TENDER
T-MCC-2003

BUILDING DEMOLITIONS
SPRINGHILL, NS

MUNICIPALITY OF THE COUNTY OF CUMBERLAND
UPPER NAPPAN SERVICE CENTRE
1395 BLAIR LAKE ROAD, RR # 6
AMHERST N.S B4H 3Y4

January 24, 2020

CLOSING: February 20, 2020

1. GENERAL REQUIREMENTS

The Municipality of the County of Cumberland (Municipality) invites tenders for demolition of three buildings and clean up and disposal of a fourth building in Springhill, Nova Scotia.

Firms submitting a Tender must be experienced and qualified in building demolition, environmental controls and site clean up.

2. SCOPE OF WORK

Three buildings in Springhill, Nova Scotia to be demolished and removed/disposed of off site. Rubble to be removed/disposed of off site from a fourth building. Site clean up and erosion stabilization of finished surface. Demolition material is not to be used as fill. Material disposed of off site shall have the origin of the load indicated on the weigh ticket/load manifest.

Environmental abatement was conducted in December 2019 leaving items noted below of concern to be dealt as part of the demolition. Environmental reports from prior to abatement conducted in December 2019 are attached for reference.

Information is summarized below for scope and known considerations. Photos are attached.

1. **Mine Manager's Building**, Miners Memorial Drive at Memorial Crescent
    a. One storey brick block construction with wood roof and 1.8 m (6') concrete foundation. Approximate building plan dimensions are 5.5 m x 9 m (18' x 30').
    b. Building to be demolished and disposed of off site, including contents.
    c. Foundation to be removed to 0.3 m (1 ft) below grade and disposed off site.
    d. Foundation to be filled with clean common fill to match surrounding grades.
    e. Lead based paint was found at lead leachate result of 99 ug/l (0.099 mg/l) which complies with the lead leachate disposal guideline of 5 mg/l. Material is safe to dispose of with the rest of the demolition debris.
    f. Service lateral status is unknown.

2. **Mine Storage Building**, Miners Memorial Drive at Memorial Crescent
    a. Single storey brick block construction with wood roof and concrete slab on grade foundation. Approximate building plan dimensions are 9 m x 14.5 m (30' x 48').
    b. Building to be demolished and disposed of off site, including contents.
    c. Concrete slab on grade to be removed to 0.3 m (1 ft) below grade.
    d. Foundation to be filled with clean common fill to match surrounding grades.
    e. Water and sewer laterals are connected.

3. **Masons Hall**, 1 Elm Street
    a. Two storey wood construction with 2.1 m (7') mostly rock foundation. Approximate building plan dimensions are 8 m x 21 m (26' x 68').
    b. Building to be demolished and disposed of off site, including contents.
    c. Foundation to be removed to 0.3 m (1 ft) below grade.
    d. Foundation to be filled with clean common fill to match surrounding grades.
    e. Demolition equipment and site restrictions and recommended sequence for removing building provided in Harbourside Engineering Consultants Springhill Masons Hall Demolition Report, September 20, 2019.
    f. Protect adjacent building from damage and make good any damage at contractor's cost.

g. Conduct pre-demolition condition inspection/report and provide copy prior to demolition.
h. Coordinate utility relocation/protection as required (NSP and communications carriers).
i. Provide traffic control as required.
j. Hazardous materials have been cleaned up with the exception of non-friable asbestos containing transite board along west wall which was not accessible for removal. Transite board to be removed with other building materials. Contractor to ensure transite board does not become friable, is taken intact – do not use a saw on the board.
k. Water lateral disconnected outside foundation.
l. Sewer lateral cut off from plumbing and plugged in basement at floor level.

4. **Lamp Cabin Building**, Miners Memorial Drive at Memorial Crescent
   a. Building was single storey brick block construction with wood roof and 1.8 m (6') concrete foundation. Approx. plan dimensions were 10.5 m x 41 m (34' x 134').
   b. Building rubble to be disposed of off site.
   c. Coordinate with Springhill Public Works for Public Works to remove the fencing just prior to starting work.
   d. Building debris to be wetted down on a continual basis while being handled by workers and/or machinery due to presence of asbestos in the debris.
   e. Foundation to be removed to 0.3 m (1 ft) below grade.
   f. Foundation to be filled with clean common fill to match surrounding grades.
   g. Water lateral is connected.

3. INSTRUCTIONS TO TENDERERS

It is the responsibility of each Tenderer to ensure their Tender arrives on time. Any late Tenders will not be accepted. Tenders may be withdrawn at any time prior to opening. Tenders received after the Closing Time or in locations other than the address indicated, will not be accepted and will be returned unopened.

Any Tenders submitted by email, facsimile, or telephone will ***not*** be accepted under any circumstances.

Any corrections or additions to any submitted Tender will not be accepted unless it is initialed by the person signing the Tender.

All Tenders must be firm for 60 calendar days after the closing date. Price to include any/all delivery charges to Springhill, Nova Scotia.

Any Tenders that do not meet these criteria may be rejected.

The Municipality reserves the right to waive technicalities, reject any or all tenders, or any portion thereof, to advertise for new Tenders, to proceed to do the work otherwise, or to abandon the work, if in the best interest of the Municipality.

The Municipality reserves the right to award the work for Masons Hall separately or with the other buildings as may be in the interests of the Municipality at the Municipality's sole judgement.

All Tenders shall be submitted on the Tender Form supplied with this document.

This Tender is not intended to exclude standard equipment or materials except where specified. This Tender is not intended to favor any particular equipment, manufacturer or contractor. Any names or figures the same or similar to any specific equipment, manufacturer or contractor is purely coincidental. The phrase "or equivalent" shall apply where a particular specification, equipment, manufacturer or contractor is mentioned.

All goods shall be free from design deficiencies that may affect their operation or serviceability. Materials not defined here shall be of the best commercial quality and suitable for the purpose intended.

4. CLARIFICATION AND ADDENDA

Notify the Municipality not less than three (3) working days before Tender closing of omissions, errors or ambiguities found in this document. If it is considered that correction, explanation or interpretation is necessary; a written addendum will be issued. All Addenda become part of the Tender documents.

Additional information, clarifications or instructions provided to a Tenderer that may, in the opinion of the Municipality, be of general interest and any other information or instructions that the Municipality may deem to be appropriate in the circumstances may be incorporated in an Addendum to the Tender that will be distributed to all Tenderers.

Direct all Tender questions and queries to:

Kellie Seaman
Phone: 902-664-9243
kseaman@cumberlandcounty.ns.ca

It is the responsibility of the Tenderer to ensure all addenda have been received. Addenda will be posted on the Municipality website at www.cumberlandcounty.ns.ca and the Nova Scotia Public Tenders website at www.gov.ns.ca/tenders. The Municipality will not bear any responsibility for the failure of potential Tenderers to obtain all documents before submitting a tender.

5. TENDER SECURITY

Provide Tender Security in a minimum amount of ten percent (10%) with Tender in the form of a Certified Cheque or Money Order payable to the Owner, or a Bid Bond on CCDC Form 220, or other Owner approved form. The Tenderer agrees this amount may be forfeited as liquidated damages in the event that the tender is withdrawn after closing or the Tenderer fails to comply with any other provisions of this Tender. The deposit shall be returned to the unsuccessful Tenderer(s) after a Contract has been signed with the successful Tenderer.

6. TENDER CLOSING

Tenders must be received at the Upper Nappan Service Centre no later than February 20, 2020 at 2:00 P.M. - ATLANTIC TIME.

7. TENDER OPENING

Tenders will be opened publicly at the Upper Nappan Service Centre, 1395 Blair Lake Road, Upper Nappan, NS, immediately following the Tender Closing time.

8. TENDERERS TO INVESTIGATE

Tenderers will be deemed to have familiarized themselves with the existing working conditions which may affect the performance of the Contract. Tenderers shall take measurements to determine materials, access, etc. No claims for extra compensation resulting from failure to investigate will be paid.

A site visit can be arranged by contacting Jon Eppell, P.Eng. at 902-664-9544 or e-mail jeppell@cumberlandcounty.ns.ca.

9. CONTRACTOR EXPERIENCE

Tenderers must include a corporate overview outlining their experience in the contracting business.

A brief supplementary statement may be included with the response to an item to give the evaluators a clear understanding of the products/ personnel proposed and their ability to perform the specified tasks.

In addition to the responses requested in the Tender, Tenderers may include specifications on some or all proposed items for evaluation purposes.

Supporting documents should be suitably cross-referenced to the Tender.

10. EVALUATION

In evaluating the Tender, the Municipality may consider criteria, including:

- the proposed price;
- the proposed completion date;
- the Tenderer's ability to complete the work within the scheduled time;
- the Tenderer's ability to effectively manage and perform the work;
- the Tenderer's ability to cooperate and work effectively with the Municipality, its consultants and representatives;
- the Tenderer's safety qualifications and track record;
- the Tenderer's ability to present cost saving opportunities which may be appropriate and acceptable to the Consultant and to the Corporation; and
- the financial strength and capability of the Tenderer.

11. TENDER SUBMISSION

Tenderers must submit the following items in the Tender:

a) Qualifications
b) Experience

c) Valid Letter of Good Standing issued by the Construction Safety NS or equal.
d) Completed Tender Form.

12. APPLICABLE GUIDELINES AND REGULATIONS

All work shall be conducted in accordance with applicable national codes, guidelines and provincial regulations and codes of practices.

All work shall be conducted in accordance with applicable provincial regulations and codes of practices, including, but not limited to the following.

- Code of Practice for Removal of Friable Asbestos Containing Material (11/21/13).
- Code of Practice for A Guide to Assessment & Management of Asbestos in the Workplace (11/21/13).
- NS Labour and Workforce Development Outdoor Work with Asbestos Guidelines, March 26, 1998.
- Asbestos Waste Management Regulations N.S Reg. 53/95.
- Canada Occupational Health and Safety Regulations -SOR/86-304.
- Hazardous Products Act, R.S., c. H-3.
- Hazardous Products (Crocidolite Asbestos) Regulations, SOR/89-440.
- Occupational Health and Safety Act, S.N.S 1996.
- Health Canada Hazardous Products Act and Transportation of Dangerous Goods Act.
- Canadian Environmental Protection Act (CEPA) SOR 2008-273.
- NS PCB Management regulations NS Reg. 163/97.
- NS Environment Guidelines for Disposal of Contaminated Solids (1994).

Workers handling asbestos containing material should be outfitted with appropriate personal protective equipment (PPE). The appropriate level of containment should be constructed to prevent the escape of asbestos contamination from the work area.

Workers involved in the demolition and disposal of building materials should be outfitted with appropriate PPE, protective of asbestos, lead, silica, mould, and animal droppings. Special care should be taken not to grind or pulverize leaded materials during removal. In addition, appropriate dust hoarding should be erected if excessive dust is generated.

13. SUPERVISION AND COMMUNICATION

The Contractor MUST have a project manager on site at all times who is fully qualified to properly direct the project and is experienced with all aspects of the work.

14. REFERENCE INFORMATION

The following documents are provided for information in preparing the quotation. It is expected that any requirements in the reports will be complied with by the contractor.

- Harbourside Engineering Consultants Springhill Masons Hall Demolition Report, September 20, 2019.
- Bureau Veritas Report# R5898305 dated 2019/09/27 for lead sample taken from Mine Manager’s Building.

- NS Labour and Workforce Development Outdoor Work with Asbestos Guidelines, March 26, 1998.
- Strum Consulting Qualitative Regulated Materials Survey Miner's Memorial Drive, Springhill NS, September 6, 2019.

15. SAFETY CERTIFICATION

Submit with Tender a copy of Tenderer's current and valid Letter of Good Standing indicating COR certification issued by Construction Safety Nova Scotia, or equal, and the Province of Nova Scotia Department of Labour.

Out of province companies shall submit, with their Tender, a current and valid Letter of Good Standing from their province of origin or from a recognized Safety Association which utilizes an external audit element.

Out of province companies may obtain a Letter of Good Standing from Construction Safety Nova Scotia, or a recognized safety certified company, upon submission of documentation verifying training and compliance with the NS OH&S Act and Regulations.

In any event, out of province Tenderers will have to satisfy and provide proof from Construction Safety Nova Scotia in respect to their safety status prior to being awarded a contract.

16. WORKERS' COMPENSATION

A certificate of good standing with the Workers' Compensation Board of Nova Scotia or equivalent must be provided by the successful Tenderer prior to starting Work.

17. INSURANCE CERTIFICATE

A valid certificate showing at least $5,000,000 liability, with the Municipality of the County of Cumberland named under additional insured, must be provided by the successful Tenderer prior to the execution of the Articles of Agreement.

18. CONTRACT SECURITY

Performance Bond in the amount of the Estimated Contract Price to be provided within fourteen (14) days of acceptance of the Tender or the Owner will retain the Tender Security until the work has been substantially completed, as determined by the Director, Engineering and Operations.

19. QUALITY/COMPLETE PROJECT

By submitting a Tender, the Tenderer guarantees that, unless specified otherwise, all components required to make the required equipment or system operable or to deliver the required services have been included in the Tender, or will be provided at no additional charge to the Municipality.

20. CANCELLATION; NO AWARD

Issuing a Tender implies no obligation on the Municipality to accept any Tender, or a portion of any Bid submitted. **The lowest or any Bid may not necessarily be accepted**.

Tenders may be cancelled in whole or in part without penalty, when a) the price Tendered exceeds the funds allocated for the purchase; b) there has been a substantial change in the requirements after the Invitation has been issued; c) information has been received by the Municipality after the Invitation has been issued that the Municipality feels has substantially altered the procurement; or d) there was insufficient competition in order to provide the level of service, quality of goods or pricing required.

If no compliant Tenders are received in response to an Invitation, the Municipality reserves the right to enter into negotiations with one or more vendors in order to complete the procurement.

The Municipality will be the sole judge of whether there is sufficient justification to cancel any Tender.

No action or liability will lie or reside against the Municipality in its exercise of its rights under this section.

21. TENDER FORM

See attached.



Mine related building locations



Mine Manager's Building



Mine Storage Building



Masons Hall viewed from Main Street



Masons Hall – transite board remains adjacent neighbouring building (not visible in photo)



Lamp Cabin Building Rubble

TENDER FORM

Tenderer declares that the Tender documents and Addenda No. __ to __ inclusive were carefully examined.

	Item	Pricing	
1	**Mine Manager's Building**		
.1	Demolition		
.2	Removal of foundation to below grade and infilling		
.3	Site clean up		
	Subtotal - Mine Manager's Building .		
2	**Mine Storage Building**		
.1	Demolition		
.2	Removal of foundation to below grade and infilling		
.3	Site clean up		
	Subtotal - Mine Storage Building .		
3	**Masons Hall**		
.1	Demolition		
.2	Removal of foundation to below grade and infilling		
.3	Site clean up		
.4	Utilities and traffic control		
	Subtotal - Masons Hall .		
4	**Lamp Cabin Building**		
.1	Removal of rubble		
.2	Removal of foundation to below grade and infilling		
.3	Site clean up		
	Subtotal – Lamp Cabin Building .		
	Subtotal		
	15% HST		
	Total		

Schedule for the work will be as follows:

	Item	**No. of Weeks** (after award)	
1, 2 & 4	**Mine Manager's Building, Mine Storage Building and Lamp Cabin buildings**	**Start**	
		Finish	
3	**Masons Hall**	**Start**	
		Finish	

Traffic closures to facilitate work will be as follows:

	Item	Single Lane Closure					Road Closure				
		No. of Weeks (after award)		Days/ week	Daily Schedule		No. of Weeks (after award)		Days/ week	Daily Schedule	
		Start	Finish		Start	Finish	Start	Finish		Start	Finish
1	Miners Memorial Drive										
2	Memorial Crescent										
3	Main Street										
4	Elm Street										

SIGNATURES DATED THIS _____ DAY OF FEBRUARY 2020.

[Seal]

Name of Firm Proposing	Signature of Signing Officer
	Name and Title of Signing Officer (Printed)
Witness	Name and Title (Printed)
Witness	Name and Title (Printed)
Company Address	Telephone No.
	E-mail

**NOTE: *Tenders submitted by or on behalf of any Corporation must be signed and sealed in the name of such Corporation by a duly authorized officer or agent.*

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	Subtotal - Mine Storage Building .		
3	**Masons Hall**		
.1	Demolition		
.2	Removal of foundation to below grade and infilling		
.3	Site clean up		
.4	Utilities and traffic control		
	Subtotal - Masons Hall .		
4	**Lamp Cabin Building**		
.1	Removal of rubble		
.2	Removal of foundation to below grade and infilling		
.3	Site clean up		
	Subtotal – Lamp Cabin Building .		
	Subtotal		
	15% HST		
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Schedule for the work will be as follows:

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		Start	Finish		Start	Finish	Start	Finish		Start	Finish
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2	Memorial Crescent										
3	Main Street										
4	Elm Street										

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Company Address	Telephone No.
	E-mail

**NOTE: *Tenders submitted by or on behalf of any Corporation must be signed and sealed in the name of such Corporation by a duly authorized officer or agent.*

Springhill Masons Hall
Demolition Report

PREPARED BY:
Harbourside Engineering Consultants
219 Waverley Road, Suite 200
Dartmouth, NS B2X 2C3
Tel: (902) 405-4696

PREPARED FOR:
Municipality of Cumberland
1395 Blair Lake Road
Upper Nappan, NS B4H 3Y4

September 20, 2019
HEC File #191184

HARBOURSIDE
Engineering Consultants

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1.0 INTRODUCTION

Harbourside Engineering Consultants (Harbourside) were contracted by Cumberland County to provide an engineering plan for the demolition of the building located at 1 Elm St in Springhill, Nova Scotia (the Mason's Building). This building is approximately 100 years old and was constructed on the corner of Elm and Main Streets. The foundation is primarily dry-laid stone walls, with some of the foundation walls near the back of the building made from cast in place concrete. Above the foundations, the building is a two storey, timber framed building with a footprint of approximately 7.6 m wide by 20 m deep and 6 m tall (from the ground to the front peak).



Figure 1: Front and West side of the Mason's Hall located at 1 Elm St.

The building is located very close to both Main St and Elm St. At the rear of the building there is a parking lot that is used for rear access to the adjacent apartment building and other businesses located nearby. The building has started to lean to the west (downhill) as demonstrated by the buckling of siding between the Mason's Hall and the adjacent apartment building. In the basement, it is clear that the entire structure has shifted to the west, as the stone portion of the foundation on both the east and west sides of the building are both leaning towards the west (downhill).

The building is owned by Cumberland County and is currently abandoned. The County intend to demolish this building and prepare the site for use by a new private owner.

The primary intent of this report is to provide the County and their selected contractor with information necessary to develop a demolition plan and identify potential issues and risks that the contractors will need to consider and mitigate.

2.0 EXISTING STRUCTURE DESCRIPTION

The building located at 1 Elm St. is at least 100 years old, built on a foundation comprising sections of concrete and dry-laid stone. The building is timber framed and two stories tall. Recently the main floor of the building was used as a store and martial arts center. The second floor was primarily used as the local Mason's Hall. The building has been abandoned and unused for the last couple of years.

2.1. FOUNDATIONS

The building foundation can be divided into two main sections: the front 15 m of the building and the rear 5 m. The front portion of the foundation is composed of dry-laid stone walls. The ceiling height in this portion of the basement is approximately 1.6 m. The rear portion of the basement is composed of concrete walls and a sunken concrete floor. The ceiling height in this portion of the basement is approximately 2.3 m. At the time of inspection, the sunken concrete floor was covered in about 20 mm of water.

The concrete walls in the rear portion of the building appeared to be in good condition, with no major cracks observed. The walls were observed to be vertical.

The dry-laid stone portion of the foundation was observed to be in poor condition. There were two sections where the stone wall has collapsed into the basement. On the front face of the building (north face) there is an approximately 3 m long section of the wall that has collapsed. This has created a gap at the top of the wall where it was possible to look directly out to Main St. The gap was recently covered by work crews from the County when they paved the sidewalk in front of the building. The collapsed section of wall and repair is shown in Figure 2.



Figure 2: Collapsed Section of north stone foundation wall (Main St side).

On the East side wall (Elm St side) there is another 3.5 m section of the stone wall that has collapsed. The collapsed section of wall is shown in Figure 3.



Figure 3: Collapsed Section of the East foundation wall (Elm St side of building).

The sections of the side walls that have not collapsed are both significantly leaning to the West (downhill). The walls were measured to be leaning to the West by about 450 mm over a height of 1.6 m, as shown in Figure 4 and Figure 5.



Figure 4: West foundation wall.

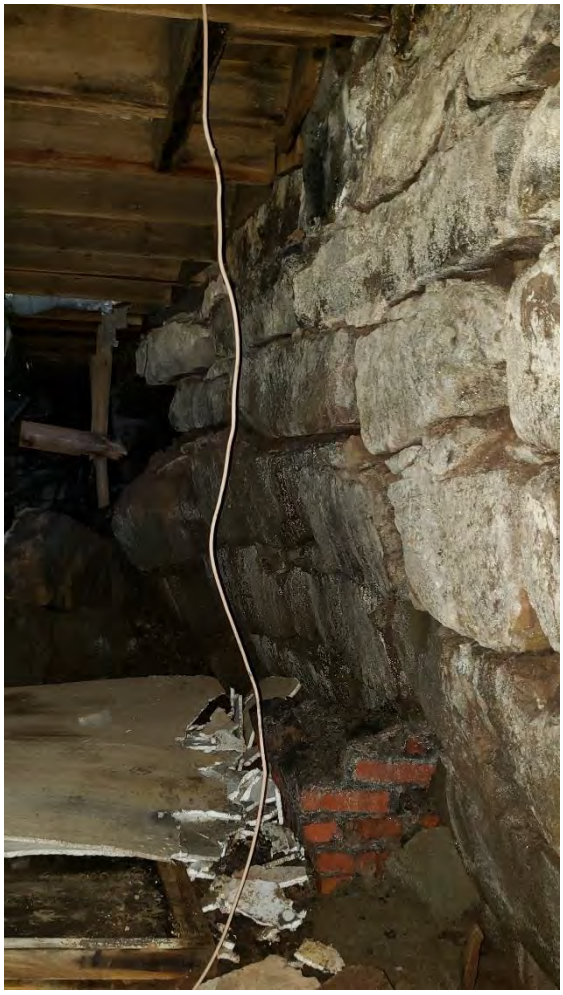


Figure 5: East foundation wall

In the center of the front portion of the basement, there is a row of pipe posts supporting the center beam for the main floor. These posts are also leaning to the west as shown in Figure 6.



Figure 6: Steel Posts leaning to the west.

2.2. MAIN FLOOR

The main floor is composed of various rooms, hallways and two bathrooms, complete with toilets and sinks. There is a false ceiling at about 2.4 m above the floor, however the original ceiling is 3.0 m above the floor. The walls are framed with dimensional lumber, and covered with a combination of drywall, plaster and wood paneling. The floors are primarily covered with plywood sheets, with tiles on the bathroom floors. There is a brick chimney that extends from the basement through the first floor, up to the second floor on the east side of the building.

On the west side of the building there are some holes in the wall where it is possible to view daylight. It is believed that these holes were caused by raccoons that were living in the building. According to the County, the raccoons have been removed from the property. Photos of the main floor can be found in Annex B.

2.3. SECOND FLOOR

The second floor is accessed by an L-shaped staircase located in the southwest corner of the building, which is about 1 m wide. The second floor comprises two large rooms with a couple of smaller rooms (presumably closets). The front room has a ceiling height of about 3 m, while the back rooms have a false ceiling about 2.4 m above the floor. The walls are framed with dimensional lumber and covered with a combination of wood paneling, plaster and drywall. The flooring is primarily plywood sheets, with carpet in the back part of the building.

There are holes in the exterior walls near the top of the stairs. Similar to the main floor, these holes are the result of raccoons that used to live in the building. According to the County, the windows on the second floor were left open during the last couple years, and therefore there is water damage to the floors and walls.

The brick chimney mentioned on the first floor, continues up through the second floor, where there is also a fireplace with brick mantel. Photos of the second floor can be found in Annex B.

2.4. EXTERIOR

The exterior of the building is clad on the east and south sides with white vinyl siding. On the front of the building, the siding appears to be wood or fibre-board. The west side of the building does not have any siding, and is clad with some form of fiber-board. The roof is covered with asphalt shingles.

As noted in discussion about the basement, it is clear from the exterior of the building that the entire structure is leaning to the west, and potentially bearing on the adjacent structure. At the front of the building, there is vinyl siding between the Mason's Hall and the adjacent apartment building. This siding has started to buckle, which indicates the gap between the buildings has reduced since the siding was installed. The infill siding can be seen in Figure 7.

At the back of the building, the west wall is in contact with the adjacent apartment building roof. The gap between buildings is full of siding debris from each of the buildings. This area will be inaccessible until the Mason Hall's walls are removed.



Figure 7: Buckled infill siding between the buildings.

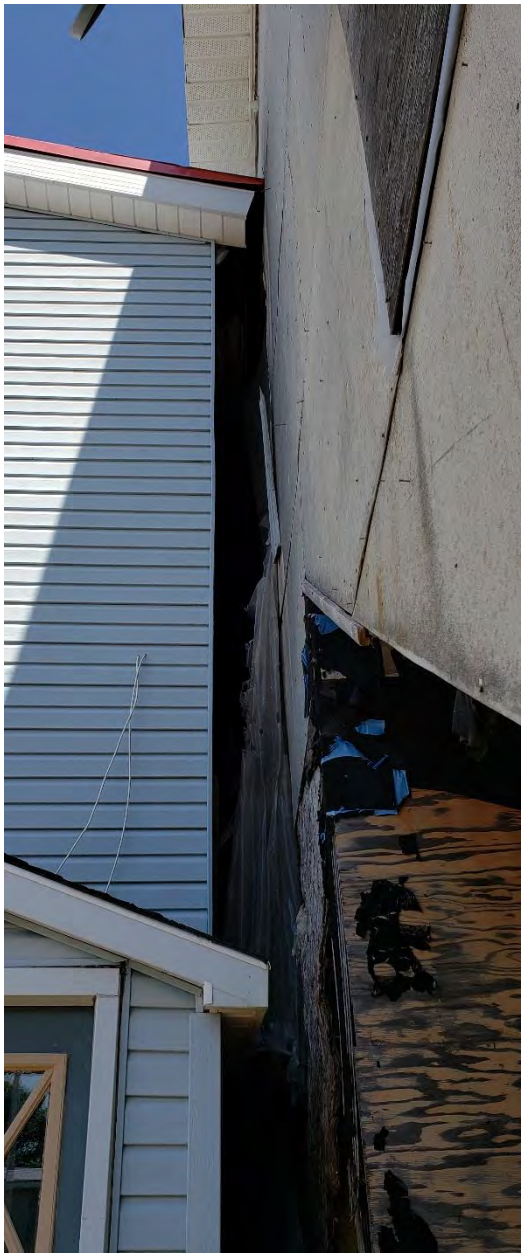


Figure 8: The space between the rear of the buildings.

At the rear of the building there are garbage and compost bins that will need to be removed prior to starting demolition. It is unknown to Harbourside who owns these bins.

On the east side of the building there is a guardrail installed near the current sidewalk, adjacent to the building. This guardrail appears to have been installed to protect the building from vehicles, however it should be noted that the guardrail is located at the same location where a portion of the east foundation has collapsed. In fact, it is possible to see into the basement from Elm St, under the guardrail.



Figure 9: East side of the building, with the guardrail visible.

Similarly, on the front side of the building, the County have recently paved the sidewalk. In order to complete the sidewalk paving, the County installed panel boards and siding to prevent asphalt from being deposited into the building's basement.



Figure 10: Boards installed on front of building to cover hole into the basement.

2.5. ADJACENT STRUCTURES

The adjacent building to the west houses three (3) apartments that are at least partially occupied. The building is founded on a concrete foundation and is also a timber-framed, two-storey building. This building will need to be protected against damage during demolition. One component in particular that will need to be protected is the rear entry at the south-east corner of the building. It will be necessary for the contractor to ensure that the foundation of this entry is not undermined during demolition.

It should be noted that after the removal of the building at 1 Elm St, the adjacent building on Main St will likely require new cladding installed on the east face that is currently inaccessible because of the close proximity to the Mason's Hall building.

3.0 DEMOLITION RESTRICTIONS

Based on Harbourside's site visit and subsequent investigation, the following section outlines requirements for the contractor to consider during demolition of the building and reinstatement of the site. It is understood that the County will issue an RFP that will outline the contractual requirements for the contractor to follow. The following information related to the structure, hazardous materials and Nova Scotia Power requirements is to be considered by the contractor so that the building is removed safely.

3.1. STRUCTURAL ISSUES

As noted in Section 2, the building is leaning to the west and sections of the foundation is in poor condition. In particular the sections of dry-laid stone foundation on the front, west and east sides are either collapsing or leaning significantly to the west. The contractor is to keep equipment back at least 2 m from the existing foundation walls to avoid imparting loads onto the foundation walls. As demolition progresses, the contractor shall infill the basement as soon as practical, to minimize risk of the foundation walls collapsing into the basement.

The Main St sidewalk and roadway on Elm St are immediately adjacent to the Mason's Hall. As a result, the removal of the foundation walls will require partial street and sidewalk closures during demolition, and reinstatement of the sidewalk and roadway after demolition is complete. During demolition activities Harbourside recommends a maximum slope of 1.5 horizontal to 1 vertical (1.5H:1V) where there will be traffic at the top of the slopes. For other areas without traffic, the maximum slope should be 1 horizontal to 1 vertical (1H:1V).

The adjacent apartment building has a concrete foundation, and should not be impacted by the building demolition, however it remains the contractor's responsibility to ensure that the adjacent structure is not adversely impacted by demolition activities. Particularly, the contractor should take note of the rear entrance to the adjacent apartment building, and its proximity to the Mason's Hall. The extent of the foundation under this entrance is not known and therefore it is at risk of undermining while the Mason Hall's foundation is removed.

During demolition the contractor shall ensure that the exterior walls remain stable, especially the west walls. Steps should also be taken to prevent the structure shifting further to the west, thereby imparting loads onto the adjacent building. Methods of ensure the exterior walls and roof remain stable may include additional temporary bracing to the existing studs or tying the west wall back to prevent it from shifting further.

The lateral stability of the structure is primarily provided by the external walls and sheathing, as there are no shear walls within the building. As a result, if one exterior wall is completely removed (such as the rear wall) the building may become unstable. It is apparent that the building is already leaning to the west, and therefore it is not recommended that one full external wall is removed unless the structure is secured

against shifting further to the west. Harbourside recommends that the building is demolished by starting with the roof, followed by the second floor, and finally the main floor. As noted above, the walls shall be braced to stabilize them as the floors above are demolished. Walls running east-west should be removed last on each floor and temporary bracing should be used to secure the walls as the roof, floors and interior walls are removed.

The recommended sequence for demolishing the building is as follows:

1. Shore/brace the exterior walls (first and second floors);
2. Remove the roof;
3. Remove the east exterior wall (second floor);
4. Remove interior walls running north-south (second floor).
5. Remove rear (south) exterior wall (second floor);
6. Remove west wall starting from the rear of the building towards the front (second floor);
7. Remove the north (front) wall (second floor);
8. Remove remaining interior walls (second floor);
9. Repeat steps 3-8 for the first floor.
10. The foundation stones in the west wall should be pulled away (east) from the adjacent building foundation;
11. Backfill the site with a rockfill material that meets the project requirements.

As noted in the structure description, there is a brick chimney on the East side of the building. Due to the proximity of the chimney to Elm St. the contractor will need to ensure the safety of the public while removing the chimney. It is recommended that the chimney be removed from the top down by hand, or with a small breaker. This work should be completed before demolition of the structure below.

During demolition of the structure, the contractor will need to assess how much space will be required to safely demolish and remove the building. This may require street closures for Elm St, and possibly Main St. Street closures are to be considered and coordinated with the County. It is anticipated that at least half street closures will be required.

Prior to demolishing the building, the contractor should remove fixtures and finishes within the building so that they can be properly disposed of. These finishes include bathroom fixtures, appliances, plumbing, heating and electrical components.

3.2. HAZARDOUS MATERIALS

Strum Environmental was retained to conduct a hazardous materials assessment of building components to identify materials that may require special handling or disposal during demolition.

Strum's sampling and testing identified two asbestos containing materials during their site visit, being the caulking in the basement ductwork and the transite boards on the exterior of the building.

Other materials that Strum identified include; lead paint and leachate, mercury in appliances, ozone depleting substances, mould and animal droppings. Strum outlines in their report recommendations for the contractor for handling and disposal of the identified hazardous materials, and Personal Protective Equipment (PPE) to be used by the contractor.

The full report is attached in Annex A.

3.3. NOVA SCOTIA POWER RESTRICTIONS

Nova Scotia Power's (NSP) planning department visited the building and completed a Safe Clearance Report for the existing building and adjacent power lines. According to NSP, the contractor shall maintain a minimum clearance from the primary power lines of 3 m (10') and from the secondary lines of 1 m (3') with all personnel and materials being handled.

Based on measurements taken by NSP during their visit, the current building is about 9.1 m tall, and the primary power lines (25 000 V) are 12.5 m above ground. There is approximately 1.5 m of horizontal separation between the primary power lines and the front of the building. Therefore, the actual separation between the primary power lines and the existing structure is approximately 3.7 m.

Should the contractor need to work within or move materials within the 3 m or 1 m clearance zones, the contractor shall coordinate with NSP to have the lines covered for the duration of the work within the zone. All costs associated with covering the lines are to be the responsibility of the contractor.

The full Safe Clearance Report can be found in Annex C.

In order to maintain the required clearances from the existing power lines, it is suggested that the contractor start demolition from the back of the building and work towards the front of the building.

4.0 CONCLUSIONS

In conclusion, the building located at 1 Elm St is generally in poor condition and should be demolished. The contractor will need to consider the structural issues, hazardous materials and NSP requirements when preparing a plan to demolish the building. Harbourside recommends that the contractor prepare a demolition plan outlining how they will address the issues identified in this report, and submit the plan to Cumberland County for review before proceeding with he demolition work.

The primary structural issues that the contractor will need to consider are:

- Construction equipment to be kept at least 2m away from the foundation wall until the basement has been infilled;
- Any excavations where traffic will be running at the top of the slopes, should have a maximum slope of 1.5H:1V.
- Care shall be taken not to undermine the rear entrance of the adjacent building; and,
- Structure is to be demolished from the top down, while bracing the external walls to ensure that they remain stable and avoid the structure shifting further to the west and imparting loads onto the adjacent building.

The contractor shall follow the requirements of the Hazardous Materials Report for the handling and disposal of all hazardous materials before and during the demolition of the structure.

The contractor is responsible to maintaining the required clearances from the existing power lines (3 m from the primary lines and 1 m from the secondary lines). Should the contractor need to work within these clearances, the contractor shall coordinate with NSP to have the lines covered.

Annex A

Hazardous Materials Report

Strum
CONSULTING

QUALITATIVE REGULATED MATERIALS SURVEY
1 Elm Street
Springhill, NS

September 13, 2019



Strum
CONSULTING

September 13, 2019

Mr. Thomas McNutt
Harbourside Engineering Consultants
219 Waverley Rd., Suite 200
Dartmouth, NS B2X 2C3

Dear Mr. McNutt,

Re: Qualitative Regulated Materials Survey
1 Elm Street, Springhill, NS

Attached is the Qualitative Regulated Materials Survey prepared for 1 Elm Street in Springhill, NS.

This report documents our observations, findings, and recommendations.

We trust this to be satisfactory at this time. Once you have had an opportunity to review this correspondence, please contact us to address any questions you may have.

Thank you,

Courtney MacLean, CET
Environmental Technologist
cmaclean@strum.com

Jeff Faulkner, P.Geo.
Senior Project Manager
jfaulkner@strum.com

EXECUTIVE SUMMARY

In August 2019, Strum Consulting was retained by the Harbourside Engineering Consultants to undertake a Regulated (Hazardous) Materials Survey at 1 Elm Street in Springhill, Nova Scotia. The scope of the Regulated Materials Survey consisted of a site visit to review building materials and the sampling of building materials that may require special handling or disposal during deconstruction and renovation. This report provides our findings and recommendations.

Main Findings & Recommendations

The main findings of the assessment are outlined below:

Asbestos	• Non-friable ACM caulking on ductwork in the basement and transite board on the exterior have been identified during the assessment. As such, all caulking on ductwork and exterior transite board should be considered to contain ACM. • Friable asbestos containing material (ACM) was not identified during the assessment. • Asbestos abatement practices and precautionary measures protective of human health will be required to safely remove all ACM prior to the proposed demolition.
Lead in Paint	• Concentrations of lead in paint samples were reported to range from 40 to 89,000 mg/kg. Two of six paint samples (collected from the surfaces of exterior wood siding and interior plaster walls) reported concentrations of leachable lead which are not acceptable at local solid waste disposal facilities. • It is anticipated that painted building materials including their substrates (i.e. wood and plaster) may contain total leachable concentrations of lead which are less than those reported in the samples collected of paint only; and therefore, may comply with the applicable guidelines. Sampling of these materials including both the painted surfaces and substrate would be required to confirm disposal requirements. • Precautionary measures protective of human health will be required during the disturbance and disposal of lead containing building materials.
Mercury in Appliances	• Fluorescent lighting that may contain mercury vapour was identified throughout the building.
Ozone Depleting Substances	• One refrigerator was identified in the assessment area as ODS containing. One air conditioner was also identified in the assessment area as potentially ODS containing and should be screened for ODS prior to disposal.

Polychlorinated Biphenyls (PCBs)	• No PCB containing ballasts were identified during the representative screening completed during the assessment. • No potential PCB containing caulking or electrical equipment was observed during the assessment.
Silica	• Typical of standard construction, concrete, and masonry materials used for foundations, flooring, and walls may contain silica.
Mould and Animal Droppings	• Mould and animal droppings were observed throughout the assessment area. Precautionary measures protective of human health will be required during the disturbance and disposal of these materials.

Based on the findings of this assessment the following recommendations are forwarded:

1. Prior to the completion of any demolition activities, a qualified abatement contractor should be retained to complete the safe removal and disposal of non-friable asbestos containing transite board and caulking present throughout the area of assessment, as per the applicable provincial regulations and codes of practices. Workers handling ACM should be outfitted with appropriate personal protective equipment (PPE). The appropriate level of containment should be constructed to prevent the escape of asbestos contamination from the work area.

2. To confirm that painted building materials including their substrates (i.e. wood and plaster) contain total leachable concentrations of lead that are acceptable in local solid waste disposal facilities, composite samples including both paint and substrates should be collected.

3. Potentially mercury containing fluorescent bulbs should be removed prior to demolition activities and disposed of in an appropriate manner in accordance with applicable regulations.

4. Although no PCB-containing ballasts were identified, ballasts should be screened on an individual basis to determine PCB content and appropriate disposal options prior to demolition activities.

5. All fixtures identified to contain an ozone depleting refrigerant should be decommissioned by a qualified refrigeration technician prior to disposal.

6. Workers involved in the demolition and disposal of building materials should be outfitted with appropriate PPE, protective of asbestos, lead, silica, mould, and animal droppings. Special care should be taken not to grind or pulverize leaded materials

during removal. In addition, appropriate dust hoarding should be erected if excessive dust is generated.

This Executive Summary provides a brief overview of the main conclusions of this assessment. Complete details are provided in the report and the attached Appendices. The statements made in this Executive Summary are subject to the same limitations as described in Sections 1.2 and 15.0.

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Strum CONSULTING

1.0 INTRODUCTION

In August 2019, Strum Consulting was retained by the Harbourside Engineering Consultants to undertake a Qualitative Regulated Materials Survey at 1 Elm Street in Springhill, NS. The objective of this assessment is to identify any regulated materials that will require removal from the building prior to proposed demolition.

1.1 Scope of Work

The scope of the Regulated Materials Survey consisted of a site visit on August 6, 2019, to review building materials and the sampling of building materials that may require special handling or disposal during deconstruction. The assessment areas and investigation points are shown on Drawing 1 (Appendix A). The following is a list of materials reviewed:

- Asbestos containing material (ACM)
- Lead containing material (LCM)
- Mercury
- Ozone depleting substances (ODS)
- Polychlorinated biphenyls (PCBs)
- Silica (free crystalline silica)
- Mould
- Radioactive materials
- Urea formaldehyde foam insulations (UFFI)

Other regulated materials referred to in various provincial and federal regulations are not expected to be present in this location. Should any of the excluded substances be found within the areas designated for deconstruction, they should be assessed on an individual basis prior to disturbance.

1.2 Limitations

While every effort was made to identify all hazardous materials within the assessment area, undiscovered regulated materials may still exist in the building within enclosed areas such as wall cavities. Access to the roof was also unavailable at the time of assessment.

If additional materials suspected of potentially containing hazardous materials are identified during site work, these materials should be assessed to determine if they contain hazardous materials.

2.0 ASBESTOS SAMPLING & ANALYSIS

2.1 Applicable Guidelines & Regulations

Nova Scotia has issued guidelines and codes of practice for the handling and disposal of asbestos containing materials (ACM). Regulations and Codes of Practice governing asbestos work in Nova Scotia and Federal sites are listed below.

- Code of Practice for Removal of Friable Asbestos Containing Material (11/21/13)
- Code of Practice for A Guide to Assessment & Management of Asbestos in the Workplace (11/21/13)
- Outdoor Work with Asbestos (Removal Projects)
- Asbestos Waste Management Regulations N.S Reg. 53/95
- Canada Occupational Health and Safety Regulations - SOR/86-304
- Hazardous Products Act, R.S., c. H-3
- Hazardous Products (Crocidolite Asbestos) Regulations, SOR/89-440
- Occupational Health and Safety Act, S.N.S 1996

These codes define ACM as a material which contains greater than 0.5% asbestos by volume. Prior to the commencement of any architectural demolition, all identified ACM must be removed from the building and disposed of appropriately. Workers and building occupants must be protected at all times from potential exposure to fibres from both friable and non-friable ACM sources. The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for exposure to asbestos is 0.1 fibres/cc. This TLV is enforced through the Nova Scotia Occupational Health and Safety Act.

Where a friable material contains trace amounts of asbestos (i.e. < 0.5%), but has the potential to release sufficient amount of fibres to create an area where there is a reasonable potential that airborne concentrations of asbestos will exceed occupational health and safety exposure limits, the materials are to be treated as asbestos-containing and must be removed under controlled conditions prior to general demolition or renovations.

2.2 Sampling Methodology

Samples of materials potentially containing asbestos were obtained throughout the designated assessment area by Strum staff on August 6, 2019. The collection of asbestos samples was performed with the intent to determine a general pattern of asbestos use within the building.

Efforts were made to ensure that every type of material that could potentially contain asbestos was sampled. Materials that were sampled for asbestos content include vinyl flooring, mastic, plaster, drywall/joint compound, cement sheet siding and tar paper.

A total of 18 building material samples [A1(AU06)-A18(AU06)] collected by Strum field staff were submitted to EMC Scientific Inc. in Mississauga, ON, for analysis of asbestos by Polarized Light Microscopy (EPA 600R-93/116). Sampling methodology was in compliance with Strum QA/QC protocols.

A Site Plan showing the locations of the collected samples is provided as Drawing 1 in Appendix A. A Photo Log of samples collected, along with analytical results, is provided in Appendix B. Laboratory reports are provided in Appendix C.

2.3 Asbestos Sample Results

A summary of the bulk samples collected and the samples found to contain asbestos from the August 6, 2019 sampling event is presented in Table A, below.

Table A: Summary of Bulk Asbestos Samples

Bulk Material	Number of Samples Submitted for Analysis	Number of Samples Identified as ACM
Plaster	2	0
Tar paper	4	0
Vinyl sheet flooring	5	0
Mortar	1	0
Drywall and joint compound	2	0
Caulking	2	1
Siding	1	0
Transite board	1	1
Total	**18**	**2**

As shown on Table A, two of the 18 samples, collected from caulking and transite board, were reported to contain 2-10% chrysotile asbestos. No other samples were identified as containing asbestos.

As per the regulations and codes of practices listed in Section 2.1, any building materials found to contain greater than 0.5% asbestos is considered to be ACM. Samples identified as ACM are highlighted on Drawing 1 (Appendix A).

Based on these results, it is expected that non-friable ACM in caulking is isolated to the duct work within the building. Non-friable ACM in transite board covers the southwest exterior wall of the building.

At the time of testing, the materials sampled were in poor condition. It is understood that demolition of the site building assessment area is to be completed; and therefore, the duct work with ACM caulking and ACM transite board should be safely removed under controlled conditions by an experienced abatement contractor, prior to any demolition or disturbance of this material. Asbestos abatement should be completed as per the applicable provincial regulations and codes of practices presented in this report. The appropriate level of containment should be constructed to prevent the escape of asbestos contamination from the work area. Workers handling ACM should be outfitted with appropriate PPE.

3.0 LEAD IN PAINT & SURFACE COATINGS

3.1 Applicable Guidelines & Regulations

Regulations and guidelines dealing with the disposal of lead containing materials in Nova Scotia include:

- Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids (1994)
- Code of Practice for Working with Lead
- Working with Inorganic Lead – An Information Package

- Hazardous Products Act, R.S., c. H-3

Disposal of lead-containing materials from a demolition standpoint should be evaluated on an individual basis, taking into account the concentrations contained within the material as well as the total volume of material to be disposed.

If the reported concentrations of lead comply with disposal guideline criteria, the material can be disposed of at a local solid waste disposal facility without any special considerations.

If the concentrations of lead exceed the disposal criteria, additional leachate testing must be completed on the material to determine if the concentrations in a leachate extraction exceed 5 mg/L. This is to prevent toxic materials from leaching or migrating into the ground and creating adverse environmental effects. If lead leachate concentrations are below the landfill disposal guidelines, the material is deemed suitable for disposal at an NSE approved solid waste landfill or C&D waste disposal site. If the material reports leachate concentrations which exceed the landfill guidelines, it is considered *leachate toxic* and must be disposed of at an approved facility.

Further details of lead in leachate sampling and results are provided in section 4.0.

3.2 Sampling Methodology

Paint samples were collected by Strum field staff on August 6, 2019 and analyzed to determine the concentrations of lead. The collection of paint samples was performed with the intent to determine a general pattern of paint use within the building. Samples were collected based on condition, pliability, and layering. Painted areas from which the samples were collected were observed to typically be in poor condition with large areas of degradation observed.

A total of six paint samples [P1(AU06) – P6(AU06)] were submitted to Bureau Veritas in Bedford, NS for analysis of lead in paint (ICPMS). Sampling methodology was in compliance with Strum QA/QC protocols.

A Site Plan showing the locations of the collected samples is provided in Appendix A. A Photo Log of samples collected, along with the analytical results, is provided in Appendix B. Laboratory reports are provided in Appendix C.

3.3 Lead in Paint Sample Results

Samples [P1(AU06) – P6(AU06)] collected for lead in paint analysis reported concentrations of lead ranging from 40 to 89,000 mg/kg. Three samples [P3(AU06), P4(AU06), and P5(AU06)] complied with the Nova Scotia Department of the Environment Disposal Guidelines of 1,000 mg/kg, while the remaining three samples [P1(AU06), P2(AU06), and P6(AU06)] exceeded the applicable guidelines. Material containing lead in paint concentrations below the applicable guideline of 1,000 mg/kg can be disposed of at a local solid waste disposal facility without any special considerations. Additional leachate testing is required on the remaining samples.

As a best management practice, all workers handling paints and surface coatings containing any concentrations of lead should be outfitted with appropriate Personal Protective Equipment (PPE) if disturbing the material during renovation or demolition activities. Special care should be taken not to grind or pulverize lead containing materials during removal.

4.0 LEAD LEACHATE

4.1 Sampling Methodology

Paint samples were collected on August 6, 2019 for lead in paint analysis. All samples collected which had exceeded the provincial disposal guidelines for lead were then analyzed for lead leachate (CGSB). Paints were observed to be in poor condition. Sampling methodology was in compliance with Strum QA/QC protocols.

4.2 Analytical Results

A total of three paint samples were analyzed for lead leachate. One sample [P1(AU06)] complied with the applicable leachate disposal guideline of 5.0 mg/L; the remaining two samples [P2(AU06) and P6(AU06)] exceeded the applicable disposal guideline. Sample P2(AU06), collected from pink and blue paint in the second floor closet/ store room, reported a lead leachate concentration of 7.6 mg/L, and sample P6(AU06), collected from red paint on the south exterior wall (under vinyl siding), reported a lead leachate concentration of 5.6 mg/L.

As lead leachate concentrations in samples P2(AU06) and P6(AU06) exceed the applicable disposal guideline of 5 mg/L, the paint is considered leachate toxic. However, it is anticipated that painted building materials including their substrates (i.e. wood and plaster) may contain total leachable concentrations of lead which are less than those reported in the samples collected of paint only; and therefore, may comply with the applicable guidelines. Sampling of these materials including both the painted surfaces and substrate would be required to confirm disposal requirements.

4.0 MERCURY ASSESSMENT

During the site visit, a visual inspection was completed within the assessment area to identify and assess materials potentially containing mercury such as switches, fluorescent lighting, and thermostats. Mercury containing materials are regulated through Health Canada's Hazardous Products Act and Transportation of Dangerous Goods Act.

Fluorescent lighting was identified throughout the assessment area and may potentially contain mercury vapour. Fluorescent bulbs were identified in light fixtures and stored in various areas throughout the building.

Any appliances/fixtures that potentially contain mercury and will be disturbed by demolition activities should be removed and sealed in appropriate sealable containers and be disposed of at an appropriate disposal facility.

5.0 OZONE DEPLETING SUBSTANCES

Strum personnel completed an inventory to document all potential ozone depleting substances (ODS) within the assessment area. To classify the potential of a chemical in relation to its ozone depleting properties, an Ozone Depleting Potential (ODP) is assigned to each gas. This is a relative value that indicates the potential of a substance to destroy ozone gas as compared with the potential of chlorofluorocarbon-11 (CFC-11) which is assigned a reference value of 1. Any substance with an ODP value greater than zero is known to be ozone depleting.

One refrigerator was identified as ODS containing:

Residential Style Fridge
Manufacturer: unknown
Model#: YRM1015W-3
Serial#: F-099194-1
Location: Bar Area
Refrigerant: R-12
Volume: 4.0 oz
ODP Value: 0.82

One wall-mounted air conditioner was also identified in the building as potentially ODS containing, however could not be confirmed. No other ODS containing appliances were identified within the assessment area.

All fixtures containing ozone depleting substances should be decommissioned by a qualified refrigeration contractor in accordance with applicable regulations, if the unit is to be disposed of.

6.0 PCB ASSESSMENT

A survey of the assessment area was completed to identify electrical equipment (ballasts, transformers, capacitors) which may contain liquid PCBs and building materials which may contain non-liquid PCBs (i.e. Thiokol caulking).

6.1 Applicable Guidelines & Regulations

Regulatory requirements detailing the manufacturing, processing, and handling of PCB containing materials are listed below.

- Canadian Environmental Protection Act (CEPA) SOR 2008-273
- Nova Scotia PCB Management Regulations N.S. Reg. 163/97

In addition, the Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids (1994) states that material containing PCBs in excess of 50 ppm are not suitable for landfill disposal. Materials which exceed this concentration are classified as

hazardous waste and therefore require disposal at an approved hazardous waste disposal facility.

6.2 PCB Assessment Methodology

Fluorescent light fixtures were visually identified throughout the building during the assessment. To determine if dielectric fluid containing PCBs was present within the ballasts of the fluorescent lighting, accessible light ballasts were evaluated. Identification of PCB containing light ballasts was completed based on available manufacturer information and procedures detailed in the Environment Canada publication entitled Identification of Lamp Ballasts Containing PCBs. No sampling of dielectric fluid was completed during this survey.

No evidence of fluid leakage from lighting fixtures was noted during the assessment. No other electrical equipment that may contain PCBs (e.g. transformers, capacitors) was identified within the assessment area.

6.3 PCB Containing Equipment/Materials Results

Of the ballasts screened during the assessment, none contained PCBs or require specialized disposal. All ballasts were labelled to contain no PCBs.

While PCBs were not identified during the selective screening of light ballasts, unscreened ballasts may be PCB containing. It is therefore recommended that all ballasts be screened prior to demolition to ensure specialized disposal is not required.

6.4 NLPCBs (Non-Liquid PCBs)

Non-liquid PCBs are materials containing PCBs that by visual inspection do not flow at room temperature (25°C or 77°F). Buildings that were constructed or refurbished before 1977 may still contain caulking with elevated levels of PCBs.

No potential PCB containing caulking was identified during the assessment. Should it be discovered during renovations, testing should be completed to determine PCB content for disposal purposes.

7.0 SILICA

No sampling of silica containing materials were completed during this assessment, however, silica, sand, and gravel are commonly used in building construction (i.e. concrete, ceramic, and refractory materials). Concrete and/or masonry block used for footings, flooring, and walls inside the building may contain silica. During renovations, as a best management practice, special precautions should be undertaken if dust is being generated to protect workers and occupants from potential silica containing dust. At a minimum, PPE should consist of a full body protective suit and a half-faced Air Purifying Respirator employing HEPA P100 filtration.

The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for worker exposure to the respirable fraction of crystalline silica is 0.05 mg/m^3.

8.0 MOULD

Mould and water damage were observed in several areas within the area of assessment at the time of the site visit. As a best management practice, workers should wear appropriate PPE, including respirators with organic filters, during building demolition activities.

9.0 ANIMAL DROPPINGS

A significant amount of animal droppings was observed in several areas of the building at the time of the site visit. Animal droppings can cause an air quality issue and can carry zoonotic diseases that are harmful to human health. As a best management practice, workers should wear appropriate PPE, including respirators with organic filters, if working in the area or handling materials contaminated with animal droppings.

10.0 RADIOACTIVE MATERIALS

No radioactive materials were identified within the assessment area.

11.0 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

No UFFI was identified to be within the assessment area.

12.0 OTHER REGULATED MATERIALS

Other regulated materials referred to in various provincial and federal regulations are typically only present in industrial or manufacturing facilities. For this reason, isocyanates, vinyl chloride monomer, benzene, acrylonitrile, coke oven emissions, and ethylene oxide are not expected to be present in this building. Should any of the excluded substances be found within the areas designated for deconstruction, they should be assessed on an individual basis prior to disturbance.

13.0 SUMMARY OF FINDINGS

The findings of the Regulated Materials Survey completed at 1 Elm Street, in Springhill, NS in August 2019 are summarized below:

Asbestos	• Non-friable ACM caulking on ductwork in the basement and transite board on the exterior have been identified during the assessment. As such, all caulking on ductwork and exterior transite board should be considered to contain ACM. • Friable asbestos containing material (ACM) was not identified during the assessment. • Asbestos abatement practices and precautionary measures protective of human health will be required to safely remove all ACM prior to the proposed demolition.
Lead in Paint	• Concentrations of lead in paint samples were reported to range from 40 to 89,000 mg/kg. Two of six paint samples (collected from the surfaces of exterior wood siding and interior plaster walls) reported concentration of leachable lead which are not acceptable at local solid waste disposal facilities. • It is anticipated that painted building materials including their substrates (i.e. wood and plaster) may contain total leachable concentrations of lead which are less than those reported in the samples collected of paint only; and therefore, may comply with the applicable guidelines. Sampling of these materials including both the painted surfaces and substrate would be required to confirm disposal requirements. • Precautionary measures protective of human health will be required during the disturbance and disposal of lead containing building materials.
Mercury in Appliances	• Fluorescent lighting that may contain mercury vapour was identified throughout the building.
Ozone-Depleting Substances	• One refrigerator was identified in the assessment area as ODS containing. One air conditioner was also identified in the assessment area as potentially ODS containing and should be screened for ODS prior to disposal.
Polychlorinated Biphenyls (PCBs)	• No PCB containing ballasts were identified during the representative screening completed during the assessment. • No potential PCB containing caulking or electrical equipment was observed during the assessment.

Silica	• Typical of standard construction, concrete, and masonry materials used for foundations, flooring, and walls may contain silica.
Mould and Animal Droppings	• Mould and animal droppings were observed throughout the assessment area. Precautionary measures protective of human health will be required during the disturbance and disposal of these materials.

14.0 RECOMMENDATIONS

Based on the findings of this assessment the following recommendations are forwarded:

1. Prior to the completion of any demolition activities, a qualified abatement contractor should be retained to complete the safe removal and disposal of non-friable asbestos containing transite board and caulking present throughout the area of assessment, as per the applicable provincial regulations and codes of practices. Workers handling ACM should be outfitted with appropriate personal protective equipment (PPE). The appropriate level of containment should be constructed to prevent the escape of asbestos contamination from the work area.

2. To confirm that painted building materials including their substrates (i.e. wood and plaster) contain total leachable concentrations of lead that are acceptable in local solid waste disposal facilities, composites samples including both paint and substrates should be collected.

3. Potentially mercury containing fluorescent bulbs should be removed during demolition activities and disposed of in an appropriate manner in accordance with applicable regulations.

4. Although no PCB-containing ballasts were identified, ballasts should be screened on an individual basis to determine PCB content and appropriate disposal options prior to demolition activities.

5. All fixtures identified to contain an ozone depleting refrigerant should be decommissioned by a qualified refrigeration technician prior to disposal.

6. Workers involved in the demolition and disposal of building materials should be outfitted with appropriate PPE, protective of asbestos, lead, silica, mould, and animal droppings. Special care should be taken not to grind or pulverize leaded materials during removal. In addition, appropriate dust hoarding should be erected if excessive dust is generated.

15.0 STATEMENT OF QUALIFICATIONS AND LIMITATIONS

This Report (the "Report") has been prepared by Strum Consulting ("Consultant") for the benefit of Harbourside Engineering Consultants ("Client") in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations, and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents Consultant's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to Consultant which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement;
- in the case of subsurface, environmental, or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time

Consultant shall be entitled to rely upon the accuracy and completeness of information that was provided and has no obligation to update such information. Consultant accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental, or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

Consultant agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but Consultant makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

The Report is to be treated as confidential and may not be used or relied upon by third parties, except:

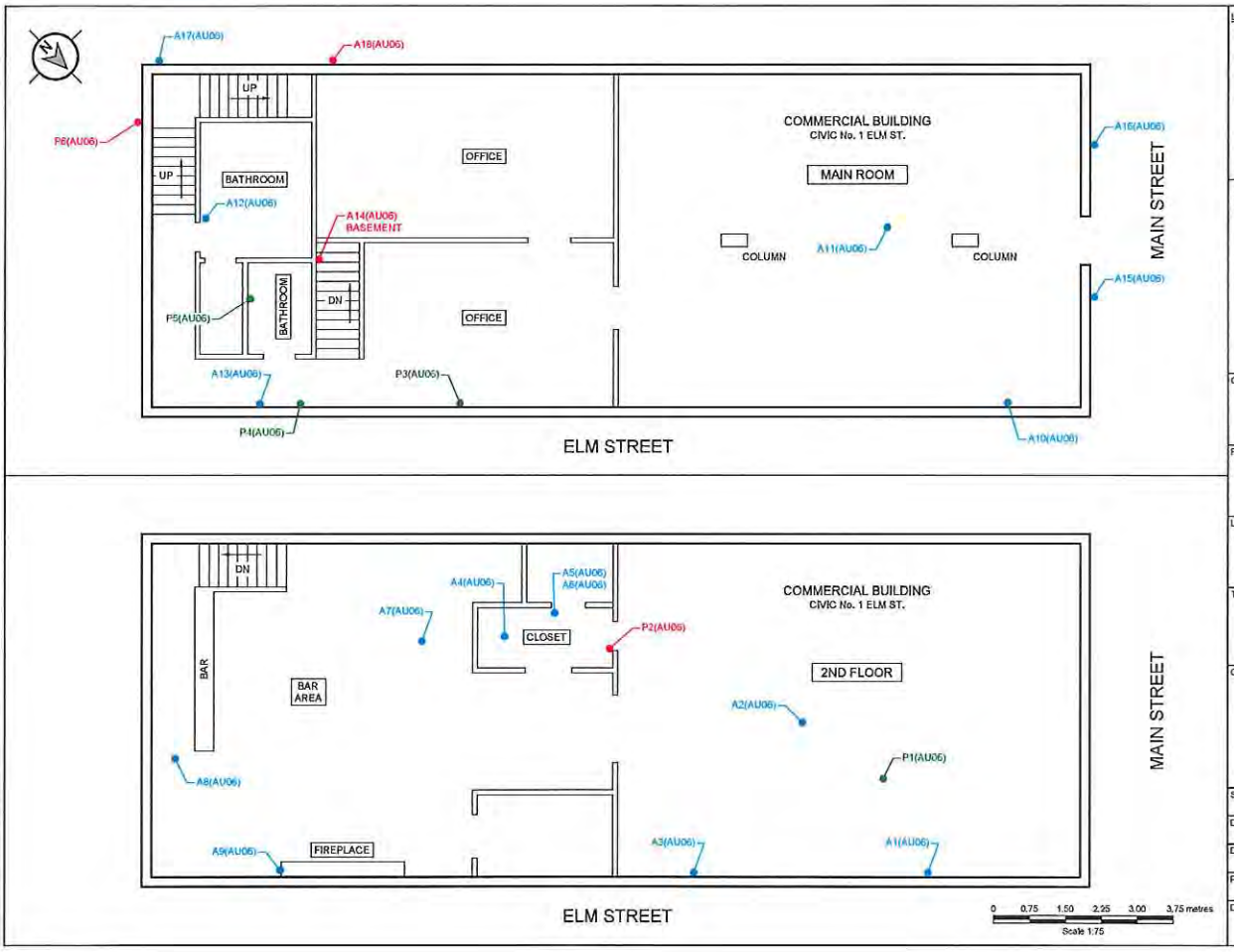
- as agreed in writing by Consultant and Client;
- as required by law; and
- for use by governmental reviewing agencies.

Consultant accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss, or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Report"), except to the extent those parties have obtained the prior written consent of Consultant to use and rely upon the Report and the Information. Any damages arising from improper use of the Report or parts thereof shall be borne by the party making such use.

This Statement of Qualifications and Limitations forms part of the Report and any use of the Report is subject to the terms hereof.

This report was prepared by Courtney MacLean, CET, Environmental Technologist and was reviewed by Jeff Faulkner, P.Geo., Senior Project Manager.

APPENDIX A
SITE DIAGRAM



LEGEND

ASBESTOS SAMPLE — A17(AU06) A18(AU06)

PAINT SAMPLE — P4(AU06) P4(AU06)

RED LABEL INDICATES EXCEEDENCE OF REQUIRED CRITERIA

GENERAL NOTES:

1. DRAWING REFERENCES: NOVA SCOTIA PROPERTY RECORDS, DIGITAL TOPOGRAPHIC MAPPING BY NOVA SCOTIA GEOMATICS CENTRE, NOVA SCOTIA GROUNDWATER ATLAS.
2. PROJECTION: NAD83(CSRS), UTM ZONE 20 NORTH.
3. ALL PROPERTY BOUNDARIES, SITE FEATURES AND SERVICES ARE APPROXIMATE ONLY, SUBJECT TO SURVEY

CLIENT:
HARBOURSIDE ENGINEERING CONSULTANTS

PROJECT:
REGULATED MATERIALS SURVEY

LOCATION:
1 ELM STREET
SPRINGHILL, NS.

TITLE:
SAMPLE LOCATIONS
MAIN FLOOR & SECOND FLOOR

CONSULTANT:
Strum CONSULTING
Engineering * Surveying * Environmental
Bedford * Antigonish * St.John's * Moncton

SCALE: H: 1:75		V:
DATE: AUGUST 2019		DRAWN: L. PEMBERTON
DESIGNED:	CHECKED: C. MACLEAN	APPR'D: J. FAULKNER
PROJECT No.: 19-6935		
DRAWING No.: 1		

APPENDIX B
SAMPLE LOG

Strum CONSULTING	**Project #**	19-6935	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A1(AU06)	Plaster	Second Floor, Large Room		Plaster on walls. 2 Phases: a) Grey, plaster b) White, plaster

Covering	None
Condition	Poor
Access	A
Hazard	No
Friability	Friable

PLM Analytical Results – Lab ID # A51372-1

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Grey, plaster	nd	-	100
White, plaster	nd	-	100

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A2(AU06)	Tar Paper	Second Floor, Large Room		Tar paper, over hardwood floor

Covering	None
Condition	Poor
Access	A
Hazard	No
Friability	Friable

PLM Analytical Results – Lab ID # A51372-2

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Tar Paper, grey	nd	90	10

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	Project #	19-6935	Field Work Date:	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	Site Address:	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A3(AU06)	Vinyl Sheet Flooring	Second Floor, Large Room		Blue vinyl sheet flooring with jute backing. 2 Phases: a) Blue, vinyl flooring b) Brown, cellulose backing

Covering	None
Condition	Poor
Access	A
Hazard	No
Friability	Non-Friable

PLM Analytical Results – Lab ID # A51372-3

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Blue, vinyl flooring	nd	-	100
Brown, cellulose backing	nd	90	10

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A4(AU06)	Plaster	Second Floor, Closet		Plaster on walls and ceiling. 2 Phases: a) Grey, plaster b) White, plaster

Covering	None
Condition	Poor
Access	A
Hazard	No
Friability	Friable

PLM Analytical Results – Lab ID # A51372-4

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Grey, plaster	nd	-	100
White, plaster	nd	-	100

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	Project #	19-6935	Field Work Date:	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	Site Address:	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A5(AU06)	Vinyl Sheet Flooring	Second Floor, Closet		Vinyl sheet flooring, blue tile pattern Covering: Carpet Condition: Poor Access: A Hazard: No Friability: Non-Friable **PLM Analytical Results** – Lab ID # A51372-5 Phase: Black, vinyl backing; Asbestos Fibres (%): nd; Non-asbestos fibres (%): 60; Non-fibrous material (%): 40
A6(AU06)	Tar Paper	Second Floor, Closet		Tar paper under vinyl flooring Covering: None Condition: Poor Access: A Hazard: No Friability: Non-friable **PLM Analytical Results** – Lab ID # A51372-6 Phase: Grey, paper; Asbestos Fibres (%): nd; Non-asbestos fibres (%): 90; Non-fibrous material (%): 10

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6935	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A7(AU06)	Vinyl Sheet Flooring	Second Floor, Bar Room		Green vinyl sheet flooring with jute backing. 2 Phases: a) Green, vinyl flooring b) Brown, cellulose backing

Covering	None
Condition	Poor
Access	A
Hazard	No
Friability	Non-Friable

PLM Analytical Results – Lab ID # A51372-7

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Green, vinyl flooring	nd	-	100
Brown, cellulose backing	nd	90	10

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A8(AU06)	Vinyl Sheet Flooring	Second Floor, Bar Room		White vinyl sheet flooring, mottled pattern. 2 Phases: a) White, vinyl flooring b) Grey, vinyl backing

Covering	None
Condition	Fair
Access	A
Hazard	No
Friability	Non-Friable

PLM Analytical Results – Lab ID # A51372-8

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
White, vinyl flooring	nd	-	100
Grey, vinyl backing	nd	60	40

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	Project #	19-6935	Field Work Date:	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	Site Address:	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A9(AU06)	Mortar	Second Floor, Bar Room		Mortar around fireplace mantle 2 Phases: a) Black, cementitious material b) Grey, cementitious material Covering: None Condition: Poor Access: A Hazard: No Friability: Friable **PLM Analytical Results** – Lab ID # A51372-9 Black, cementitious material: Asbestos Fibres (%): nd; Non-asbestos fibres (%): -; Non-fibrous material (%): 100 Grey, cementitious material: Asbestos Fibres (%): nd; Non-asbestos fibres (%): -; Non-fibrous material (%): 100
A10(AU06)	Drywall Joint Compound	Main Floor, Front Room		Drywall joint compound, white Covering: None Condition: Poor Access: A Hazard: No Friability: Friable **PLM Analytical Results** – Lab ID # A51372-10 White, joint compound: Asbestos Fibres (%): nd; Non-asbestos fibres (%): -; Non-fibrous material (%): 100

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	Project #	19-6935	Field Work Date:	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	Site Address:	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A11(AU06)	Tar Paper	Main Floor, Front Room		Tar paper under plywood flooring Covering: Plywood Condition: Poor Access: A Hazard: No Friability: Friable **PLM Analytical Results** – Lab ID # A51372-11 Phase: Black, paper with tar; Asbestos Fibres (%): nd; Non-asbestos fibres (%): 70; Non-fibrous material (%): 30
A12(AU06)	Vinyl Sheet Flooring	Main Floor, Bathroom		Vinyl sheeting flooring, blue speckle pattern Covering: None Condition: Poor Access: A Hazard: No Friability: Non-friable **PLM Analytical Results** – Lab ID # A51372-12 Phase: Grey, vinyl backing; Asbestos Fibres (%): nd; Non-asbestos fibres (%): 60; Non-fibrous material (%): 40

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	Project #	19-6935	Field Work Date:	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	Site Address:	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A13(AU06)	Drywall	Main Floor, Hallway		Drywall on chimney surround Covering: None Condition: Poor Access: A Hazard: No Friability: Friable **PLM Analytical Results** – Lab ID # A51372-13 Grey, drywall: Asbestos Fibres (%) nd; Non-asbestos fibres (%) 1; Non-fibrous material (%) 99
A14(AU06)	**Caulking**	Basement		Grey caulking on duct work Covering: None Condition: Fair Access: B Hazard: Yes Friability: Non-Friable **PLM Analytical Results** – Lab ID # A51372-14 Grey, caulking: Asbestos Fibres (%) **2**; Non-asbestos fibres (%) -; Non-fibrous material (%) 98 **2% Chrysotile**

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6935	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A15(AU06)	Caulking	Exterior		White caulking on front window **Covering:** None **Condition:** Fair **Access:** A **Hazard:** No **Friability:** Non-Friable **PLM Analytical Results** – Lab ID # A51372-15 Phase: White, caulking; Asbestos Fibres (%): nd; Non-asbestos fibres (%): -; Non-fibrous material (%): 100
A16(AU06)	Siding	Exterior		Particle board siding **Covering:** None **Condition:** Fair **Access:** A **Hazard:** No **Friability:** Friable **PLM Analytical Results** – Lab ID # A51372-16 Phase: Brown, compressed fibrous material; Asbestos Fibres (%): nd; Non-asbestos fibres (%): 90; Non-fibrous material (%): 10

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6935	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	1 Elm Street, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A17(AU06)	Tar Paper	Exterior		Black tar paper, under siding **Covering:** Siding **Condition:** Poor **Access:** A **Hazard:** No **Friability:** Friable **PLM Analytical Results – Lab ID # A51372-17** Phase: Black, paper with tar; Asbestos Fibres (%): nd; Non-asbestos fibres (%): 70; Non-fibrous material (%): 30
A18(AU06)	**Transite Board**	Exterior		Transite siding **Covering:** None **Condition:** Poor **Access:** A **Hazard:** Yes **Friability:** Non-Friable **PLM Analytical Results – Lab ID # A51372-18** Phase: Grey, cement sheet; Asbestos Fibres (%): **10**; Non-asbestos fibres (%): -; Non-fibrous material (%): 90 **10% Chrysotile**

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	Project #	19-6935	Field Work Date:	August 6, 2019
	Assessment Area(s):	Building Interior and Exterior	Site Address:	1 Elm Street, Springhill, NS
	Paint Analysis By:	Maxxam Analytics		

Sample ID	Material Type	Area	Photo	Analytical Result
P1(AU06)	White/Grey Paint on Ceiling	Second Floor, Large Room		Analytes / Result / RDL / *Guideline Lead: 1,700 mg/kg / 5.0 mg/kg / 1000 mg/kg Leachable Lead: 0.12 mg/L / 0.005 mg/L / 5 mg/L Paint Metals: Lab ID KLR956 * Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.
P2(AU06)	Pink and Blue Paint on Walls	Second Floor, Small Room/ Closet		Analytes / Result / RDL / *Guideline Lead: 89,000 mg/kg / 5.0 mg/kg / 1000 mg/kg Leachable Lead: 7.6 mg/L / 0.005 mg/L / 5 mg/L Paint Metals: Lab ID KLR957 * Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected

Strum CONSULTING	**Project #**	19-6935	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and Exterior	**Site Address:**	1 Elm Street, Springhill, NS
	Paint Analysis By:	Maxxam Analytics		

Sample ID	Material Type	Area	Photo	Analytical Result
P3(AU06)	Grey Paint on Floor	Main Floor, Central Room		**Analytes** / **Result** / **RDL** / ***Guideline**: Lead / 520 mg/kg / 5.0 mg/kg / 1000 mg/kg **Paint Metals:** Lab ID KLR958 * Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.
P4(AU06)	Light Pink Paint in Hallway	Main Floor, Hallway		**Analytes** / **Result** / **RDL** / ***Guideline**: Lead / 580 mg/kg / 5.0 mg/kg / 1000 mg/kg **Paint Metals:** Lab ID KLR959 * Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected

Strum CONSULTING	Project #	19-6935	Field Work Date:	August 6, 2019
	Assessment Area(s):	Building Interior and Exterior	Site Address:	1 Elm Street, Springhill, NS
	Paint Analysis By:	Maxxam Analytics		

Sample ID	Material Type	Area	Photo	Analytical Result
P5(AU06)	Blue Paint on Walls	Main Floor, Bathroom		Analytes / Result / RDL / *Guideline Lead / 40 mg/kg / 5.0 mg/kg / 1000 mg/kg Paint Metals: Lab ID KLR960 * Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.
P6(AU06)	**Red Paint on Wood Shingles (under siding)**	Exterior		Analytes / Result / RDL / *Guideline **Lead** / **40,000 mg/kg** / 5.0 mg/kg / 1000 mg/kg **Leachable Lead** / **5.6 mg/L** / 0.005 mg/L / 5 mg/L Paint Metals: Lab ID KLR961 * Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected

APPENDIX C
LABORATORY REPORTS

emcscientific
INCORPORATED

Laboratory Analysis Report

To:

Courtney MacLean
Strum Consulting
1355 Bedford Highway
Bedford, Nova Scotia
B4A 1C5

EMC LAB REPORT NUMBER: A51372
Job/Project Name: Elm Street
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Aug 8/19 **Date Analyzed:** Aug 15/19
Analyst: Jon Delos Santos, *Laboratory Supervisor*
Reviewed By: Malgorzata Sybydlo, *Laboratory Manager*

Job No: 19-6935
Number of Samples: 18
Date Reported: Aug 15/19

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
A1 (AU06)	A51372-1	Plaster, off-white, 2nd Fl, large room	2 Phases: a) Grey, plaster b) White, plaster	 **ND** **ND**			 100 100
A2 (AU06)	A51372-2	Tar paper, grey. 2nd Fl, large room	Grey, paper	**ND**		90	10
A3 (AU06)	A51372-3	Blue sheet flooring w/jute backing, 2nd Fl, large room	2 Phases: a) Blue, vinyl flooring b) Brown, cellulose backing	 **ND** **ND**		 90	 100 10
A4 (AU06)	A51372-4	Plaster, off-white, 2nd F, closet	2 Phases: a) Grey, plaster b) White, plaster	 **ND** **ND**		 	 100 100
A5 (AU06)	A51372-5	Vinyl sheet flooring, blue tile pattern, 2nd Fl, closet	Black, vinyl backing	**ND**		60	40
A6 (AU06)	A51372-6	Tar paper, grey, 2nd Fl, closet	Grey, paper	**ND**		90	10
A7 (AU06)	A51372-7	Green sheet flooring w/jute backing, 2nd Fl, closet	2 Phases: a) Green, vinyl flooring b) Brown, cellulose backing	 **ND** **ND**		 90	 100 10
A8 (AU06)	A51372-8	Vinyl sheet flooring, white mottled pattern, 2nd Fl, bar room	2 Phases: a) White, vinyl flooring b) Grey, vinyl backing	 **ND** **ND**		 60	 100 40

emcscientific
INCORPORATED

Laboratory Analysis Report

EMC LAB REPORT NUMBER: A51372
Client's Job/Project Name/No.: 19-6935
Analyst: Jon Delos Santos, *Laboratory Supervisor*

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
A9 (AU06)	A51372-9	Mortar, black/grey, 2nd F, bar room	2 Phases: a) Black, cementitious material b) Grey, cementitious material	 **ND** **ND**			 100 100
A10 (AU06)	A51372-10	Drywall joint compound, white, main Fl, front room	White, joint compound	**ND**			100
A11 (AU06)	A51372-11	Tar paper, black, main Fl, front room	Black, paper with tar	**ND**		70	30
A12 (AU06)	A51372-12	Vinyl sheet flooring, blue speckle pattern, main Fl, bathroom	Grey, vinyl backing	**ND**		60	40
A13 (AU06)	A51372-13	Drywall, off–white, main Fl, hallway	Grey, drywall	**ND**		1	99
A14 (AU06)	A51372-14	Caulking, grey, basement	Grey, caulking	**Chrysotile**	**2**		98
A15 (AU06)	A51372-15	Caulking, white, exterior	White, caulking	**ND**			100
A16 (AU06)	A51372-16	Particle board siding, exterior	Brown, compressed fibrous material	**ND**		90	10
A17 (AU06)	A51372-17	Tar paper, black, exterior	Black, paper with tar	**ND**		70	30
A18 (AU06)	A51372-18	Transite siding, exterior	Grey, cement sheet	**Chrysotile**	**10**		90

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. ND = None Detected (no asbestos fibres were observed), NA = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Nova Scotia Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

Your Project #: 19-6935
Your C.O.C. #: n/a

Attention: Courtney MacLean

Strum Environmental
Standing Offer
1355 Bedford Hwy
Bedford, NS
CANADA B4A 1C5

Report Date: 2019/08/21
Report #: R5848293
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B9L8388
Received: 2019/08/07, 13:24

Sample Matrix: Paint
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
CGSB extraction - Init and Final pH	3	N/A	2019/08/20	ATL SOP 00034	CGSB 164-GP-1 MP m
CGSB extraction - volume of extractant	3	N/A	2019/08/20	ATL SOP 00034	CGSB 164-GP-1 MP m
CGSB extraction - Dry Weight	3	N/A	2019/08/20	ATL SOP 00034	CGSB 164-GP-1 MP m
Metals Leach TCLP/CGSB extraction	3	2019/08/20	2019/08/21	ATL SOP 00058	EPA 6020B R2 m
Metals Paint Acid Extr. ICPMS	6	2019/08/09	2019/08/10	ATL SOP 00058	EPA 6020B R2 m
Moisture	3	N/A	2019/08/14	ATL SOP 00001	OMOE Handbook 1983 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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Your Project #: 19-6935
Your C.O.C. #: n/a

Attention: Courtney MacLean

Strum Environmental
Standing Offer
1355 Bedford Hwy
Bedford, NS
CANADA B4A 1C5

Report Date: 2019/08/21
Report #: R5848293
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B9L8388
Received: 2019/08/07, 13:24

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Keri Mackay, Customer Experience Team Lead
Email: Keri.MACKAY@bvlabs.com
Phone# (902)420-0203 Ext:294

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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BV Labs Job #: B9L8388
Report Date: 2019/08/21

Strum Environmental
Client Project #: 19-6935

RESULTS OF ANALYSES OF PAINT

BV Labs ID		KLR956	KLR957	KLR961		
Sampling Date		2019/08/06	2019/08/06	2019/08/06		
COC Number		n/a	n/a	n/a		
	UNITS	P1 (AU06)	P2 (AU06)	P6 (AU06)	RDL	QC Batch
Charge/Prep Analysis						
Dry Weight	g	50	50	4.7	0.010	6286620
Volume of Acetic Acid	mL/L	48	26	8.5	N/A	6286622
Inorganics						
Moisture	%	ND (1)	ND (1)	ND (1)	5.0	6277034
Initial pH	N/A	6.6	7.1	5.2	N/A	6286621
Final pH	N/A	5.7	4.9	5.0	N/A	6286621

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Moisture value(s) reported is a visual estimate for calculation purposes.

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ELEMENTS BY ICP/MS (PAINT)

BV Labs ID		KLR956	KLR957	KLR961		
Sampling Date		2019/08/06	2019/08/06	2019/08/06		
COC Number		n/a	n/a	n/a		
	UNITS	P1 (AU06)	P2 (AU06)	P6 (AU06)	RDL	QC Batch
Metals						
Leachable Lead (Pb)	ug/L	120	7600	5600	5.0	6288861

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: B9L8388
Report Date: 2019/08/21

Strum Environmental
Client Project #: 19-6935

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

BV Labs ID		KLR956	KLR957	KLR958	KLR959	KLR960	KLR961		
Sampling Date		2019/08/06	2019/08/06	2019/08/06	2019/08/06	2019/08/06	2019/08/06		
COC Number		n/a	n/a	n/a	n/a	n/a	n/a		
	UNITS	P1 (AU06)	P2 (AU06)	P3 (AU06)	P4 (AU06)	P5 (AU06)	P6 (AU06)	RDL	QC Batch
Metals									
Acid Extractable Lead (Pb)	mg/kg	1700	89000	520	580	40	40000	5.0	6271323

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	22.0°C

REVISED REPORT - re-issued to include CGSB + lead on samples P1(AU06), P2(AU06) and P6(AU06) as per email request from C. MacLean. 2019-08-14 KMA

Sample KLR961 [P6 (AU06)] : The minimum weight of 50g for the standard CGSB extraction, as per Reference Method CGSB 164-GP-1 MP R1999, could not be achieved due to insufficient sample. Client consent has been received to proceed using the modified CGSB method. The uncertainty of the analysis may be increased, and the reported results may not be suitable for compliance purposes.

Results relate only to the items tested.

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BV Labs Job #: B9L8388
Report Date: 2019/08/21

Strum Environmental
Client Project #: 19-6935

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6271323	BAN	Matrix Spike	Acid Extractable Lead (Pb)	2019/08/09		NC	%	75 - 125
6271323	BAN	Spiked Blank	Acid Extractable Lead (Pb)	2019/08/09		105	%	75 - 125
6271323	BAN	Method Blank	Acid Extractable Lead (Pb)	2019/08/09	ND, RDL=5.0		mg/kg	
6271323	BAN	RPD	Acid Extractable Lead (Pb)	2019/08/09	9.7		%	35
6277034	YLG	RPD	Moisture	2019/08/14	1.8		%	25
6286620	AYN	Method Blank	Dry Weight	2019/08/20	NA, RDL=0.010		g	
6286620	AYN	RPD	Dry Weight	2019/08/20	0		%	25
6286621	AYN	Method Blank	Initial pH	2019/08/20	5.0		N/A	
			Final pH	2019/08/20	5.0		N/A	
6286621	AYN	RPD	Initial pH	2019/08/20	0.72		%	25
			Final pH	2019/08/20	0.82		%	25
6286622	AYN	Method Blank	Volume of Acetic Acid	2019/08/20	0.0		mL/L	
6286622	AYN	RPD	Volume of Acetic Acid	2019/08/20	7.0		%	25
6288861	BAN	Matrix Spike	Leachable Lead (Pb)	2019/08/21		99	%	75 - 125
6288861	BAN	Spiked Blank	Leachable Lead (Pb)	2019/08/21		105	%	75 - 125
6288861	BAN	Method Blank	Leachable Lead (Pb)	2019/08/21	ND, RDL=5.0		ug/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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BV Labs Job #: B9L8388
Report Date: 2019/08/21

Strum Environmental
Client Project #: 19-6935

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Eric Dearman, Scientific Specialist

Rosemarie MacDonald, Scientific Specialist (Organics)

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Annex B

Photos



Figure B-1: East side of the building.



Figure B-2: East side and rear of the building.



Figure B-3: Rear and West side of the building exterior.

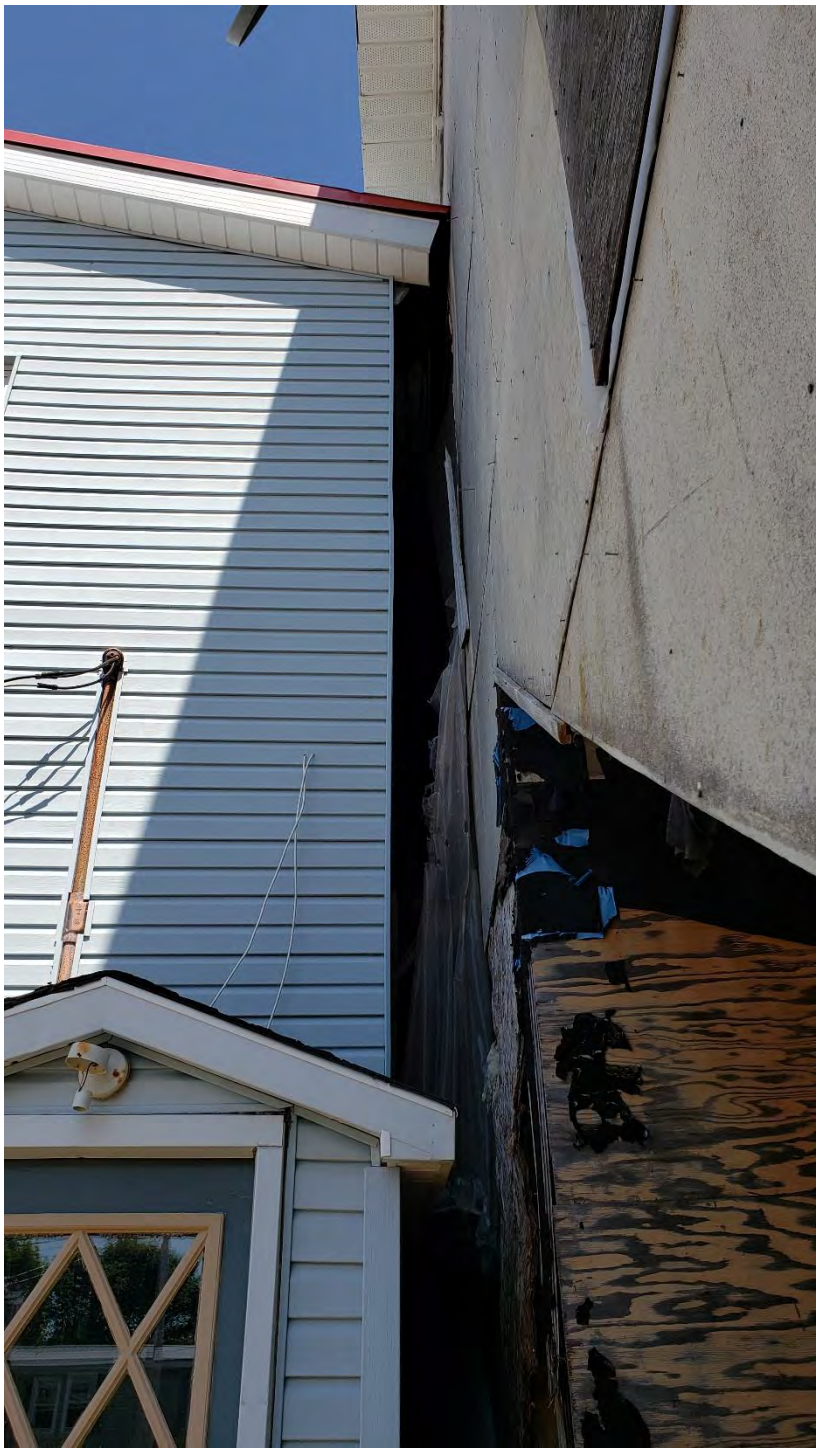


Figure B-4: Exterior west side of the building in contact with the adjacent structure.



Figure B-5: Brick chimney in the basement.



Figure B-6: East foundation wall, leaning to the west with a collapsed section visible.



Figure B-7: Collapsed section of the east foundation wall.



Figure B-8: Collapsed section of the north foundation wall (front of the building).



Figure B-9: West foundation wall, leaning to the west.



Figure B-10: Front room on the main floor.



Figure B-11: One of the bathrooms located on the main floor.



Figure B-12: Main floor hallway.



Figure B-13: Second bathroom on the main floor.



Figure B-14: Room on the main floor. Note that light is visible near the ceiling where the walls have holes in them.



Figure B-15: Lower flight of stairs from the main floor up to the second floor.



Figure B-16: Upper flight of stairs to the second floor.



Figure B-17: Main room on the second floor.



Figure B-18: Back room on the second floor.

Annex C

Nova Scotia Power – Power Services Safe Clearance Report

Power Services Safe Clearance Report

No. 123258

Nova Scotia POWER An Emera Company

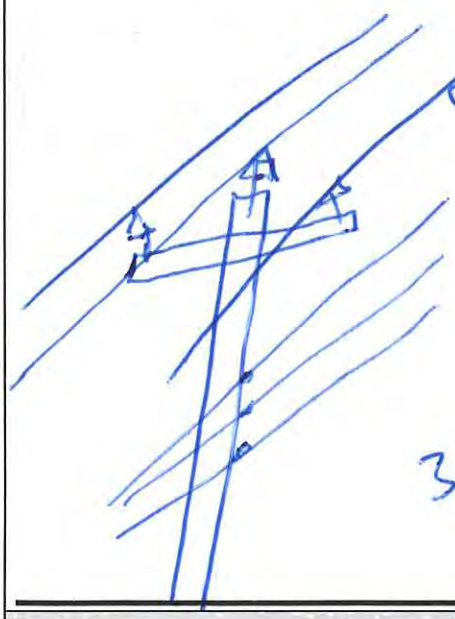
Project Name Mason Building Demo	**Date** Yr. 19 Mth. 07 Day 05 Time 10:00 AM
Project Location 1 Elm Street Springhill	
Type of Project Building Demolition	
☑ Initial Visit ☐ Follow-up ☐ Telephone ☐ Other	
☑ Overhead System ☐ Underground System	**Construction Presently Underway** ☐ Yes ☑ No
Proposed Start Date ASAP Yr. Mth. Day	

COMMENTS/INSTRUCTIONS/SKETCH

Note: All NSPI plant voltages located within customer's job site must be identified below.

Voltage Present:	Safe distance:
25000V	10'
120/240V	3'

- Remain more than 10' from Top 3 wires at all times with Personal and materials being handled



- Remain more than 3' from Next 5 wires at all times
- Cover up required if 10'+3' Separation Can't be maintained.

See Customer Responsibilities on Back.

N.S. Power Representative

Name: Chris Newman	**Position:** Regional Planner
District: North East	
Signature:	**Date:** August 5 2019

Customer Representative

Name: THOMAS MCNUTT	**Position:** ENGINEER.
Firm's Name: HARBOURSIDE ENGINEERING.	
Firm's Address: DARTMOUTH NS	
Telephone No.: 902 405 4696	**Fax No:**
Involvement of Firm to Project ☐ Owner ☑ Consultant ☐ Gen. Cont. ☐ Sub-Cont. ☐ Other	
Signature: **I am authorized to represent Customer on this project**	**Date:** 2019 Aug 6.

Distribution: White - Firm Yellow - NSPI

80 50 2480

Customer Responsibilities:

The Customer, its representatives, contractors or agents are responsible for and assume all risks associated with the following:

1. All cable markings are approximate.
2. Hand digging is required within one metre of the cable markings.
3. Customer is responsible to call Nova Scotia Power Inc. if there is digging at sites other than those specified on the Clearance Report.
4. This Clearance Report applies to this project only. It is not to be used for future reference as cables may be moved without notice.
5. **Nova Scotia Power Inc. assumes no responsibility for customer-owned underground cables. NSPI will not indicate these on the Clearance Report. Customer–owned equipment must be located by the customer or its agents.**
6. Nova Scotia Power Inc. is not responsible to locate underground telephone, cable TV cables or Gas lines. The Telephone, Cable and Gas companies should be contacted directly.
7. If there is any doubt or question about the location of NSPI cables, you must contact the NSPI representative before digging.
8. Duct banks and manholes are not to be exposed or undermined without specific approval of NSPI. Should it become necessary to expose or undermine power facilities, NSPI must be contacted to determine required action needed to protect the integrity of these facilities. Costs for same are the responsibility of customer.
9. Should it be deemed necessary by NSPI, NSPI will provide an "on site" spotter and / or inspector. Costs for same will be the responsibility of customer.
10. Customer and/or its agents are responsible for all cost incurred for the restoration of service and repair of power facilities damaged as a result of excavation. Instructions are based on conditions at the time of assessment.
11. Distance from live overhead lines must be:

Voltage Present	**Safe Distance**
0 – 750volts	1 metre
750 – 69000 volts	6 metre

Unless stated differently on the front of this Clearance Report.

12. Customers /Contractors must have a Job Safety Plan according to provincial department of Labour. This Clearance Report does not constitute a Job Safety Plan.

Your Project #: 19-6954
Your C.O.C. #: n/a

Attention: Courtney MacLean

Strum Environmental
Standing Offer
1355 Bedford Hwy
Bedford, NS
CANADA B4A 1C5

Report Date: 2019/09/27
Report #: R5898305
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9Q3384
Received: 2019/09/19, 11:32

Sample Matrix: Solid
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
CGSB extraction - Init and Final pH	1	N/A	2019/09/23	ATL SOP 00034	CGSB 164-GP-1 MP m
CGSB extraction - volume of extractant	1	N/A	2019/09/23	ATL SOP 00034	CGSB 164-GP-1 MP m
CGSB extraction - Dry Weight	1	N/A	2019/09/23	ATL SOP 00034	CGSB 164-GP-1 MP m
Metals Leach TCLP/CGSB extraction	1	2019/09/23	2019/09/24	ATL SOP 00058	EPA 6020B R2 m
Moisture	1	N/A	2019/09/20	ATL SOP 00001	OMOE Handbook 1983 m

Remarks:

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All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

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Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 19-6954
Your C.O.C. #: n/a

Attention: Courtney MacLean

Strum Environmental
Standing Offer
1355 Bedford Hwy
Bedford, NS
CANADA B4A 1C5

Report Date: 2019/09/27
Report #: R5898305
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9Q3384
Received: 2019/09/19, 11:32

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Keri Mackay, Customer Experience Team Lead
Email: Keri.MACKAY@bvlabs.com
Phone# (902)420-0203 Ext:294

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RESULTS OF ANALYSES OF SOLID

BV Labs ID		KVE742		
Sampling Date		2019/09/17 15:00		
COC Number		n/a		
	UNITS	P1(SE18)	RDL	QC Batch
Charge/Prep Analysis				
Dry Weight	g	50	0.010	6346364
Volume of Acetic Acid	mL/L	200	N/A	6346366
Inorganics				
Moisture	%	2.0	1.0	6343270
Initial pH	N/A	10	N/A	6346365
Final pH	N/A	5.7	N/A	6346365

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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ELEMENTS BY ICP/MS (SOLID)

BV Labs ID		KVE742		
Sampling Date		2019/09/17 15:00		
COC Number		n/a		
	UNITS	P1(SE18)	RDL	QC Batch
Metals				
Leachable Lead (Pb)	ug/L	99	5.0	6346911

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	20.0°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6343270	YLG	RPD	Moisture	2019/09/20	0		%	25
6346364	EPU	Method Blank	Dry Weight	2019/09/23	NA, RDL=0.010		g	
6346364	EPU	RPD	Dry Weight	2019/09/23	0		%	25
6346365	EPU	Method Blank	Initial pH	2019/09/23	4.9		N/A	
			Final pH	2019/09/23	5.1		N/A	
6346365	EPU	RPD	Initial pH	2019/09/23	0.79		%	25
			Final pH	2019/09/23	4.1		%	25
6346366	EPU	Method Blank	Volume of Acetic Acid	2019/09/23	0		mL/L	
6346366	EPU	RPD	Volume of Acetic Acid	2019/09/23	0		%	25
6346911	BAN	Matrix Spike	Leachable Lead (Pb)	2019/09/24		99	%	75 - 125
6346911	BAN	Spiked Blank	Leachable Lead (Pb)	2019/09/24		98	%	75 - 125
6346911	BAN	Method Blank	Leachable Lead (Pb)	2019/09/24	ND, RDL=5.0		ug/L	
6346911	BAN	RPD	Leachable Lead (Pb)	2019/09/24	NC		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Bureau Veritas Laboratories 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Alan Stewart, Organics Manager, Bedford

Eric Dearman, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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Outdoor Work with Asbestos Guidelines

March 26, 1998

Outdoor operations involving work with asbestos should be subject to appropriate precautions. The extent of these precautions will be dictated by the nature of the work undertaken and the project size. Each undertaking must be assessed by a competent individual to determine the specific job requirements.

Isolation

- a) For all jobs, barricades of rope or warning tape should be erected around the areas where work on asbestos is to be carried out (For major work, placing barricades a distance of 15 metres (50 feet) from the work site would usually be adequate).
- b) Where bystanders (neighbours or other workers) are likely to be present or the potential for fibre release is judged to be high, the immediate area in which work is to be carried out may have to be sealed by building temporary enclosures and appropriate warning signs erected.

Personal Protective Equipment and Hygiene

Where personnel may be exposed to an inhalation hazard, an acceptable respirator must be made available and worn. The respirator selected should provide adequate protection for asbestos concentrations likely to be encountered. In addition, appropriate protective clothing should be provided to prevent skin and street clothing contamination.

Where required a change area should be provided. This area should be close to the work site but outside the posted area.

Equipment and Material

- respiratory protective equipment
- protective clothing
- high efficiency vacuum and/or wet cleaning equipment
- hand tools appropriate for the operations to be conducted
- leak tight polyethylene bags for waste disposal
- wetting/saturating agents and equipment
- barrier material

Code of Practice

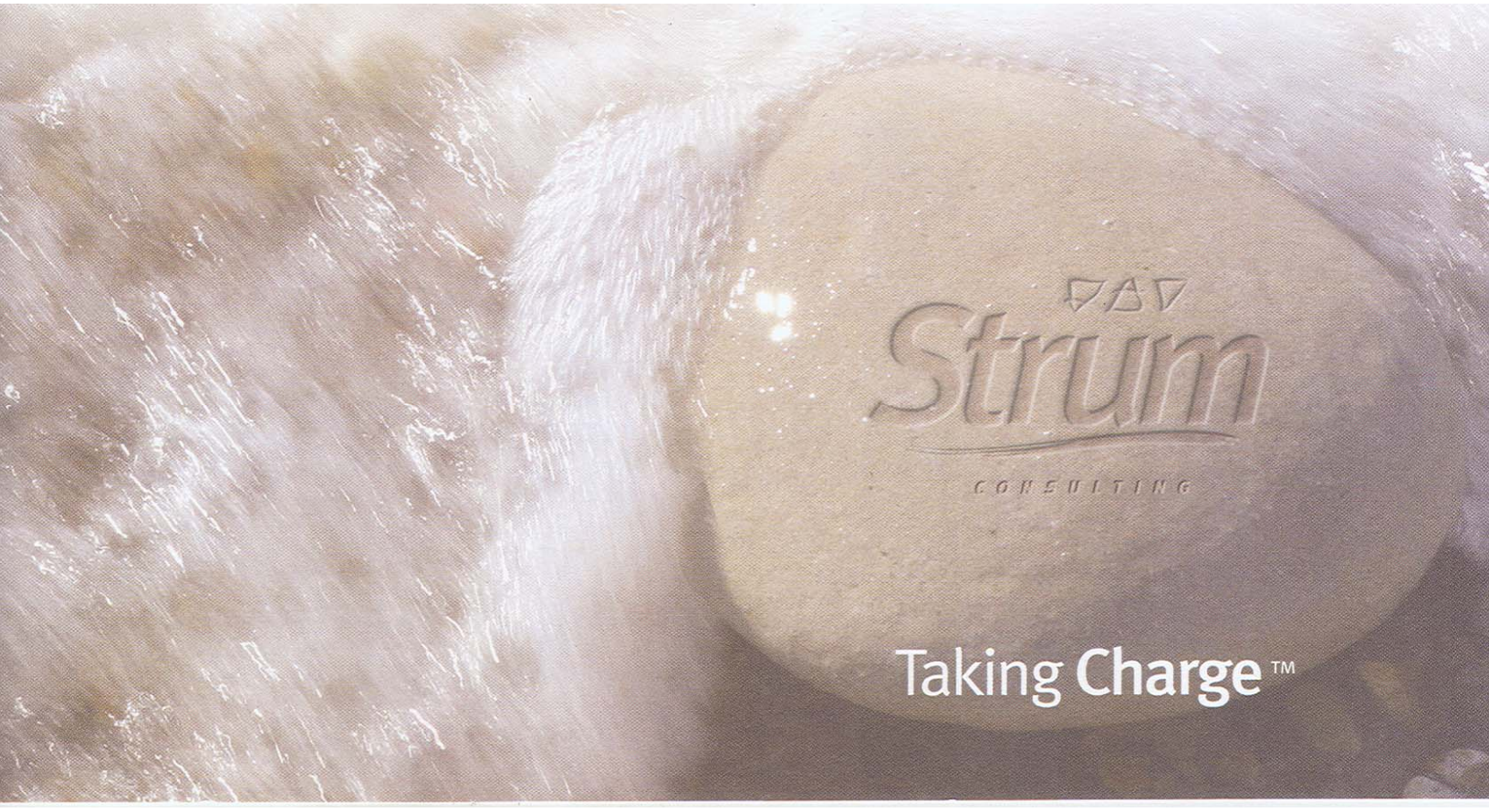
A defined procedure indicating how the operation is to be conducted should be developed. All operators involved should be aware of and adhere to this procedure.

Additional information is included in the Nova Scotia Department of Labour and Workforce Development booklet "Dealing with Asbestos Containing Materials - An Information Package."

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Page last updated 2009-09-30.
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QUALITATIVE REGULATED MATERIALS SURVEY
Miner's Memorial Drive
Springhill, NS

September 6, 2019



September 6, 2019

Mr. Jon Eppell
Municipality of Cumberland

Dear Mr. Eppell,

Re: Qualitative Regulated Materials Survey
Miner's Memorial Drive, Springhill, NS

Attached is the Qualitative Regulated Materials Survey report prepared for Miner's Memorial Drive, Springhill, NS.

This report documents our observations, findings, and recommendations.

We trust this to be satisfactory at this time. Once you have had an opportunity to review this correspondence, please contact us to address any questions you may have.

Thank you,

Courtney MacLean, CET
Environmental Technologist
cmaclean@strum.com

Jeff Faulkner, P.Geo.
Senior Project Manager
jfaulkner@strum.com

EXECUTIVE SUMMARY

In August 2019, Strum Consulting was retained by the Municipality of Cumberland to undertake a Regulated (Hazardous) Materials Survey at two buildings (mine manager's office and compressor hoist building) located at 29 Miner's Memorial Drive in Springhill, Nova Scotia. The scope of the Regulated Materials Survey consisted of a site visit to review building materials and the sampling of building materials that may require special handling or disposal during deconstruction or renovation. This report provides our findings and recommendations.

Main Findings & Recommendations

The main findings of the assessment are outlined below:

Asbestos	• Friable asbestos containing material (ACM) has been identified in pipe wrap/elbows in both site buildings. • Non-friable ACM in transite board and mastic under vinyl tile has been identified in the compressor hoist building. • Asbestos abatement practices and precautionary measures protective of human health will be required to safely remove all ACM prior to the proposed demolition.
Lead in Paint	• Concentrations of lead in paint samples were reported to range from 74 to 13,000 mg/kg. One of five paint samples (collected from concrete walls of the office building basement) reported a concentration of leachable lead which is not acceptable at local solid waste disposal facilities. • It is anticipated that painted building materials including substrate (i.e. concrete) may contain a total leachable concentration of lead which is less than what was reported in the sample collected of paint only; and therefore, may comply with the applicable guidelines. Sampling of this material, including both the painted surface and a substrate, would be required to confirm disposal requirements. • Precautionary measures protective of human health will be required during the disturbance and disposal of lead containing building materials.
Mercury in Appliances	• Fluorescent lighting that may contain mercury vapour was identified in both buildings.
Polychlorinated Biphenyls (PCBs)	• Potential PCB containing ballasts were identified during the assessment. • No potential PCB containing caulking or electrical equipment was observed during the assessment.
Silica	• Typical of standard construction, concrete, and masonry materials used for foundations, flooring, and walls may contain silica.

Based on the findings of this assessment the following recommendations are forwarded:

1. Prior to the completion of demolition activities, a qualified abatement contractor should be retained to complete the safe removal and disposal of friable asbestos containing pipe wrap/elbows and non-friable asbestos containing vinyl tile mastic and transite board present throughout the area of assessment, as per the applicable provincial regulations and codes of practices. Workers handling ACM should be outfitted with appropriate PPE. The appropriate level of containment should be constructed to prevent the escape of asbestos contamination from the work area.

2. To confirm that painted building materials including substrate (i.e. concrete) contain a total leachable concentration of lead that is acceptable in local solid waste disposal facilities, a composite sample of both paint and substrate should be collected.

3. Potentially mercury containing fluorescent bulbs should be removed prior to demolition activities and disposed of in an appropriate manner in accordance with applicable regulations.

4. Although no PCB-containing ballasts were identified, ballasts should be screened on an individual basis to determine PCB content and appropriate disposal options prior to demolition activities.

5. Workers involved in the demolition and disposal of building materials should be outfitted with appropriate PPE, protective of asbestos, lead, silica and mould. Special care should be taken not to grind or pulverize leaded materials during removal. In addition, appropriate dust hoarding should be erected if excessive dust is generated.

This Executive Summary provides a brief overview of the main conclusions of this assessment. Complete details are provided in the report and the attached Appendices. The statements made in this Executive Summary are subject to the same limitations as described in Sections 1.2 and 16.0.

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1.0 INTRODUCTION

In August 2019, Strum Consulting was retained by the Municipality of Cumberland to undertake a Qualitative Regulated Materials Survey at two buildings (mine manager's office and compressor hoist building) located at 29 Miner's Memorial Drive in Springhill, NS. The objective of this assessment was to identify any regulated materials that will require removal from the buildings prior to proposed demolition.

1.1 Scope of Work

The scope of the Regulated Materials Survey consisted of a site visit on August 6, 2019, to review building materials and the sampling of building materials that may require special handling or disposal during deconstruction. The following is a list of materials reviewed:

- Asbestos containing material (ACM)
- Lead containing material (LCM)
- Mercury
- Ozone depleting substances (ODS)
- Polychlorinated biphenyls (PCBs)
- Silica (free crystalline silica)
- Mould
- Radioactive materials
- Urea formaldehyde foam insulations (UFFI)

Other regulated materials referred to in various provincial and federal regulations are not expected to be present in this location. Should any of the excluded substances be found within the areas designated for deconstruction, they should be assessed on an individual basis prior to disturbance.

1.2 Limitations

While every effort was made to identify all hazardous materials within the areas of proposed deconstruction, undiscovered regulated materials may still exist in the buildings within enclosed areas such as wall cavities. The roofs of each building were also inaccessible.

If additional materials suspected of potentially containing hazardous materials are identified during site work, these materials should be assessed to determine if they contain hazardous materials.

2.0 ASBESTOS SAMPLING & ANALYSIS

2.1 Applicable Guidelines & Regulations

Nova Scotia has issued guidelines and codes of practice for the handling and disposal of asbestos containing materials (ACM). Regulations and Codes of Practice governing asbestos work in Nova Scotia and Federal sites are listed below.

- Code of Practice for Removal of Friable Asbestos Containing Material (11/21/13)

- Code of Practice for A Guide to Assessment & Management of Asbestos in the Workplace (11/21/13)
- Outdoor Work with Asbestos (Removal Projects)
- Asbestos Waste Management Regulations N.S Reg. 53/95
- Canada Occupational Health and Safety Regulations - SOR/86-304
- Hazardous Products Act, R.S., c. H-3
- Hazardous Products (Crocidolite Asbestos) Regulations, SOR/89-440
- Occupational Health and Safety Act, S.N.S 1996

These codes define ACM as a material which contains greater than 0.5% asbestos by volume. Prior to the commencement of any architectural demolition, all identified ACM must be removed from the building and disposed of appropriately. Workers and building occupants must be protected at all times from potential exposure to fibres from both friable and non-friable ACM sources. The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for exposure to asbestos is 0.1 fibres/cc. This TLV is enforced through the Nova Scotia Occupational Health and Safety Act.

Where a friable material contains trace amounts of asbestos (i.e. < 0.5%), but has the potential to release sufficient amount of fibres to create an area where there is a reasonable potential that airborne concentrations of asbestos will exceed occupational health and safety exposure limits, the materials are to be treated as asbestos-containing and must be removed under controlled conditions prior to general demolition or renovations.

2.2 Sampling Methodology

Samples of materials potentially containing asbestos were obtained throughout the designated assessment areas (mine manager's office building and compressor hoist building) by Strum staff on August 6, 2019. The collection of asbestos samples was performed with the intent to determine a general pattern of asbestos use within the buildings.

Efforts were made to ensure that every type of material that could potentially contain asbestos was sampled. Materials that were sampled for asbestos content include vinyl flooring, mastic, plaster, drywall/joint compound, mortar, and cement sheet (transite) siding.

A total of 12 building material samples [A1(AU06) – A12(AU06)] collected by Strum field staff were submitted to EMC Scientific Inc. in Mississauga, ON, for analysis of asbestos by Polarized Light Microscopy (EPA 600R-93/116). Sampling methodology was in compliance with Strum QA/QC protocols.

A Photo Log of samples collected, along with analytical results, is provided in Appendix A. Laboratory reports are provided in Appendix B.

2.3 Asbestos Sample Results

A summary of the bulk samples collected and the samples found to contain asbestos from the August 6, 2019 sampling event is presented in Table A, below.

Table A: Summary of Bulk Asbestos Samples

Bulk Material	Number of Samples Submitted for Analysis	Number of Samples Identified as ACM
Drywall joint compound	1	0
12" x 12" vinyl tile with mastic	2	1
Plaster	2	0
Pipe Wrap	2	2
Gasket	1	0
Transite board	2	2
Mortar	1	0
Roofing material	1	0
Total	**12**	**5**

As shown on Table A, five of the 12 samples, collected from transite board, pipe wrap, and vinyl tile (mastic), were reported to contain 1 to 60% chrysotile asbestos, and 1% amosite asbestos (pipe wrap). No other samples were identified as containing asbestos.

As per the regulations and codes of practices listed in Section 2.1, any building materials found to contain greater than 0.5% asbestos is considered to be ACM.

At the time of testing, the materials sampled were in poor condition. It is understood that demolition has been proposed for the site; and therefore, the building materials containing ACM should be safely removed under controlled conditions by an experienced abatement contractor, prior to any demolition or disturbance of this material. Asbestos abatement should be completed as per the applicable provincial regulations and codes of practices presented in this report. The appropriate level of containment should be constructed to prevent the escape of asbestos contamination from the work area. Workers handling ACM should be outfitted with appropriate PPE.

3.0 LEAD IN PAINT & SURFACE COATINGS

3.1 Applicable Guidelines & Regulations

Regulations and guidelines dealing with the disposal of lead-containing materials in Nova Scotia include:

- Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids (1994)
- Code of Practice for Working with Lead
- Working with Inorganic Lead – An Information Package
- Hazardous Products Act, R.S., c. H-3

Disposal of lead-containing materials from a demolition standpoint should be evaluated on an individual basis, taking into account the concentrations contained within the material as well as the total volume of material to be disposed.

If the reported concentrations of lead comply with disposal criteria, the material can be disposed of at a local solid waste disposal facility without any special considerations.

If the concentrations of lead exceed the disposal criteria, additional leachate testing must be completed on the material to determine if the concentrations in a leachate extraction exceed 5 mg/L. This is to prevent toxic materials from leaching or migrating into the ground and creating adverse environmental effects. If lead leachate concentrations are below the landfill disposal guidelines, the material is deemed suitable for disposal at an NSE-approved solid waste landfill or C&D waste disposal site. If the material reports leachate concentrations which exceed the landfill guidelines, it is considered *leachate toxic* and must be disposed of at an approved facility.

Further details of lead in leachate sampling and results are provided in section 4.0.

3.2 Sampling Methodology

Paint samples were collected by Strum field staff on August 6, 2019 and analyzed to determine the concentrations of lead. The collection of paint samples was performed with the intent to determine a general pattern of paint use within the site buildings. Samples were collected based on condition, pliability, and layering. Painted areas from which the samples were collected were observed to typically be in poor condition with large areas of degradation observed.

Sampling methodology was in compliance with Strum QA/QC protocols. A total of five paint samples [P1(AU06) – P5(AU06)] were submitted to Bureau Veritas in Bedford, NS for analysis of lead in paint (ICPMS). A Photo Log of samples collected, along with the analytical results, is provided in Appendix A. Laboratory reports are provided in Appendix B.

3.3 Lead in Paint Sample Results

Samples collected for lead in paint analysis reported concentrations of lead ranging from 74 to 13,000 mg/kg. Two paint samples [P2(AU06) and P5(AU06)] complied with the Nova Scotia Department of the Environment Disposal Guidelines of 1,000 mg/kg. The remaining three samples exceeded the applicable criteria. Materials that reported lead concentrations below the applicable guidelines [P2(AU06) and P5(AU06)] can be disposed of at a local solid waste disposal facility without any special considerations. Additional leachate testing was required on the remaining samples.

As a best management practice, all workers handling paints and surface coatings containing any concentrations of lead should be outfitted with appropriate Personal Protective Equipment (PPE) if disturbing the material during renovation or demolition activities. Special care should be taken not to grind or pulverize lead containing materials during removal.

4.0 LEAD LEACHATE

4.1 Sampling Methodology

All samples collected for lead analysis which had exceeded the provincial disposal guidelines [P1(AU06), P3(AU06), and P4(AU06)] were then analyzed for lead leachate (CGSB). Paints were observed to be in poor condition. Substrate was not included in the samples. Sampling methodology was in compliance with Strum QA/QC protocols.

4.2 Analytical Results

A total of three paint samples were analyzed for lead leachate. All samples complied with the applicable leachate disposal guideline of 5.0 mg/L, with the exception of P4(AU06). This sample, collected from green and light blue paint on concrete walls within the basement of the office building, reported a lead leachate concentration of 8.8 mg/L.

As the lead leachate concentration in sample P4(AU06) exceeds the applicable disposal guideline of 5 mg/L, the paint is considered leachate toxic. However, it is anticipated that the painted building material including substrate (i.e. concrete) may contain total leachable concentrations of lead which are less that what was reported in the sample collected of paint only; and therefore would comply with applicable disposal guidelines. Sampling of this material including both paint and substrate would be required to confirm disposal requirements.

4.0 MERCURY ASSESSMENT

During the site visit, a visual inspection was completed within the assessment area to identify and assess materials potentially containing mercury such as switches, fluorescent lighting, and thermostats. Mercury containing materials are regulated through Health Canada's Hazardous Products Act and Transportation of Dangerous Goods Act.

Fluorescent lighting was identified within both buildings and may potentially contain mercury vapour. No other potential mercury containing fixtures were observed during the assessment.

Any appliances/fixtures that potentially contain mercury and will be disturbed by renovation/demolition activities should be removed and sealed in appropriate sealable containers and disposed of at an appropriate disposal facility.

5.0 OZONE DEPLETING SUBSTANCES

No ozone depleting substances (ODS) containing appliances were identified within the assessment area.

6.0 PCB ASSESSMENT

A survey of the assessment area was completed to identify electrical equipment (ballasts, transformers, capacitors) which may contain liquid PCBs and building materials which may contain non-liquid PCBs (i.e. Thiokol caulking).

6.1 Applicable Guidelines & Regulations

Regulatory requirements detailing the manufacturing, processing, and handling of PCB containing materials are listed below.

- Canadian Environmental Protection Act (CEPA) SOR 2008-273
- Nova Scotia PCB Management Regulations N.S. Reg. 163/97

In addition, the Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids (1994) states that material containing PCBs in excess of 50 ppm are not suitable for landfill disposal. Materials which exceed this concentration are classified as hazardous waste and therefore require disposal at an approved hazardous waste disposal facility.

6.2 PCB Containing Equipment/Materials

Fluorescent light fixtures were visually identified throughout the buildings during the assessment. To determine if dielectric fluid containing PCBs are present within the ballasts of the fluorescent lighting, it is recommended that screening of all ballasts be completed based on available manufacturer information and procedures detailed in the Environment Canada publication entitled Identification of Lamp Ballasts Containing PCBs to prior to demolition to ensure specialized disposal is not required. No sampling of dielectric fluid was completed during this survey.

No evidence of fluid leakage from lighting fixtures was noted during the assessment. No other electrical equipment that may contain PCBs (e.g. transformers, capacitors) were identified within the assessment area.

6.3 NLPCBs (Non-Liquid PCBs)

Non-liquid PCBs are materials containing PCBs that by visual inspection do not flow at room temperature (25˚C or 77˚F). Buildings that were constructed or refurbished before 1977 may still contain caulking with elevated levels of PCBs.

No potential PCB-containing caulking was identified during the assessment. Should it be discovered during building deconstruction, testing should be completed to determine PCB content for disposal purposes.

7.0 SILICA

No sampling of silica containing materials were completed during this assessment, however, silica, sand, and gravel are commonly used in building construction (i.e. concrete, ceramic, and refractory materials). Concrete and/or masonry block used for footings, flooring, and walls inside the building may contain silica. During demolition, as a best management practice, special precautions should be undertaken if dust is being generated to protect workers from potential silica containing dust. At a minimum, PPE should consist of a full body protective suit and a half-faced Air Purifying Respirator employing HEPA P100 filtration.

The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for worker exposure to the respirable fraction of crystalline silica is 0.05 mg/m^3.

8.0 MOULD

Mould was not observed within the area of assessment at the time of the site visit.

9.0 RADIOACTIVE MATERIALS

No radioactive materials were identified within the assessment area.

10.0 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

No UFFI was identified to be within the assessment area.

11.0 OTHER REGULATED MATERIALS

Other regulated materials referred to in various provincial and federal regulations are typically only present in industrial or manufacturing facilities. For this reason, isocyanates, vinyl chloride monomer, benzene, acrylonitrile, coke oven emissions, and ethylene oxide are not expected to be present in these buildings. Should any of the excluded substances be found within the areas designated for deconstruction, they should be assessed on an individual basis prior to disturbance.

13.0 SUMMARY OF FINDINGS

The findings of the Regulated Materials Survey completed at the two buildings (office building and storage building) on Miner's Memorial Drive, in Springhill, NS on August 6, 2019 are summarized below:

Asbestos	• Friable asbestos containing material (ACM) has been identified in pipe wrap/elbows in both site buildings. • Non-friable ACM in transite board and mastic under vinyl tile has been identified in the compressor hoist building. • Asbestos abatement practices and precautionary measures protective of human health will be required to safely remove all ACM prior to the proposed demolition.
Lead in Paint	• Concentrations of lead in paint samples were reported to range from 74 to 13,000 mg/kg. One of five paint samples (collected from concrete walls of the office building basement) reported a concentration of leachable lead which is not acceptable at local solid waste disposal facilities. • It is anticipated that painted building materials including substrate (i.e. concrete) may contain a total leachable concentration of lead which is less than what was reported in the sample collected of

	paint only; and therefore, may comply with the applicable guidelines. Sampling of this material, including both the painted surface and a substrate, would be required to confirm disposal requirements. • Precautionary measures protective of human health will be required during the disturbance and disposal of lead containing building materials.
Mercury in Appliances	• Fluorescent lighting that may contain mercury vapour was identified in both buildings.
Polychlorinated Biphenyls (PCBs)	• Potential PCB containing ballasts were identified during the assessment. • No potential PCB containing caulking or electrical equipment was observed during the assessment.
Silica	• Typical of standard construction, concrete, and masonry materials used for foundations, flooring, and walls may contain silica.

14.0 RECOMMENDATIONS

Based on the findings of this assessment the following recommendations are forwarded:

1. Prior to the completion of demolition activities, a qualified abatement contractor should be retained to complete the safe removal and disposal of friable asbestos containing pipe wrap/elbows and non-friable asbestos containing vinyl tile mastic and transite board present throughout the area of assessment, as per the applicable provincial regulations and codes of practices. Workers handling ACM should be outfitted with appropriate PPE. The appropriate level of containment should be constructed to prevent the escape of asbestos contamination from the work area.

2. To confirm that painted building materials including substrate (i.e. concrete) contain a total leachable concentration of lead that is acceptable in local solid waste disposal facilities, a composite sample of both paint and substrate should be collected.

3. Potentially mercury containing fluorescent bulbs should be removed prior to demolition activities and disposed of in an appropriate manner in accordance with applicable regulations.

4. Although no PCB-containing ballasts were identified, ballasts should be screened on an individual basis to determine PCB content and appropriate disposal options prior to demolition activities.

5. Workers involved in the demolition and disposal of building materials should be outfitted with appropriate PPE, protective of asbestos, lead, silica and mould. Special

care should be taken not to grind or pulverize leaded materials during removal. In addition, appropriate dust hoarding should be erected if excessive dust is generated.

16.0 STATEMENT OF QUALIFICATIONS AND LIMITATIONS

This Report (the "Report") has been prepared by Strum Consulting ("Consultant") for the benefit of Municipality of Cumberland ("Client") in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations, and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents Consultant's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to Consultant which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement;
- in the case of subsurface, environmental, or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time

Consultant shall be entitled to rely upon the accuracy and completeness of information that was provided and has no obligation to update such information. Consultant accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental, or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

Consultant agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but Consultant makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

The Report is to be treated as confidential and may not be used or relied upon by third parties, except:

- as agreed in writing by Consultant and Client;
- as required by law; and
- for use by governmental reviewing agencies.

Consultant accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss, or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Report"), except to the extent those parties have obtained the prior written consent of Consultant to use and rely upon the Report and the Information. Any damages arising from improper use of the Report or parts thereof shall be borne by the party making such use.

This Statement of Qualifications and Limitations forms part of the Report and any use of the Report is subject to the terms hereof.

This report was prepared by Courtney MacLean, CET, Environmental Technologist and was reviewed by Jeff Faulkner, P.Geo., Senior Project Manager.

APPENDIX A
SAMPLE LOG

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A1(AU06)	Drywall Joint Compound	Main Room, Mine Manager's Office Building		Joint compound on walls **Covering:** Paint **Condition:** Poor **Access:** A **Hazard:** No **Friability:** Friable
A2(AU06)	**12" x 12" Vinyl Tile**	Store Room, Mine Manager's Office Building		12" x 12" vinyl tile, beige 2 Phases: a) Beige, vinyl floor tile b) Black, Mastic **Covering:** None **Condition:** Poor **Access:** A **Hazard:** Yes **Friability:** Non-Friable

PLM Analytical Results – Lab ID # A51374-1

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
White, joint compound	nd	-	100

PLM Analytical Results – Lab ID # A51374-2

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Beige, vinyl floor tile	nd	-	100
Black, mastic	**1**	-	99

1% Chrysotile Asbestos

Legend:

ACCESS		CONDITION	
A	**All Building Occupants**	**Good**	**No visible damage or exposed material**
B	**Maintenance & Operations Staff without use of a ladder**	**Fair**	**Repairable damage with minor amounts of exposed material**
C	**Maintenance & Operations Staff with use of a ladder**	**Poor**	**Irreparable damage with exposed and missing material**
D	**Inaccessible**		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A3(AU06)	Plaster	Store Room, Mine Manager's Office Building		Grey plaster on walls **Covering**: None **Condition**: Poor **Access**: A **Hazard**: No **Friability**: Friable **PLM Analytical Results** – Lab ID # A51374-3

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Grey, plaster	nd	-	100

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A4(AU06)	**Pipe Wrap**	Basement, Mine Manager's Office Building		Grey cementitious material with fibres **Covering**: None **Condition**: Poor **Access**: A **Hazard**: Yes **Friability**: Friable **PLM Analytical Results** – Lab ID # A51374-4

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Grey, pipe wrap	**30** **1**	-	69

30% Chrysotile Asbestos
1% Amosite Asbestos

Legend:

ACCESS		CONDITION	
A	**All Building Occupants**	**Good**	**No visible damage or exposed material**
B	**Maintenance & Operations Staff without use of a ladder**	**Fair**	**Repairable damage with minor amounts of exposed material**
C	**Maintenance & Operations Staff with use of a ladder**	**Poor**	**Irreparable damage with exposed and missing material**
D	**Inaccessible**		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A5(AU06)	Gasket	Exterior, Mine Manager's Office Building		Red, rubber gasket on pipe work on building exterior **Covering**: None **Condition**: Fair **Access**: A **Hazard**: No **Friability**: Non-Friable **PLM Analytical Results** – Lab ID # A51374-5

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Red, rubber material	nd	-	100

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A6(AU06)	**Pipe Wrap**	Main Room, Compressor Hoist Building		Pipe wrap, grey **Covering**: None **Condition**: Poor **Access**: C **Hazard**: Yes **Friability**: Non-friable **PLM Analytical Results** – Lab ID # A51374-6

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Grey, fibrous material	**60**	-	40

60% Chrysotile Asbestos

Legend:

ACCESS		CONDITION	
A	**All Building Occupants**	**Good**	**No visible damage or exposed material**
B	**Maintenance & Operations Staff without use of a ladder**	**Fair**	**Repairable damage with minor amounts of exposed material**
C	**Maintenance & Operations Staff with use of a ladder**	**Poor**	**Irreparable damage with exposed and missing material**
D	**Inaccessible**		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A7(AU06)	Transite Board	Main Room, Compressor Hoist Building		Grey cement board **Covering**: None **Condition**: Poor **Access**: A **Hazard**: Yes **Friability**: Non-Friable **PLM Analytical Results** – Lab ID # A51374-7 Grey, cement sheet: Asbestos Fibres (%) **10**; Non-asbestos fibres (%) -; Non-fibrous material (%) 90 **10% Chrysotile Asbestos**
A8(AU06)	12" x 12" Vinyl Floor Tile	Main Room, Compressor Hoist Building		12" x 12" vinyl tile, beige 2 Phases: a) Beige, vinyl floor tile b) Black, Mastic **Covering**: None **Condition**: Poor **Access**: A **Hazard**: Yes **Friability**: Non-Friable **PLM Analytical Results** – Lab ID # A51374-8 Beige, vinyl tile: Asbestos Fibres (%) nd; Non-asbestos fibres (%) -; Non-fibrous material (%) 100 Black, mastic: Asbestos Fibres (%) nd; Non-asbestos fibres (%) -; Non-fibrous material (%) 100

Legend:

ACCESS		CONDITION	
A	**All Building Occupants**	**Good**	**No visible damage or exposed material**
B	**Maintenance & Operations Staff without use of a ladder**	**Fair**	**Repairable damage with minor amounts of exposed material**
C	**Maintenance & Operations Staff with use of a ladder**	**Poor**	**Irreparable damage with exposed and missing material**
D	**Inaccessible**		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A9(AU06)	**Transite Board**	Main Room, Compressor Hoist Building		Cement board, grey **Covering**: None **Condition**: Poor **Access**: A **Hazard**: No **Friability**: Friable **PLM Analytical Results** – Lab ID # A51374-9 Grey, cement sheet: **10** Asbestos Fibres (%); - Non-asbestos fibres (%); 90 Non-fibrous material (%) **10% Chrysotile Asbestos**
A10(AU06)	Plaster	Main Room, Compressor Hoist Building		Plaster, grey behind transite board on ceiling **Covering**: Paint **Condition**: Poor **Access**: A **Hazard**: No **Friability**: Friable **PLM Analytical Results** – Lab ID # A51374-10 Grey, plaster: nd Asbestos Fibres (%); - Non-asbestos fibres (%); 100 Non-fibrous material (%)

Legend:

ACCESS		CONDITION	
A	**All Building Occupants**	**Good**	**No visible damage or exposed material**
B	**Maintenance & Operations Staff without use of a ladder**	**Fair**	**Repairable damage with minor amounts of exposed material**
C	**Maintenance & Operations Staff with use of a ladder**	**Poor**	**Irreparable damage with exposed and missing material**
D	**Inaccessible**		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interior and exterior	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Asbestos Analysis By:	EMC Scientific Inc.		

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A11(AU06)	Mortar	Main Room, Compressor Hoist Building		Grey mortar on glass brick window **Covering**: None **Condition**: Poor **Access**: A **Hazard**: No **Friability**: Friable **PLM Analytical Results** – Lab ID # A51374-11

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Grey, cementitious material	nd	-	100

Sample ID	Material Type	Area	Photo	Material Description & Analytical Result
A12(AU06)	Roofing Material	Exterior, Compressor Hoist Building		Roofing material **Covering**: None **Condition**: Poor **Access**: C **Hazard**: No **Friability**: Non-friable **PLM Analytical Results** – Lab ID # A51374-12

Phase	Asbestos Fibres (%)	Non-asbestos fibres (%)	Non-fibrous material (%)
Black, tar with fibres	nd	20	80

Legend:

ACCESS		CONDITION	
A	**All Building Occupants**	**Good**	**No visible damage or exposed material**
B	**Maintenance & Operations Staff without use of a ladder**	**Fair**	**Repairable damage with minor amounts of exposed material**
C	**Maintenance & Operations Staff with use of a ladder**	**Poor**	**Irreparable damage with exposed and missing material**
D	**Inaccessible**		

nd = None Detected (no asbestos fibres were observed)

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interiors and Exteriors	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Paint Analysis By:	Maxxam Analytics		

Sample ID	Material Type	Area	Photo	Analytical Result
P1(AU06)	Blue-Grey/Beige/ Green/Purple Paint on Walls	Bathroom, Mine Manager's Office Building		Layered **Analytes / Result / RDL / *Guideline** **Lead** — **1,200 mg/kg** — 5.0 mg/kg — 1000 mg/kg Leachable Lead — 0.27 mg/L — 0.005 mg/L — 5 mg/L **Paint Metals: Lab ID KLR931** * Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.
P2(AU06)	Taupe/White Paint on Walls	Main Room, Mine Manager's Office Building		Layered **Analytes / Result / RDL / *Guideline** Lead — 74 mg/kg — 5.0 mg/kg — 1000 mg/kg **Paint Metals: Lab ID KLR932** * Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.

Legend:

ACCESS		CONDITION	
A	**All Building Occupants**	**Good**	**No visible damage or exposed material**
B	**Maintenance & Operations Staff without use of a ladder**	**Fair**	**Repairable damage with minor amounts of exposed material**
C	**Maintenance & Operations Staff with use of a ladder**	**Poor**	**Irreparable damage with exposed and missing material**
D	**Inaccessible**		

nd = None Detected

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interiors and Exteriors	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Paint Analysis By:	Maxxam Analytics		

<table>
<tr><th>Sample ID</th><th>Material Type</th><th>Area</th><th>Photo</th><th>Analytical Result</th></tr>
<tr><td>P3(AU06)</td><td>Green/White Paint on Walls</td><td>Stairwell, Mine Manager's Office Building</td><td>
</td><td>Layered
<table>
<tr><th>Analytes</th><th>Result</th><th>RDL</th><th>*Guideline</th></tr>
<tr><td>Lead</td><td>12,000 mg/kg</td><td>5.0 mg/kg</td><td>1000 mg/kg</td></tr>
<tr><td>Lab-Dup</td><td>13,000 mg/kg</td><td>5.0 mg/kg</td><td>1000 mg/kg</td></tr>
<tr><td>Leachable Lead</td><td>0.92 mg/L</td><td>0.005 mg/L</td><td>5 mg/L</td></tr>
<tr><td colspan="4">Paint Metals: Lab ID KLR933</td></tr>
</table>
* Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.</td></tr>
<tr><td>P4(AU06)</td><td>Green/Blue on Walls</td><td>Basement, Mine Manager's Office Building</td><td></td><td>Layered
<table>
<tr><th>Analytes</th><th>Result</th><th>RDL</th><th>*Guideline</th></tr>
<tr><td>Lead</td><td>13,000 mg/kg</td><td>5.0 mg/kg</td><td>1000 mg/kg</td></tr>
<tr><td>Leachable Lead</td><td>8.8 mg/L</td><td>0.005 mg/L</td><td>5 mg/L</td></tr>
<tr><td colspan="4">Paint Metals: Lab ID KLR934</td></tr>
</table>
* Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.</td></tr>
</table>

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected

Strum CONSULTING	**Project #**	19-6954	**Field Work Date:**	August 6, 2019
	Assessment Area(s):	Building Interiors and Exteriors	**Site Address:**	Miner's Memorial Drive, Springhill, NS
	Paint Analysis By:	Maxxam Analytics		

Sample ID	Material Type	Area	Photo	Analytical Result
P5(AU06)	Yellow/White Paint on Walls	Main Room. Compressor Hoist Building		Layered

Analytes	Result	RDL	*Guideline
Lead	340 mg/kg	5.0 mg/kg	1000 mg/kg

Paint Metals: Lab ID KLR935

* Nova Scotia Department of the Environment Guidelines for Disposal of Contaminated Solids In Landfills, 2004.

Legend:

ACCESS		CONDITION	
A	All Building Occupants	Good	No visible damage or exposed material
B	Maintenance & Operations Staff without use of a ladder	Fair	Repairable damage with minor amounts of exposed material
C	Maintenance & Operations Staff with use of a ladder	Poor	Irreparable damage with exposed and missing material
D	Inaccessible		

nd = None Detected

APPENDIX B
LABORATORY REPORTS

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Laboratory Analysis Report

To:

Courtney MacLean
Strum Consulting
1355 Bedford Highway
Bedford, Nova Scotia
B4A 1C5

EMC LAB REPORT NUMBER: A51374
Job/Project Name: Miner's Memorial
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Aug 8/19 **Date Analyzed:** Aug 14/19
Analyst: Jon Delos Santos, *Laboratory Supervisor*
Reviewed By: Malgorzata Sybydlo, *Laboratory Manager*

Job No: 19-6954
Number of Samples: 12
Date Reported: Aug 15/19

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
A1 (AU06)	A51374-1	Drywall joint compound, white, main room, office building	White, joint compound	**ND**			100
A2 (AU06)	A51374-2	12x12 vinyl floor tile, beige, store room, office building	2 Phases: a) Beige, vinyl floor tile b) Black, mastic	 **ND** **Chrysotile**	 **1**		 100 99
A3 (AU06)	A51374-3	Plaster, off-white, store room, office building	Grey, plaster	**ND**			100
A4 (AU06)	A51374-4	Pipe wrap, white, basement, office building	Grey, cementitious material with fibres	**Chrysotile** **Amosite**	**30** **1**		69
A5 (AU06)	A51374-5	Gasket, red, exterior, office building	Red, rubbery material	**ND**			100
A6 (AU06)	A51374-6	Pipe wrap, white, main room, storage building	Grey, fibrous material	**Chrysotile**	**60**		40
A7 (AU06)	A51374-7	Transite board, grey, main room, storage building	Grey, cement sheet	**Chrysotile**	**10**		90
A8 (AU06)	A51374-8	12x12 vinyl floor tile, beige, main room, storage building	2 Phases: a) Beige, vinyl floor tile b) Black, mastic	 **ND** **ND**			 100 100
A9 (AU06)	A51374-9	Transite board, grey, furnace room, storage building	Grey, cement sheet	**Chrysotile**	**10**		90
A10 (AU06)	A51374-10	Plaster, white, main room, storage building	Grey, plaster	**ND**			100

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Laboratory Analysis Report

EMC LAB REPORT NUMBER: A51374
Client's Job/Project Name/No.: 19-6954
Analyst: Jon Delos Santos, *Laboratory Supervisor*

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
A11 (AU06)	A51374-11	Mortar, grey, main room, storage building	Grey, cementitious material	**ND**			100
A12 (AU06)	A51374-12	Roofing material, exterior, storage building	Black, tar with fibres	**ND**		20	80

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Nova Scotia Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.
5. Vinyl floor tiles may contain very fine asbestos fibres which the PLM method cannot detect. TEM analysis may be necessary to confirm the absence of asbestos.

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

BV Labs ID		KLR931	KLR932	KLR933	KLR933	KLR934	KLR935		
Sampling Date		2019/08/06	2019/08/06	2019/08/06	2019/08/06	2019/08/06	2019/08/06		
COC Number		n/a	n/a	n/a	n/a	n/a	n/a		
	UNITS	P1 (AU06)	P2 (AU06)	P3 (AU06)	P3 (AU06) Lab-Dup	P4 (AU06)	P5 (AU06)	RDL	QC Batch
Metals									
Acid Extractable Lead (Pb)	mg/kg	1200	74	12000	13000	13000	340	5.0	6271323

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Laboratories 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

ELEMENTS BY ICP/MS (PAINT)

BV Labs ID		KLR931	KLR933	KLR934		
Sampling Date		2019/08/06	2019/08/06	2019/08/06		
COC Number		n/a	n/a	n/a		
	UNITS	P1 (AU06)	P3 (AU06)	P4 (AU06)	RDL	QC Batch
Metals						
Leachable Lead (Pb)	ug/L	270	920	8800	5.0	6288861

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Laboratories 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com