridge, ON
L4L 8K5

January 7, 2020

Dear Mr. Chhangur:

**Re: Environmental Assessment after Fire Loss**

| | |
|---|---|
| Location: | 195 Simcoe Street North, Oshawa, ON |
| Your File: | Nantuck Investments |
| Our File: | 191361CDM |
| Incident Date: | April 22, 2019 |

## 1.0 BACKGROUND

We were contacted by Mr. Sherland Chhangur regarding a fire that occurred on April 22, 2019, at 195 Simcoe Street North in Oshawa, Ontario (the 'subject building'). The fire reportedly caused damage to the roof and floor structures, the exterior wall assemblies, and the interior finishes. We were asked to conduct an environmental assessment for combustion by-products and mould throughout the subject property.

Samples were collected and third-party results were obtained for designated substances throughout the property. A Designated Substances Survey report, and a Scope of Work document addressing the asbestos and lead containing materials and mould-impacted areas for demolition will be issued under separate cover. A Structural Assessment report has also been issued under separate cover

This report is based on our site examination, the reported information, and an independent engineering analysis. This report is a summary[1] overview of the circumstances surrounding this loss and should not be considered a complete technical document. Should you require a more detailed report, one can be prepared.

[1] This report has been kept brief as requested. Should litigation be contemplated, we recommend a full report be commissioned.

## 2.0 SITE EXAMINATION

Mr. Grant Elligsen, CRSP, P.Eng., and Ms. Claire Miller, B.E.Sc., P.Eng., of 30 Forensic Engineering, attended the site of the incident loss on October 1, 2019, to assess the building materials to identify and delineate potential designated substances, and to conduct a structural assessment of the subject building. The subject building was a multi-unit residential two-storey structure with a basement.

Mr. Elligsen revisited the site on January 2, 2020, to record our observations with respect to visible mould and moisture damage, to make intrusive cuts into interior and perimeter wall cavities to address combustion by-products contamination, and to provide recommendations for restoration and/or demolition of the impacted property.

## 3.0 METHODOLOGY

The following sections discuss the methodology of our mould and combustion by-products analysis.

### 3.1 Combustion By-Product Analysis

Carbon particles, soot, and other fire residuals, such as char, are products of incomplete combustion, which occurs when there is insufficient oxygen present to allow a fuel to react without producing by-products. When viewed under a microscope, surface samples containing soot are readily discernible from samples containing dust and other particulate matter due to the differences in particulate colour, morphology, and size. Other fire residuals, such as char or carbon particles from (non-fire) industrial sources, are more difficult to distinguish and require higher resolution microscopy offered by a third-party laboratory.

The analytical definitions from the third-party laboratory, EMSL Analytical Inc., for combustion by-product analyses include:

- Soot or black carbon – a randomly-formed particulate of carbon, commonly with a spherical to pseudo-spherical morphology, that is a by-product of uncontrolled combustion.
- Char or carbonized material – a solid decomposition product of natural or synthetic origin that maintains, at least in part, its original form.
- Ash – residue left after complete carbonization of the material which does not maintain its original form.
- Charcoal – char obtained from wood, peat, coal, or other organic material.
- Carbon black – an industrial manufactured spherical carbon material with sizes below 1 µm produced for varying uses, including paint pigment, copier toner, and automobile tires.

### 3.2 Visual Intrusive Mould Assessment

We completed our visual intrusive assessment along accessible surfaces within the subject building. We assessed the surfaces by visually identifying signs of water damage and/or suspect mould growth. In areas where we observed evident water damage, or where the presence of mould growth was suspected, we made a destructive test cut in the finishes to assess the condition of the cavities and other building materials present.

### 3.3 Moisture Content Assessment

We used a GE Protimeter BLD5360 Surveymaster Dual-Function Moisture Meter ('moisture meter') to obtain the moisture content (MC) along accessible surfaces that were suspected to have been impacted by water damage and/or mould growth.

This moisture meter was used to assess the moisture content (%MC) and/or wood moisture, equivalent (%WME) of porous building materials, which reportedly had been impacted by water. In search mode, the moisture meter is held at a 25° angle against the surface in question to detect relative %MC beneath the surface of the material in question. In measure mode, the moisture meter pin electrodes are inserted into the suspect substrate to obtain the %WME of various material(s) between the electrodes. The values obtained are compared against reference value(s) ('the control') of known *"dry"* building material(s).

The reported values have been summarized in the table below:

| | | |
|---|---|---|
| Less than 17% WME | *"DRY"* | Optimal state |
| 17-20% WME | *"AT RISK"* | Moist conditions that may or may not support mould amplification* |
| Greater than 20% WME | *"WET"* or *"SATURATED"* | High water activity and the likelihood of mould amplification* |

*Mould amplification is dependent upon current environmental conditions and the composition of the building materials.

## 4.0 RESULTS AND DISCUSSION

The following sections discuss our mould assessment observations and our combustion by-product analysis, as well as the combustion by-products lab results from EMSL Analytical Inc..

### 4.1 Visual Observations

During our site attendances, we visually reviewed the subject property by conducting a room-by-room walkthrough. Photographs from our site examination are included in Appendix A.

Based on our observations:

- The southwest elevation of the building was partially consumed by the fire.
- The roof of the building was partially consumed by the fire, extensively damaged, and open to the outdoors. The construction of the roof had deteriorated further during the time between our first and second site visits, and the hole in the roof had begun to collapse in on itself, nearly doubling in size.
- Snow melt was dripping from the outer roof onto the second level floor.
- The majority of the second level ceiling had collapsed, and asbestos containing vermiculite insulation and debris covered the entire second level floor.
- Debris on the second level was frozen in approximately 3 inches of ice.
- The southwest quarter of the building was structurally damaged, including the second level southwest bedrooms and Apartment 1 located on the south elevation of the main level.
- There was black stained and settled particulate in all rooms of the building. We found black water-suppression streaks on interior and perimeter walls and windows throughout the property.
- We also observed black stained and settled particulate in the ceiling cavities and inside the interior and perimeter wall cavities throughout the property.
- The main level ceiling materials were in various states of collapse and water was dripping to the main level floor.
- Water was trapped in an interior door header and a large water bubble had formed. Water was slowly dripping from the bubble.
- The moisture meter confirmed every perimeter and interior wall finish were wet from full height. The WME readings were greater than 40% from all measured finishes in all locations, indicating substantial mould impacts in the concealed wall cavities and ceiling voids were likely.
- Visually confirmed mould impacts were found throughout the subject building on numerous wall and ceiling finishes. Where exposed, we observed visually confirmed mould impacts in ceiling voids and interior and perimeter wall cavities.
- We inspected the perimeter wall cavities and observed that there was no exterior sheathing present. Brick was secured to the exterior structure of the home.
- There was a water stain at approximately 12 inches above the main level floor, indicating that at one point there would have been approximately 12 inches of standing water on the main level. Electrical sockets within this 12-inch range were plugged with debris from the water damage throughout the main level.
- The floor in the basement was an exposed dirt floor and was wetted to the point of mud.
- There was excessive wood rot and mould growth on the basement floor joists and framing members.
- There was a strong fire and smoke odour throughout the interior of the subject property.

### 4.2 Third-Party Combustion By-Product Results

We submitted six samples to EMSL Analytical Inc. A summary of the submitted samples and analytical results are presented in Appendix B.

EMSL Analytical Inc. analyzed the samples via Polarized Light Microscopy (PLM), Stereomicroscopy, epi-Reflected Light Microscopy (RLM), and by using standard ASTM D6602 to determine the presence of any combustion by-products from the fire. Results of these analyses are presented in Appendix C.

The results indicated that all samples had char and/or soot concentrations above the reportable detection limit of 1%. This included:

- Exterior wall cavities were found to have char concentrations between 30 and 70%;
- Interior wall cavities were found to have char concentrations up to 15% and soot concentrations up to 40%; and
- Surface samples taken from discoloured surfaces where found to have char and soot concentrations up to 80%.

There was no area to collect a control sample as all areas throughout the subject building were observed to have been impacted.

## 5.0 CONCLUSIONS

Our conclusions, based on the observations and the third party findings detailed above, are as follows:

- We observed extensive mould impacts throughout the subject building on finishes and within wall cavities and ceiling voids.
- We observed excessive wood rot on basement floor joists and framing members.
- Elevated moisture levels were obtained from all walls throughout the property.
- In several locations, water was dripping from the roof to the second level floor and from the main level ceiling to the main level floor.
- We observed signs of water suppression efforts in the form of dried water stains with smoke streaked drips on walls and windows throughout the property.
- We observed significant smoke discolouration on all surfaces and finishes throughout the property.
- Combustion by-product impacts were confirmed throughout the property on exposed surfaces and finishes and within interior and perimeter walls.
- Combustion by-products had impacted the interior side of the exterior brick at the perimeter walls.
- Strong fire and smoke odours were present throughout the property.

- Asbestos containing vermiculite insulation had collapsed from the attic and water had distributed this insulation debris throughout the property.
- Various asbestos and lead containing finishes were confirmed throughout the subject building.

## 6.0 RECOMMENDATIONS

The following sections outline our previous recommendations issued in our Structural Assessment report:

- *"The roof structure and the damaged portion of the second level floor structure will need to be demolished and reconstructed. Further, the fire-damaged brick on the front elevation of the house will likely need to be replaced with bricks closely matching the originals."*
- *"In addition to the above, the original construction of the subject house will require work unrelated to the fire incident. The stone foundation walls and main level framing will likely need to be repaired or replaced to ensure that these aspects of the house are structurally sound and meet the requirements of the Ontario Building Code (OBC)."*
- *"Further, since it is likely that all of the interior finishes will need to be removed and replaced as part of the remediation, the vertical and horizontal fire separations between the residential units must to be upgraded to meet the requirements of the current 2012 OBC."*

As a result of these previous recommendations, combined with the observations from our environmental and designated substances site assessments, and the third-party lab results, we recommend two possible options for your consideration:

### 6.1 Option 1: Demolition (Recommended)

- Demolish the entire structure, including the foundation.
- Prior to any work being performed:
  1) A Designated Substance Survey report will be required for the protection of workers and disposal of hazardous materials.
  2) A Scope of Work document will be required to provide direction for the demolition in accordance with the Ontario Occupational Health & Safety Act (OHSA) and Ontario Regulation 213/91 – *Construction Projects* (O. Reg. 213/91).

### 6.2 Option 2: Restoration

- Demolish the roof and the southwest portion of the second and main levels of the property, while ensuring the remainder of the property is structurally supported per the direction of our structural engineers.

- Demolition will have to be completed by hand to protect the structural integrity of building.

- Since we have observed excessive water damage, and combustion by-products have been confirmed throughout the property, remove all smoke- and mould-impacted building materials, including subfloors, following Level III remediation procedures, as outlined in the Canadian Construction Association Standard construction document CCA 82 2004 *"Mould Guidelines for the Canadian Construction Industry."*
- Given the presence of asbestos-containing materials, asbestos-contaminated materials, and lead-containing materials confirmed on various building materials throughout the property, remove all damaged and contaminated building materials following Type 3 abatement procedures as per Ontario Regulation 278/05 and Type 2a lead abatement procedures as per the Ontario Ministry of Labour, *"Load on Construction Projects."*
- Once the abatement and remediation procedures have been completed, successful clearance air sampling as per Ontario Regulation 278/05 and successful post-remediation air sampling for airborne mould elements as per the Canadian Construction Association Standard, CCA 82 2004 document, *"Mould Guidelines for the Canadian Construction Industry"* would be required before the enclosures can be dismantled.
- Once all brick and structural wood have been exposed, the remaining structural components and interior surface of the brick will have to be media-blasted, treated with an anti-microbial agent, and smoke-sealed.
- After the smoke sealing has been completed, restoration can begin according to the permit and design provided by our structural engineers, meeting the requirements of the current 2012 OBC.

Given these considerations, it is our opinion that Option 1 will require less time and resources, making the project more efficient and significantly more cost-effective.

We recommend demolition for this property.

Option 2 comes with several challenges, including meeting the requirements of the current 2012 OBC and multiple additional engineering assessments.

- Once exposed, an engineering assessment of the main level framing will be required to ensure that these aspects of the building are structurally sound.
- The excessive rot on the basement structural components will require the majority of the basement structural components to be replaced, which will also require engineered shoring.
- An engineering assessment of the stone foundation walls will be required to ensure they are structurally sound.
- Since the basement is comprised of an exposed dirt floor, it will be difficult to obtain acceptable post-remediation air samples for airborne mould elements given the Level III mould remediation procedures.

This completes our assessment to date. If you have any questions, please do not hesitate to contact us.

Sincerely,


Grant Elligsen, CRSP, P.Eng.
January 7, 2020

Christopher Ciasnocha, B.A.Sc. (for general review only)
January 7, 2020

The above signature has been electronically applied by Stephanie Jorgensen with the express written permission of Grant Elligsen.

***Enclosures*:** **APPENDIX A: Site Examination Photo Log**

**APPENDIX B: Summary of Wipe and Bulk Sample Analysis Results**

**APPENDIX C: ESML Analytical Inc. Test Results & Certificate of Analysis**

## APPENDIX A: SITE EXAMINATION PHOTO LOG

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

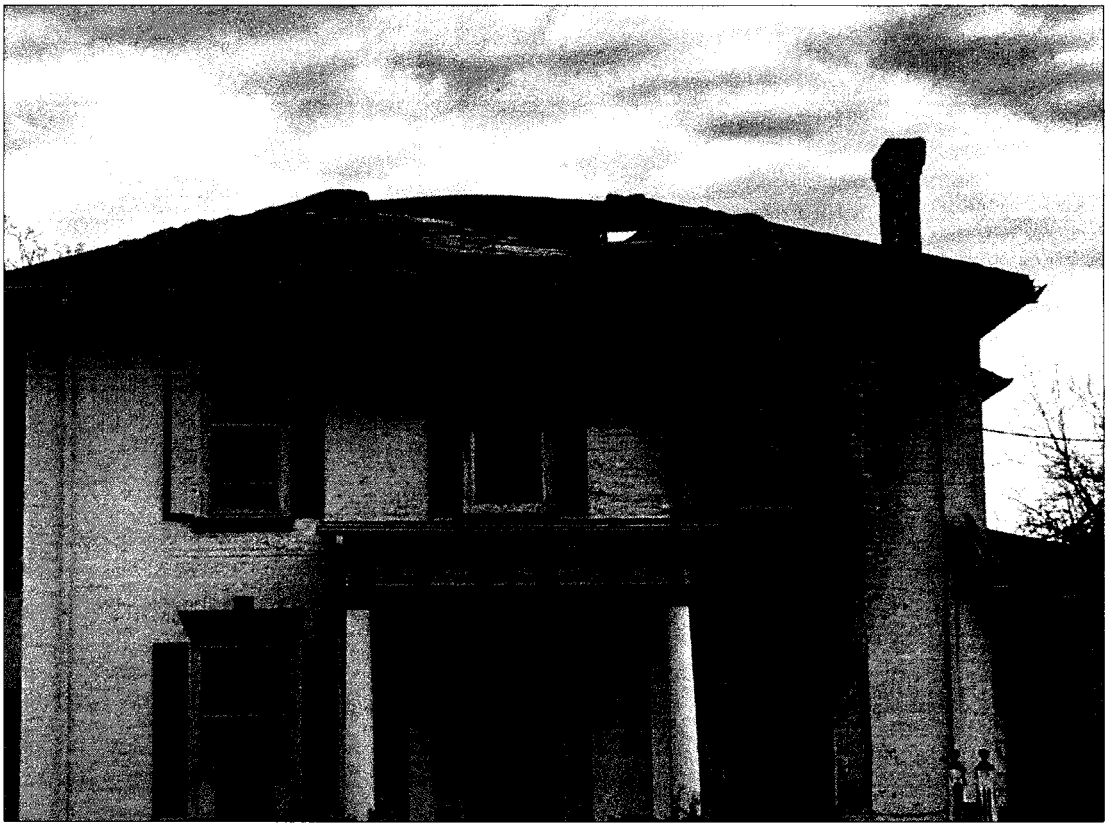

**Figure 1: View of front exterior of subject house and roof consumed by fire**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

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**Taken by:** Grant Elligsen

**Figure 2: View of deteriorated roof and collapsed second level ceiling**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 3: View of dripping snow melt and debris frozen in ice on second level**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

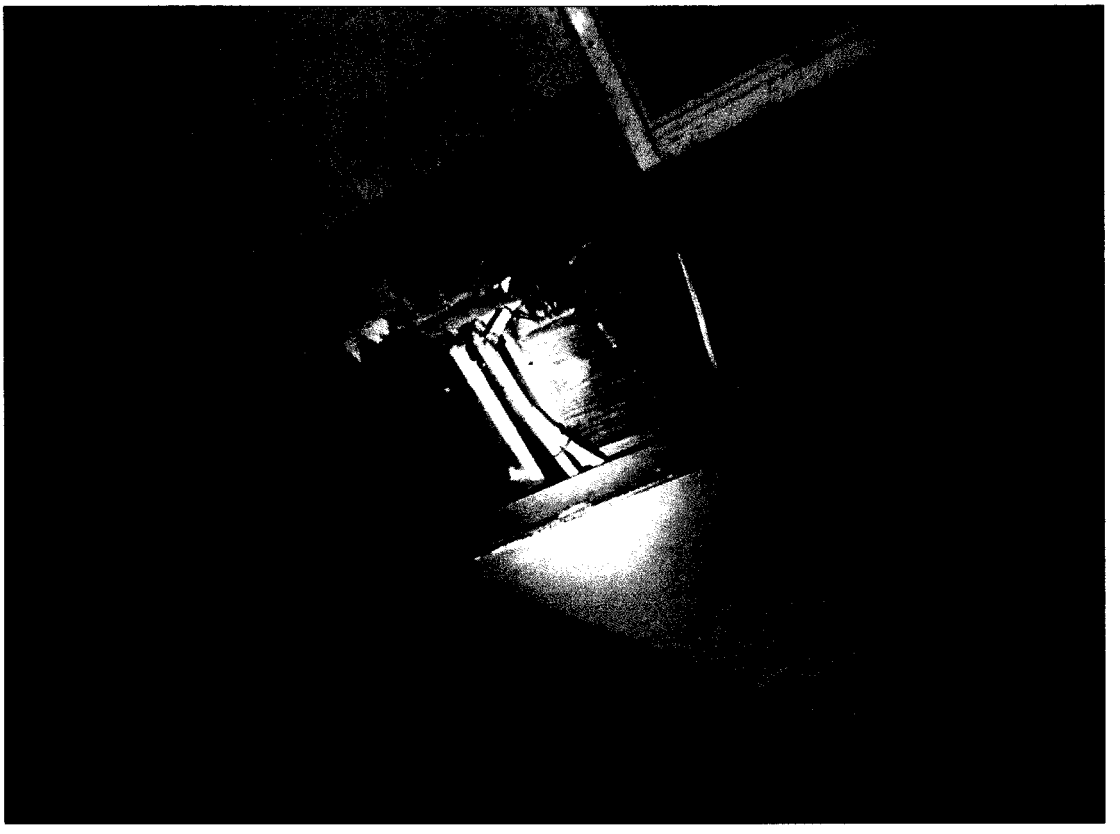

**Figure 4: View of collapsing main level ceiling and water and mould damage in ceiling void**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 5: View of water bubble trapped in door header**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 6: View of moisture meter confirming elevated moisture readings from wall finishes**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 7: View of visually confirmed mould impacts on main level ceiling**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

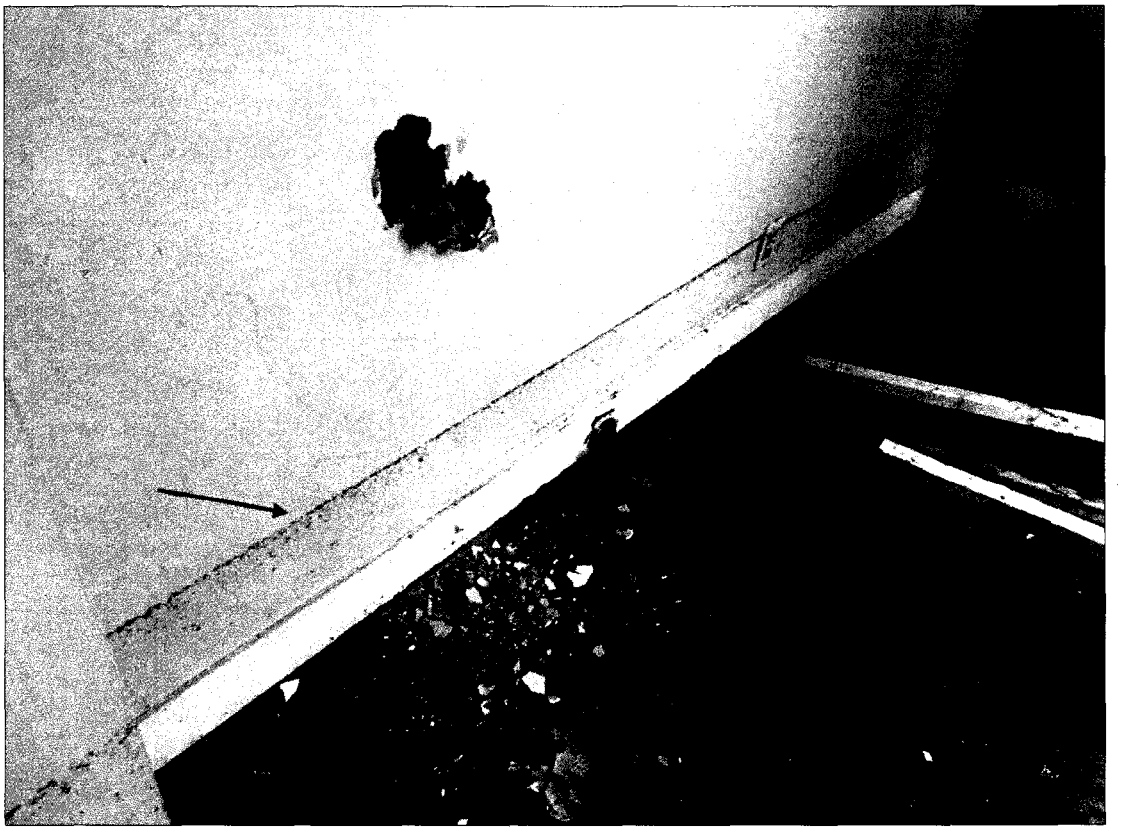

**Figure 8: View of water staining line throughout main level and smoke impacted wall finishes in northeast bedroom (Sample S-4)**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 9: View of electrical socket plugged with debris**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

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**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 10: View of wood rot and mould impacts on basement structural members**

## SITE EXAMINATION PHOTO LOG

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**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 11: View of structurally damaged main level southwest bedroom wall (Sample S-1)**

## SITE EXAMINATION PHOTO LOG

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**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

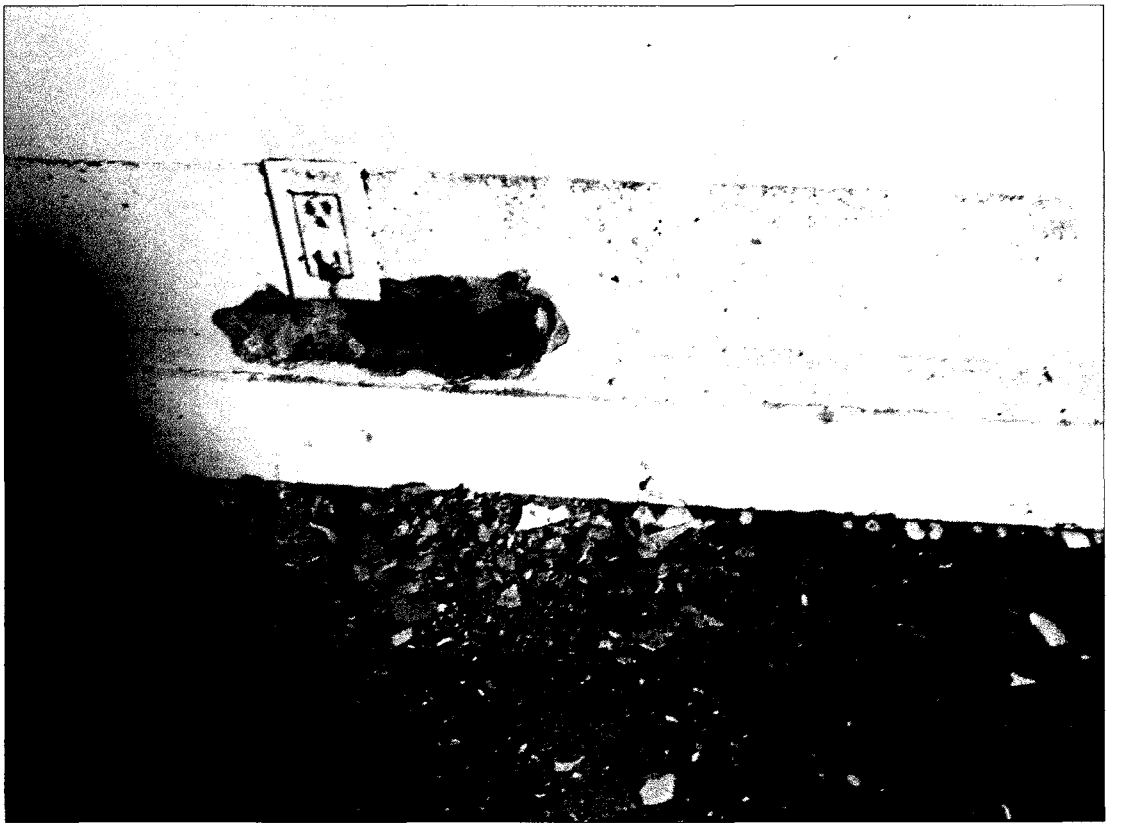

**Figure 12: View of smoke impacted perimeter wall cavity in main level northeast bedroom (Sample B-2)**

## SITE EXAMINATION PHOTO LOG

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**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

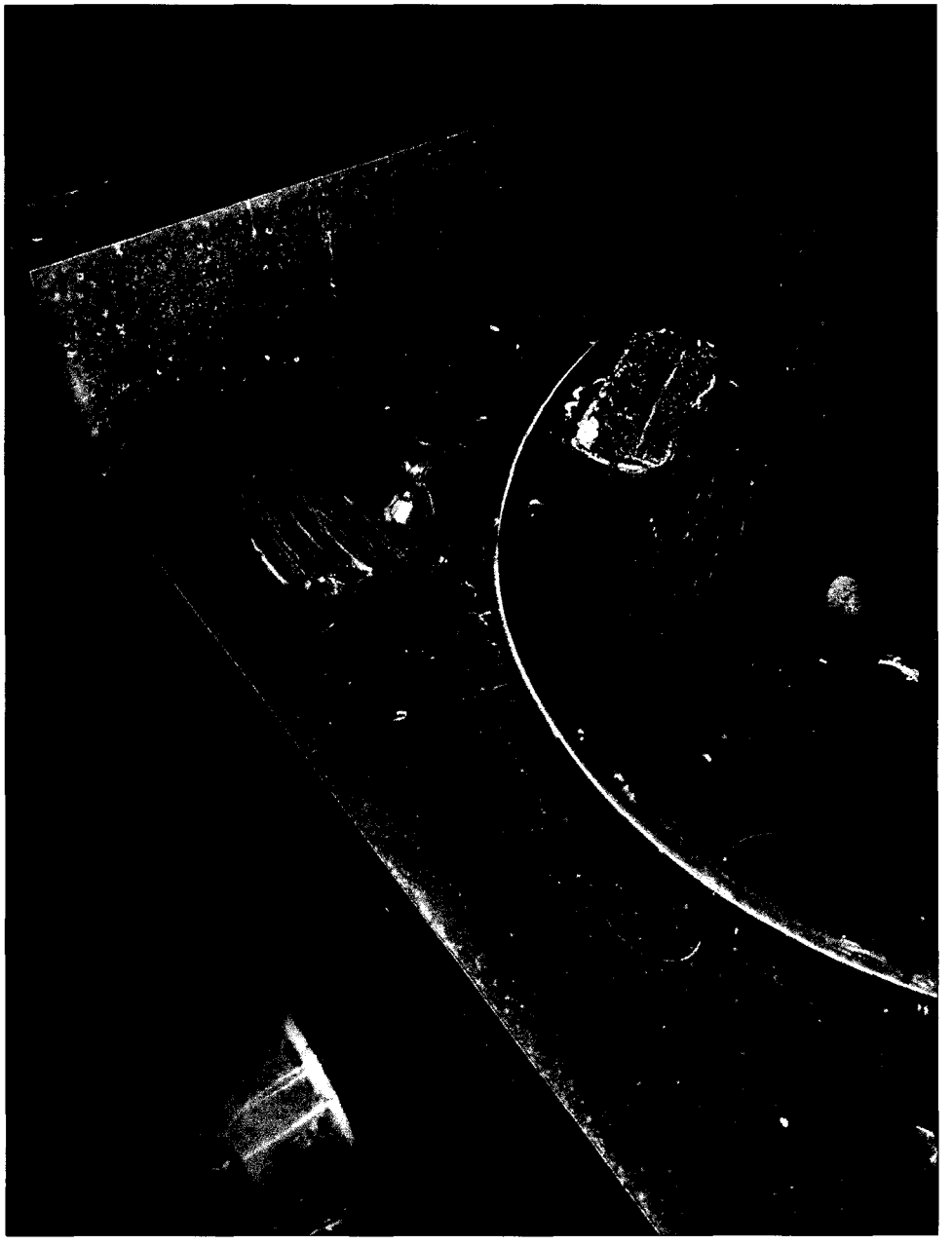

**Figure 13: View of smoke impacted vanity in main level east washroom (Sample S-3)**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 14: View of smoke impacted perimeter wall cavity in northeast bedroom (Sample S-5) on second level**

## SITE EXAMINATION PHOTO LOG

**Project Name:** Environmental Assessment after a Fire Loss, 195 Simcoe Street North, Oshawa, Ontario

**Our File:** 190818GTE **Date of Visit:** January 2, 2020 **Visit No.:** 2

**Reason for Visit:** Smoke and Mould Impacts Assessment

**Taken by:** Grant Elligsen

**Figure 15: View of smoke impacted interior wall cavity in southeast bedroom (Sample B-6) on second level**

## APPENDIX B: SUMMARY OF WIPE AND BULK SAMPLE ANALYSIS RESULTS

## Summary of Wipe & Bulk Sample Analysis Results for the Presence of Combustion By-Products by Polarized Light Microscopy (PLM), Stereomicroscopy, and epi-Reflected Light Microscopy (RLM)
## Samples Collected January 2, 2020

| Sample Number | Sample Location/Description | Analysis Results (Concentration and Analyte) *Only those analytes with detected concentrations are presented |
|---|---|---|
| S-1 | Main level, Southwest perimeter bedroom wall, point of loss | 10% - 15%, Char |
| B-2 | Main level, Northeast bedroom, North perimeter wall cavity | 60% - 70%, Char |
| S-3 | Main level, East washroom, vanity | 70% - 80%, Char<br>1% - 2%, Soot |
| S-4 | Main level, Northeast bedroom, East interior wall | 10% - 15%, Char<br>30% - 40%, Soot |
| S-5 | Second level, Northeast bedroom, East perimeter wall cavity | 30% - 40%, Char |
| B-6 | Second level, Southeast bedroom, North interior wall cavity | 40% - 50%, Char<br>5% - 10%, Soot |

## APPENDIX C: ESML ANALYTICAL INC. TEST RESULTS & CERTIFICATE OF ANALYSIS

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Phone: Toll Free: 800-220-3675| Fax: 856-786-5971
www.emsl.com info@emsl.com

| | |
|---|---|
| EMSL Order: | **552000004** |
| Customer ID: | **GKFE78** |
| Customer PO: | - |

| | | | |
|---|---|---|---|
| Attn: | ***Grant Elligsen*** | Phone: | **416-368-1700** |
| | **30 Forensic Engineering** | Fax: | - |
| | 40 University Avenue | | |
| | Suite 800 | Collected: | **1/2/2020** |
| | Toronto, ON M5J 1T1 | Received: | **1/3/2020** |
| Project: | **190818GTE** | Analyzed: | **1/6/2020** |

# - Laboratory Report -
# Combustion By-Products
## -Screening-

| *EMSL Sample ID* | *Sample ID* | *Description* | *Analyte* | *Qualifier* | *Comments (Sample Specific)* |
|---|---|---|---|---|---|
| 552000004-0001 | S1 | Lv 1, SW bedroom POL | Carbonized Material (Char)<br>Carbonized Material (Ash)<br>Black Carbon (Soot)* | Present<br>Not Present<br>Not Present* | The amount of char in this sample is 10-15%. |
| 552000004-0002 | B2 | Lv 1, NE perimeter wall cavity | Carbonized Material (Char)<br>Carbonized Material (Ash)<br>Black Carbon (Soot)* | Present<br>Not Present<br>Not Present* | The amount of char in this sample is 60-70%. |
| 552000004-0003 | S3 | Lv 1, E washroom vanity | Carbonized Material (Char)<br>Carbonized Material (Ash)<br>Black Carbon (Soot)* | Present<br>Not Present<br>Present* | The amount of char in this sample is 70-80%. The amount of presumptive soot in this sample is 1-2%. |
| 552000004-0004 | S4 | Lv 1, NE bedroom interior wall | Carbonized Material (Char)<br>Carbonized Material (Ash)<br>Black Carbon (Soot)* | Present<br>Not Present<br>Present* | The amount of char in this sample is 10-15%. The amount of presumptive soot in this sample is 30-40%. |
| 552000004-0005 | S5 | Lv 2, NE bedroom perimeter wall cavity | Carbonized Material (Char)<br>Carbonized Material (Ash)<br>Black Carbon (Soot)* | Present<br>Not Present<br>Not Present* | The amount of char in this sample is 30-40%. |

* Black Carbon/Soot analysis is limited to presumptive analysis only. In order to resolve the submicron size and the aciniform morphology of the particles confirmatory analysis by Transmission Electron Microscopy (TEM) is needed.

Methods and instrumentation: Polarized Light Microscopy (PLM), Stereomicroscopy, epi-Reflected Light Microscopy (RLM).

ACCREDITED
EMSL Cert #: 2845.01

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Phone: Toll Free: 800-220-3675| Fax: 856-786-5971
www.emsl.com info@emsl.com

| | |
|---|---|
| EMSL Order: | **552000004** |
| Customer ID: | **GKFE78** |
| Customer PO: | - |

| | | | |
|---|---|---|---|
| Attn: | ***Grant Elligsen*** | Phone: | **416-368-1700** |
| | **30 Forensic Engineering** | Fax: | - |
| | 40 University Avenue | | |
| | Suite 800 | Collected: | **1/2/2020** |
| | Toronto, ON M5J 1T1 | Received: | **1/3/2020** |
| Project: | **190818GTE** | Analyzed: | **1/6/2020** |

# - Laboratory Report -
# Combustion By-Products
## -Screening-

| *EMSL Sample ID* | *Sample ID* | *Description* | *Analyte* | *Qualifier* | *Comments (Sample Specific)* |
|---|---|---|---|---|---|
| 552000004-0006 | B6 | Lv 2, SE bedroom interior wall cavity | Carbonized Material (Char)<br>Carbonized Material (Ash)<br>Black Carbon (Soot)* | Present<br>Not Present<br>Present* | The amount of char in this sample is 40-50%. The amount of presumptive soot in this sample is 5-10%. |

* Black Carbon/Soot analysis is limited to presumptive analysis only. In order to resolve the submicron size and the aciniform morphology of the particles confirmatory analysis by Transmission Electron Microscopy (TEM) is needed.

Methods and instrumentation: Polarized Light Microscopy (PLM), Stereomicroscopy, epi-Reflected Light Microscopy (RLM).

Christen Helou
Materials Analyst

Eugenia Mirica, Ph.D.
Laboratory Manager