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APPENDIX B4: DESIGNATED SUBSTANCE SURVEY



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May 16, 2019

Mr. Luke Whitteker
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Project No: 19-1349
Regarding: Designated Substance and Hazardous Materials Survey
Marine Communication and Traffic Services Facility, Pointe Au Baril, Ontario

Dear Mr. Whitteker:

Please find enclosed the final version of TULLOCH's Report entitled "Designated Substance and Hazardous Materials Survey – Marine Communication and Traffic Services Facility, Pointe Au Baril, Ontario".

Should you have questions, concerns or wish to discuss, please contact the undersigned at your convenience.

Sincerely,
TULLOCH Engineering Inc.

A handwritten signature in black ink that reads "Rod Morrison".

Rod Morrison
Engineering Technologist

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Encl.

Distribution List

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Revision Log

Revision #	Revised By	Date	Issue / Revision Description

Executive Summary

TULLOCH Engineering (TULLOCH) was commissioned by Mr. Luke Whitteker of Canadian Coast Guard (Client) to complete a Designated Substance and Hazardous Materials Survey (DS&HMS) in support of the planned demolition of the two structures at the site located at the Marine Communication and Traffic Services Facility, Pointe Au Baril, Ontario (Site).

The objective of this DS&HMS was to provide a comprehensive summary of substances that require removal and/or management prior to continued interior demolition of the Site. The DS&HMS included the collection of building material samples suspected of containing asbestos, lead, PCBs and mould. Furthermore, the Site was investigated for the potential presence of designated substances as defined by Ontario Regulation 490/09 (O. Reg. 490/09) and hazardous materials as defined by various regulations.

TULLOCH understands that the buildings are scheduled for demolition and that all designated substances must be identified prior to any work being carried out. Based on TULLOCH's DS&HMS, the following designated substances and potentially hazardous materials were identified within the Site:

- Beige with brown streaks 12" x 12" vinyl floor tile (S-005A-C) contains chrysotile asbestos. Beige with brown streaks 12" x 12" vinyl floor tiles are located throughout the large trailer unit.
- Pink 12" x 12" vinyl floor tile (S-007A-C) contains chrysotile asbestos. Approximately 10 square feet of pink 12" x 12" vinyl floor tile are located at the west entrance to the large trailer unit.
- Red paint (LP-01) on the exterior doors contains lead-containing paint (2.37%) and was found in poor condition with peeling and flaking.
- White paint (LP-02) on exterior door trim contains 0.32% lead and was found in poor condition with peeling and flaking.
- Grey paint (LP-03) on decking contains very low levels of lead 0.0015% and was found in moderate condition with minimal peeling or flaking.
- Brown paint (LP-04) on wood skirting behind the metal skirting of the trailer unit contains 0.14% lead and was found in moderate condition with minimal peeling or flaking.
- Lead is considered to present in the two lead-acid batteries beside the generator in the shed and in the two emergency lights in the large trailer unit, as well as, throughout the Site in wiring connectors, grounding conductors and solder.
- Compact fluorescent lights and fluorescent light tubes contain mercury vapour and are present throughout the Site in small quantities.
- One thermostat was found in the trailer that contains mercury switches. All thermostats should be dismantled and inspected for mercury switches prior to disposal.

- PCBs may be present in ballasts found in older T12 fluorescent light fixtures present throughout the Site. One ballast was inspected and was found to be non-PCB, however, all T12 fixtures should be de-energized and inspected for the presence of PCB containing ballasts prior to disposal.
- Concrete materials used in foundations and gravel fill have the potential of containing silica.
- Residual benzene may be present within the generator and/or aboveground storage tank. Given the presence of fuel staining beneath the generator, an assessment of the underlying soils should be conducted to ensure the fuel staining did not migrate further beneath the shed.
- Mould growth was observed in the north east corner of the interior of the shed building. Mould growth on sample BULK-01 was confirmed with moderate growth of *Graphium*-like and *Penicillium* moulds. Mould was minimal on the surface of the wood board, however, continued growth could extend on the back side of the wood board wall and ceiling panels if the water source is not identified and repaired.
- Recommendations for the removal of all asbestos and hazardous materials is contained in the recommendation sections at the end of this report.

A copy of this report must be given to all contractors working on the project.

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1. INTRODUCTION

1.1 Terms of Reference

TULLOCH Engineering (TULLOCH) was commissioned by Mr. Luke Whitteker of the Canadian Coast Guard (Client) to complete a Designated Substance and Hazardous Materials Survey (DS&HMS) for the demolition of the two structures located at the Marine Communication and Traffic Services facility (MCTS) in Pointe Au Baril, Ontario (Site).

1.2 Objective

The objective of this DS&HMS was to provide a comprehensive summary of substances that require removal and/or management prior to demolition at the Site. The DS&HMS included the collection of building material samples suspected of containing asbestos, lead, PCBs and mould. Furthermore, the Site was investigated for the potential presence of designated substances as defined by Ontario Regulation 490/09 (O. Reg. 490/09) that will be disturbed during construction including:

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

The following potentially hazardous materials were also investigated that are commonly found in commercial buildings:

- Fecal Waste
- Polychlorinated Biphenyls (PCBs)
- Mould
- Radioactive Smoke Detectors
- Ozone Depleting Substances (ODS)
- Urea Formaldehyde Foam Insulation (UFFI)
- Naturally Occurring Radioactive Materials (NORMs)

1.3 Applicable Regulations and Guidelines

The DS&HMS was completed to address the following applicable regulatory requirements and guidelines for the management of designated substances and hazardous materials;

- Ontario Occupational Health & Safety Act – R.S.O. 1990, as amended, including

- Designated Substances – Ontario Regulation 490/09, as amended
- Designated Substances – Asbestos on Construction Projects and in Buildings and Repair Operations – Ontario Regulation 278/05
- Ontario Environmental Protection Act – R.S.O. 1990, as amended, including
 - General – Waste Management R.R.O. 1990, Ontario Regulation 347, as amended
 - Ozone Depleting Substances and Other Halocarbons – Ontario Regulation 463/10, as amended
 - Waste Management – PCBs, Regulation 362, as amended
- Ministry of Labour Guidelines “Lead on Construction Projects”, dated September 2004
- Ministry of Labour Guidelines “Silica on Construction Projects”, dated September 2004
- Environment Canada Document “PCB Identification of Lamp Ballasts Containing PCBs” dated August 1991
- Canadian Construction Association (CCA), Standard Construction Document 82-2004, “Mould Guidelines for the Canadian Construction Industry”, 2004
- Environmental Abatement Council of Ontario “Mould Abatement Guidelines”, 2nd Edition, 2010
- Environment and Climate Change Canada “PCB Regulations (SOR/2008-273)”

1.4 Site Description

The date of construction of the structures on Site is estimated to be in the 1970s. The structures located at the Site consist of two buildings, one shed and one trailer unit. The shed is being demolished this year and the demolition of the trailer building will occur in 2020. Minor cosmetic renovations, including painting as well as some minor repairs/alterations to the existing buildings, were conducted over the years. This survey encompasses the shed and trailer unit in their entirety. The tower and any other mechanical operations at the Site were not included in the assessment. Refer to the attached Figure F1 for the Site Location Plan and Figure F2 for the Sample Location Plan.

On May 8, 2019, TULLOCH completed an intrusive survey of the Site. The following descriptions relate only to those portions of the Site and structures that were available for direct observation at the time of inspection.

Building Component	Shed	Trailer
Exterior Cladding	Steel	Steel
Foundation	Wood Timbers	Wood Timbers
HVAC	Electric heater	Electric baseboards and residential air conditioner
Roof	Steel	Steel
Flooring	Sheet vinyl flooring	Vinyl floor tiles
Interior walls	Wood press board	Wood press board
Ceilings	Wood press board panels	Paper board panels

1.5 Scope of Work

To satisfy the objectives for the management, transportation and disposal of designated substances associated with the demolition of the structure located at the Site, the scope of work included:

- 1) A comprehensive survey of building infrastructure to identify and quantify potential ACM. The survey was intrusive in nature and was limited to safe accessible areas including wall and ceiling cavities.
- 2) An intrusive inspection of building materials in the area to be disturbed by demolition activities to identify asbestos containing materials. Suspected asbestos containing samples were collected and relinquished to an accredited laboratory for analyses.
- 3) An intrusive inspection of coating materials in the demolition area to identify suspect lead paint materials. Suspected lead-based paint samples were collected and relinquished to an accredited laboratory for analyses.
- 4) An intrusive inspection of caulking and sealant materials in the renovation area to identify suspect PCB containing materials.
- 5) A survey of accessible areas of buildings and properties to identify and quantify devices that have the potential to contain ODSs.
- 6) A comprehensive survey of building infrastructure in the area to be disturbed by renovation activities to identify and quantify other designated substances and/or potentially hazardous materials of concern.
- 7) A report summarizing the DS&HMS, identifying substances and/or materials to be managed to protect occupants and contractor personnel conducting demolitions.

1.6 Safety, Health and the Environment

Prior to commencing with the field component of this DS&HMS, TULLOCH reviewed safety, health and environmental concerns relevant to the Site, as well as the tasks involved with completing the work that would expose workers, the public, or the environment to any hazards. At the time the field work commenced, TULLOCH identified health concerns associated with exposure to asbestos fibres during the sampling process; therefore, TULLOCH implemented safe working practices that included the wearing of a full-face respirator equipped with P100 cartridges during the sampling period when potentially friable asbestos containing materials were sampled.

No other health and safety concerns were identified that would pose unsafe or hazardous working conditions. Safe work practices were implemented throughout the project, and no injuries or impairment to the environment was recorded.

1.7 Survey and Reporting Limitations

TULLOCH was granted full access to all areas of the buildings that will be demolished. The possibility remains that unexpected environmental conditions may be encountered at the Site in locations not specifically observed or investigated.

TULLOCH requested copies of all past asbestos surveys and management plans and designated substance surveys. TULLOCH was informed that an asbestos survey or management plan was not available for the Site.

TULLOCH makes no other evaluations whatsoever, including those concerning the legal significance of designated substances. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with one's own legal counsel.

2. METHODOLOGY

2.1 Asbestos Survey

The review of the on-Site structures was destructive in nature to document the general composition of building materials. Sampled areas were not restored and an assessment of the condition and accessibility of the materials as required by an asbestos management plan was not completed. All sample locations where samples were collected from friable sources were sealed with technical tape after sampling.

The destructive investigation means that holes were advanced in any area suspected of containing asbestos containing materials. ACM surveys generally include the assumption, accepted as industry standard practice that various building materials are known to contain asbestos fibres, and are not sampled if they cannot be accessed and sampled safely.

Where required, bulk samples were collected from building materials suspected to contain asbestos fibres. Sufficient sample was collected for laboratory analytical requirements, which includes multi-layered building materials (plaster on plaster), for which each layer was analysed separately. The laboratory was instructed to discontinue analysis (stop-positive) on subsequent samples in the same series when asbestos was identified in one of the samples.

Sampling and analysis of suspect ACMs was completed in accordance with Ontario Regulation 278/05, U.S. Environmental Protection Agency Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June 1993.

2.2 Lead

Surfaces considered suspect of being coated with old lead containing paint were inspected and random samples of old/glossy paints were collected for lead analysis. Analysis was completed in accordance with ASTM D3335 - 85a (2009) "Standard Test Method for Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy"

2.3 Polychlorinated Biphenyl (PCB)

Sealants suspected of containing PCBs were submitted for laboratory analysis completed in accordance with EPA, 1994. "Method 3541 (SW-846) Automated Soxhlet Extraction", Revision 0.

2.4 Other Designated Substances and Hazardous Materials

TULLOCH further reviewed the Site to visually identify and quantify designated substances and hazardous materials including mercury and PCBs. Devices that may contain ODSs or being potentially radioactive were quantified and building materials suspected of containing UFFI, silica or that appeared to support mould or bacteria growth were documented, reported and sampled for submission to an accredited laboratory for analysis. The following Designated Substances typically are not found in building materials and if present are generally in a composition that is not considered hazardous.

- Benzene
- Coke oven emissions
- Ethylene oxide
- Isocyanates
- Vinyl chloride

3. SURVEY FINDINGS

3.1 Asbestos

On May 8, 2019, TULLOCH completed the survey and identified building materials suspected of containing asbestos fibres. In total, 24 samples of 8 visually distinct materials were collected and forwarded to EMC Scientific Incorporated (EMC) for analysis.

3.1.1 Asbestos Cement Products (Non-friable)

Asbestos cement siding was not found within the survey area.

3.1.2 Sheet Vinyl Flooring/Mastic (Non-friable)

One type of visually distinct sheet vinyl flooring was found in the shed building.

Brown sheet vinyl flooring with jute backing was found on the floor of the shed building. Based on inspection holes advanced in the floor and inspection of the access hatch, the shed floor consists of one layer of vinyl sheet flooring followed by plywood, insulation and a secondary layer of plywood. A total of three samples (S-004A-C) were collected of the sheet vinyl flooring and submitted for analysis. Brown sheet vinyl flooring and paper backing does not contain asbestos.



Brown sheet vinyl flooring with jute backing (S-004AC) does not contain asbestos.

3.1.3 Vinyl Floor Tiles/Mastic (Non-friable)

Two types of visually distinct vinyl floor tiles were found throughout the survey area.

Beige with brown streaks 12" x 12" vinyl floor tiles were found in the trailer unit. Approximately 390 ft² of beige with brown streaks 12" x 12" vinyl floor tiles were found throughout the large trailer unit. A total of three samples were collected and submitted for analysis (S-005A-C). Beige with brown streaks 12" x 12" vinyl floor tiles contain chrysotile asbestos. The associated yellow mastic does not contain asbestos.

Pink 12" x 12" vinyl floor tiles were found at the north entrance to the trailer unit and consisted of approximately 10 ft² of tiles. A total of three samples were collected and submitted for analysis (S-007A-C). Pink 12" x 12" vinyl floor tiles contain chrysotile asbestos. The associated black mastic does not contain asbestos.

The presence of electrical conduits below the flooring did not allow for further intrusive test holes to be advanced. Based on observations of access hatches in the flooring, the vinyl floor tiles were followed by a layer of plywood, then insulation and another layer of plywood.

The beige with brown streak 12" x 12" vinyl floor tile (S-005A-C) and the pink 12" x 12" vinyl floor tile (S-007AC) both contain chrysotile asbestos, and as such, the removal of any flooring from the large trailer unit should be performed using methods stated in the recommendations section of the report.



Beige with brown streak 12" x 12" vinyl floor tile (S-005AC) contain chrysotile asbestos.



Pink 12" x 12" vinyl tile (S-007AC) contain chrysotile asbestos.

3.1.4 Drywall Joint Compound (Non-friable)

Drywall joint compound was not found throughout the survey area.

3.1.5 Plaster (Non-Friable)

Plaster on walls and ceilings was not found throughout the survey area.

3.1.6 Stucco (Non-Friable)

Stucco on walls and ceilings was not found within the survey area.

3.1.7 Duct Insulation and Insulation Board Materials (Friable)

Duct insulation and insulation board was not found throughout the survey area. Inspection of the walls, ceiling and floor insulation confirmed that it was insulated with fibreglass blanket insulation which is known not to contain asbestos.

3.1.8 Textured Finishing Materials (Friable)

Textured finish materials were not found within the survey area.

3.1.9 Acoustic Ceiling Tiles (Friable)

Acoustic ceiling tiles were not found within the survey area.

3.1.10 Vermiculite Insulation (Friable)

Vermiculite insulation was not found in the survey area. Accessible ceiling and wall cavities were inspected and found not to contain vermiculite.

3.1.11 Pipe Insulation Materials (Friable)

Pipe insulation was not found in the survey area.

3.1.12 Caulking Materials (Non-Friable)

A total of five types of visually distinct caulking were found throughout the survey area.

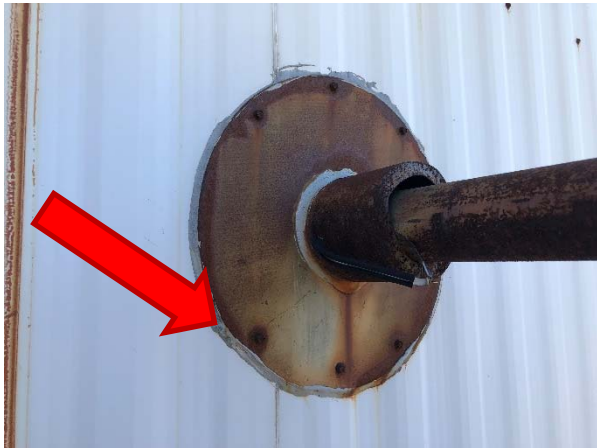
Grey caulking was observed around the exterior ducts and pipes of the shed building. A total of three samples of the grey caulking from the around the ducts and pipes were collected and submitted for analysis (S-001A-C). Grey caulking does not contain asbestos.

Clear caulking was observed around the base of the exterior steel panels of the shed building. The caulking was observed to be pliable and suspected to be silicone caulking which is known to not contain asbestos. Samples of the clear caulking were not collected.

White caulking was observed around the exterior doors of the trailer unit building. A total of three samples of the white caulking were collected and submitted for analysis (S-002A-C). White caulking does not contain asbestos.

Grey caulking was observed around the exterior wiring of the trailer unit building. A total of three samples of grey caulking were collected and submitted for analysis (S-003A-C). Grey caulking does not contain asbestos.

Black putty was observed around the exterior wiring of the trailer unit building. A total of three samples of black putty were collected and submitted for analysis (S-008A-C). Black putty does not contain asbestos.



Grey caulking around pipes on the exterior of the shed building (S-001A-C) does not contain asbestos.



Silicone caulking around the base of steel exterior panels on the shed building. Known to not contain asbestos.



White caulking around doors on the exterior of the trailer unit building (S-002A-C) does not contain asbestos.



Grey caulking around wiring on the exterior of the trailer unit building (S-003A-C) does not contain asbestos.



Black putty around wiring on the exterior of the trailer unit building (S-008A-C) does not contain asbestos.

3.1.13 Mechanical Insulation

Mechanical insulation was not found in the survey area.

3.1.14 Floor Leveling Compound

Leveling compound was not found in the survey area.

3.1.15 Sprayed/Troweled-On Fireproofing

Sprayed/troweled on fireproofing was not found in the survey area.

3.1.16 Roofing and Asphalt Siding

Roofing and asphalt siding was not found in the survey area.

3.1.17 Asphalt/Bitumen

Asphalt bitumen was not found in the survey area.

3.1.18 Other Materials

Other materials suspect of containing asbestos included a paper board panel found on the ceiling of the trailer unit. A total of three samples of the paper board panels were collected and submitted for analysis (S-006A-C). The paper board panels do not contain asbestos.

3.2 Lead

Painted surfaces with a glossy finish, typically indicative of lead-based paint, were found throughout the Site. A total of four paint samples were collected from surfaces in and outside the building, which will potentially be disturbed during demolition/renovation and analysed to determine the concentration of lead. Analytical reports for all samples are provided in Appendix A.

The US EPA definition of lead-based paints is *“in order for it to be considered lead-based paint, the paint must have greater than or equal to 0.5% (which is the same as 5,000 µg/g or 5,000 mg/kg or 5,000 ppm) lead”*¹. The Ontario Ministry of Labour (MOL) does not have a lower limit for lead paint concentrations for which precautions must be considered and does not recognize the U.S. Environmental Protection Agency (EPA) limits (greater than 0.5%) for lead for this purpose. TULLOCH refers to The Environmental Abatement Council of Ontario (EACO) Lead Guideline for Construction, Renovation, Maintenance and Repair that suggests that 0.1% (1,000 ppm) lead in paint represents a “De minimus” or “virtually safe” concentration of lead in paint for construction hygiene purposes. Lead concentrations in paint below 0.1% should not be the limiting hazard when using non-aggressive methods such as chipping, scraping or sanding to disturb paint finishes. Aggressive methods (torching, cutting with power tools or welding) may still create an airborne hazard with lead concentrations at or below 0.1%. All paints containing lead at a concentration above 0.1% shall be considered in this report as lead containing and requiring further assessment

¹ US EPA Document “Testing your home for Lead, paint, dust and soil”, EPA 747-K-00-001, July 2000

to determine appropriate abatement/work procedures. All sampled paint was also evaluated for flaking, chipping and spalling. Based on Caduceon’s analytical report for the submitted samples, three of the paint samples (LP-01, LP-02 and LP-04) contains lead concentrations above 0.1%. Refer to the table below for a summary of lead paint samples and results.

Test	Location	Colour	Test Result (%)
LP-01	Exterior doors	Red	2.37
LP-02	Exterior building trim and wood deck	White	0.32
LP-03	Wood deck	Grey	0.0015
LP-04	Trailer skirting behind the steel cladding	Brown	0.14

Paint on most surfaces was in good to fair condition with some localized areas of peeling. The red paint (LP-01) on the exterior doors and the white paint (LP-02) on exterior trim was found to be peeling and flaking in many areas.



Red paint on the exterior doors (LP-01) contains 2.37% lead.



White paint on door trim on the exterior doors (LP-02) contains lead.



Grey paint on the exterior decking (LP-03) contains very low levels of lead (0.0015%).



Brown paint on exterior trailer skirting beneath steel cladding (LP-04) contains 0.14% lead.

3.2.1 Other Lead Sources

Lead is also considered to be present throughout the Site in the following locations that may be disturbed during demolition:

- Wiring connectors, grounding conductors and solder.
- Lead acid batteries in use for the emergency lighting.
- Two batteries present in the shed for use with the interior shed generator.

3.3 Mercury

At the time of our visit, limited quantities of compact fluorescent lamps and fluorescent light tubes were observed to be in use throughout the Site. Compact fluorescent light bulbs and fluorescent light tubes contain mercury vapour. Fluorescent lamps should be removed intact and properly disposed of. One thermostat was observed during our assessment. TULLOCH determined that the thermostat did contain mercury switches. All thermostats found during demolition should be removed and inspected for the presence of mercury switches prior to disposal.



Thermostat present in the trailer unit contains mercury.



Fluorescent light tubes present throughout the Site contain mercury gas.

3.4 Urea Formaldehyde Foam Insulation (UFFI)

UFFI was not found in the survey area.

3.5 Ozone Depleting Substances (ODS)

One residential style “Kool King” air conditioner was observed in the large trailer unit, which may contain hydrochlorofluorocarbon (HCFC). The unit should be disposed of at an authorized facility to properly remove any HCFC from the unit.

No other ozone depleting substances were found in the survey area.

3.6 Polychlorinated Biphenyls

Compact fluorescent light fixtures and fluorescent light fixtures were observed at the Site. Compact fluorescent light fixtures do not contain ballasts that contain PCBs. Some older T12 fluorescent light fixtures may contain light ballasts that contain PCBs, one ballast was observed in the shed building and found to not contain PCBs, however, it should not be assumed that all ballasts are non-PCB. All T12 fluorescent light fixtures scheduled for removal should be de-energized, dismantled and inspected for PCB containing ballasts.

Three types of caulking appeared weathered and were suspected of containing PCBs within the survey area.

Grey caulking was observed around the exterior ducts and pipes of the shed building. One sample of grey caulking was collected and submitted for analysis (PCB-01). Grey caulking does not contain PCBs.

Clear caulking was observed around the base of the exterior steel panels of the shed building. The caulking was observed to be pliable and suspected to be silicone caulking which is known to not contain PCB's. Samples of the clear caulking were not collected.

White caulking was observed around the exterior doors of the trailer unit building. One sample of the white caulking was collected and submitted for analysis (PCB-02). White caulking does not contain PCBs.

Grey caulking was observed around the exterior wiring of the trailer unit building. One sample was collected and submitted for analysis (PCB-03). Grey caulking does not contain PCBs.

Black putty was observed around the exterior wiring of the trailer unit building. The putty was observed to be pliable and suspected to be newer composition which is known to not contain PCBs. Samples of the black putty were not collected.



Grey caulking around pipes on the exterior of the shed building (PCB-01) does not contain PCBs.



White caulking around doors on the exterior of the trailer unit building (PCB-02) does not contain PCBs.



Grey caulking around wiring on the exterior of the trailer unit building (PCB-03) does not contain PCBs.



Ballast observed in the shed building stated it did not contain PCBs.

3.7 Silica Containing Materials

Concrete materials and gravel, which have the potential of containing silica, were used in concrete materials used for foundations.



Concrete contains silica and is found throughout the survey area.



Gravel used for timber foundation contains silica.

3.8 Acrylonitrile

Acrylonitrile is primarily released into the environment from the chemical and plastic production industries; therefore, the presence of acrylonitrile is unlikely at the site.

3.9 Arsenic

Arsenic is used to manufacture hard, strong and corrosion resistant alloys. Arsenic compounds can also be found in pigments, animal poisons, insecticides, paints, wallpaper, ceramics and poisonous gases manufactured for

military purposes. The presence of arsenic and/or materials containing significant quantities of arsenic in the building envelope finishes is unlikely.

3.10 Benzene

Benzene is used in industry primarily for the production of other chemicals used in the manufacturing of plastics, resins, nylon, synthetic fibres, rubbers, dyes, detergents, drugs and pesticides. Benzene is naturally occurring in crude oil, fuel oil, gasoline and cigarette smoke. One generator and a fuel oil tank were present in the shed building. The fuel oil tank was reported to be empty at the time of the assessment and the fuel lines from the tank had been disconnected from the generator. Residual (minor) fuel oil may still remain within both the generator and fuel oil tank. The presence of oil staining beneath the generator was observed during the survey.

3.11 Coke Oven Emissions

Coke oven emissions are generated in the extraction of metals from ores and are generally associated with the manufacturing of iron and steel; therefore, based on the information gathered for the Site, and TULLOCH's survey, the presence of coke oven emissions is unlikely.

3.12 Ethylene Oxide

Ethylene oxide is produced in large volumes throughout the world and is generally used as a chemical intermediate for the manufacturing of textiles, detergents, polyurethane foams, antifreeze, solvents, medicinal products, adhesives, and is used as a fumigant in agricultural products, and sterilizing agents. Based on the information gathered for the Site, and TULLOCH's survey, the presence of ethylene oxide in large quantities is unlikely.

3.13 Isocyanates

Isocyanates are a raw material used in the production of polyurethanes, and widely used for the manufacturing of flexible/rigid foams, fibres, elastomers, and coatings such as paints and varnishes. Based on the information gathered for the Site, and TULLOCH's survey, the presence of isocyanates in large quantities is unlikely.

3.14 Vinyl Chloride

Since vinyl chloride is primarily released into the environment as gas emissions or in wastewater from the production of polyvinyl chloride (PVC), the presence of vinyl chloride is unlikely; however, due to the release of vinyl chloride gas from the burning of electrical wiring or PVC pipes, the use of high heat or burning methods to dismantle electrical components or PVC pipes is not recommended.

Based on the information gathered for the Site, and TULLOCH's survey, the presence of vinyl chloride in large quantities is unlikely.

3.15 Radioactive Materials

Smoke and heat detectors were not observed within the building. Smoke detectors may use ionization technology, which employs a small radioactive source as a key component in detecting smoke particles and may be present throughout the Site.

Naturally Occurring Radioactive Materials (NORMs) usually consist of industrial wastes or by-products enriched with radioactive elements found in the environment, such as uranium, thorium and potassium and any of their decay products, such as radium and radon.

Based on the information gathered for the Site, and TULLOCH's survey, the presence of NORMs is unlikely.

3.16 Mould Growth

Mould growth was suspected in one area of the shed building. The wood board ceiling in the north east corner was water damaged and a small area of mould growth observed. One bulk sample of the wood board ceiling was sampled and submitted for analysis at an accredited laboratory. Mould growth on sample BULK-01 was confirmed as moderate growth of *Graphium*-like and *Penicilium* moulds. Visible mould growth was minimal on the surface of the wood board, however, continued growth could extend on the back side of the wood board wall and ceiling panels if the water source is not identified and corrected.

Level 1 precautions should be followed in remediating the mould growth in the shed building.

3.17 Other Chemicals, Substances or Hazardous Materials of Potential Concern

Fecal droppings from rodents were found within the shed building. There is a substantial amount of fecal matter on the floors and items in the shed building. Protective clothing and respiratory equipment should be used during demolition work in the shed building if demolition is done manually.

One generator and a fuel oil tank were present in the shed building. The fuel oil tank was reported to be empty at the time of the assessment and the fuel lines from the tank had been disconnected from the generator. There was some oil staining on the flooring under the generator and access underneath the shed building was limited, therefore, limiting any further observation of staining.

No other chemicals, substances or hazardous materials of potential concern were noted within the survey area.

4. RECOMMENDATIONS

The removal of all identified designated substances must be performed prior to disturbing the building substrate below. A qualified person should inspect the removal of all designated substances prior to proceeding with renovation/repair or demolition work.

A copy of this report must be given to all contractors working on the project.

This DS&HMS, samples, quantity of samples and provided recommendations are based on the existing Site conditions at the time of the survey. TULLOCH cannot comment on materials removed prior to the assessment being completed. It is possible that some materials containing designated substances were removed prior to the survey being completed which may have negatively impacted the air quality throughout the Site.

4.1 Asbestos

All non-friable asbestos containing materials that will be disturbed during demolition/renovation must be removed prior to commencing with demolition/renovation activities. All asbestos containing materials must be removed according to O.Reg 278/05 by qualified/certified asbestos workers. All non-friable ACM (vinyl floor tile) should be removed by hand using Type 1 precautions or using Type 3 precautions for all other methods of removal (power tools/machine).

4.2 Lead

Building materials confirmed or assumed to contain lead (i.e. solder, wiring connections, copper pipes, paint, etc.) should be removed and properly recycled.

All substrates that are schedule to undergo demolition by cutting, grinding, burning or any other aggressive method that are coated with lead-containing paint should be properly abated prior to demolition by qualified workers trained in the abatement of lead and should generally follow guidelines such as the Ontario Ministry of Labour Guideline "Lead on Construction Projects" or the Environmental Abatement Council of Ontario (EACO) "Lead Guideline for Construction, Renovation, Maintenance or Repair", dated October 2014.

Waste materials which exceed the Leachate Quality Criteria for lead of 5 ppm, as established using the Toxicity Characteristic Leaching Procedure (TCLP) per O. Reg. 347 (as amended), are considered lead hazardous wastes and must be transported and disposed of at a licensed facility.

4.3 Mercury

Building materials suspect of containing mercury were the compact fluorescent lights and fluorescent light tubes found throughout the survey area. One thermostat containing mercury switches was also identified. Materials

consisting of elemental, inorganic or organic mercury that exceed the Leachate Quality Criteria of 0.1 ppm, as established by Regulation 347 (as amended) TCLP, cannot be disposed of at a solid non-hazardous waste site. The waste removal contractor should be responsible for finding a source for the disposal of materials containing mercury. Mercury is also listed in the “*Transportation of Dangerous Goods Act*”; therefore, specific requirements apply for the transportation of materials containing mercury.

Management, handling and disposal of mercury containing equipment such as thermostats and fluorescent light tubes should be in accordance with O. Reg. 347 (as amended) and O. Reg. 490/09.

4.4 Silica Containing Materials

Samples of building materials were not relinquished for silica analysis. Cast in place concrete slabs, foundations, masonry and granular fill are likely to contain silica, since silicon dioxide is the basic component of sand, sandstone, slate, flint, quartz and granite rock. The Waste Diversion Act, O. Reg. 102/94, specifies that materials containing silica or that have the potential of containing silica should not be disposed of at a landfill. Exposure to fine dust containing airborne silica becomes a health issue when inhaled. Engineering control, such as wetting materials during demolition/construction activities should be used in order to limit the accumulation of dust. O. Reg. 490/09 and the Ministry of Labour document “*Guideline – Silica on Construction Projects*” (September 2004), should be referred to when demolishing materials that may contain silica.

4.5 Benzene

Residual fuel may still be present within the generator and above ground storage fuel tank. The waste removal contractor should ensure any fuel product is contained and disposed of appropriately. Given the presence of staining beneath the generator, an assessment of the underlying soils, which was not possible at the time of the DS&HMS, should be conducted following the removal of the shed to ensure that any staining did not migrate beneath into the underlying soils.

4.6 Mould

If the shed building will continue to be occupied by staff, Level 1 Mould remediation should be performed on visibly mould impacted materials (<10 square feet) following EACO Guidelines. Prior to carrying out remedial work the source of the water intrusion should be identified and corrected to prevent subsequent mould growth. If the shed building will no longer be occupied it is recommended that no further action be taken in regards to mould abatement.

5. Statement of Qualifications and Limitations

The attached Report (the “Report”) has been prepared by TULLOCH Engineering (“Consultant”) for the benefit of the Canadian Coast Guard (“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 to it 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
- 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 is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

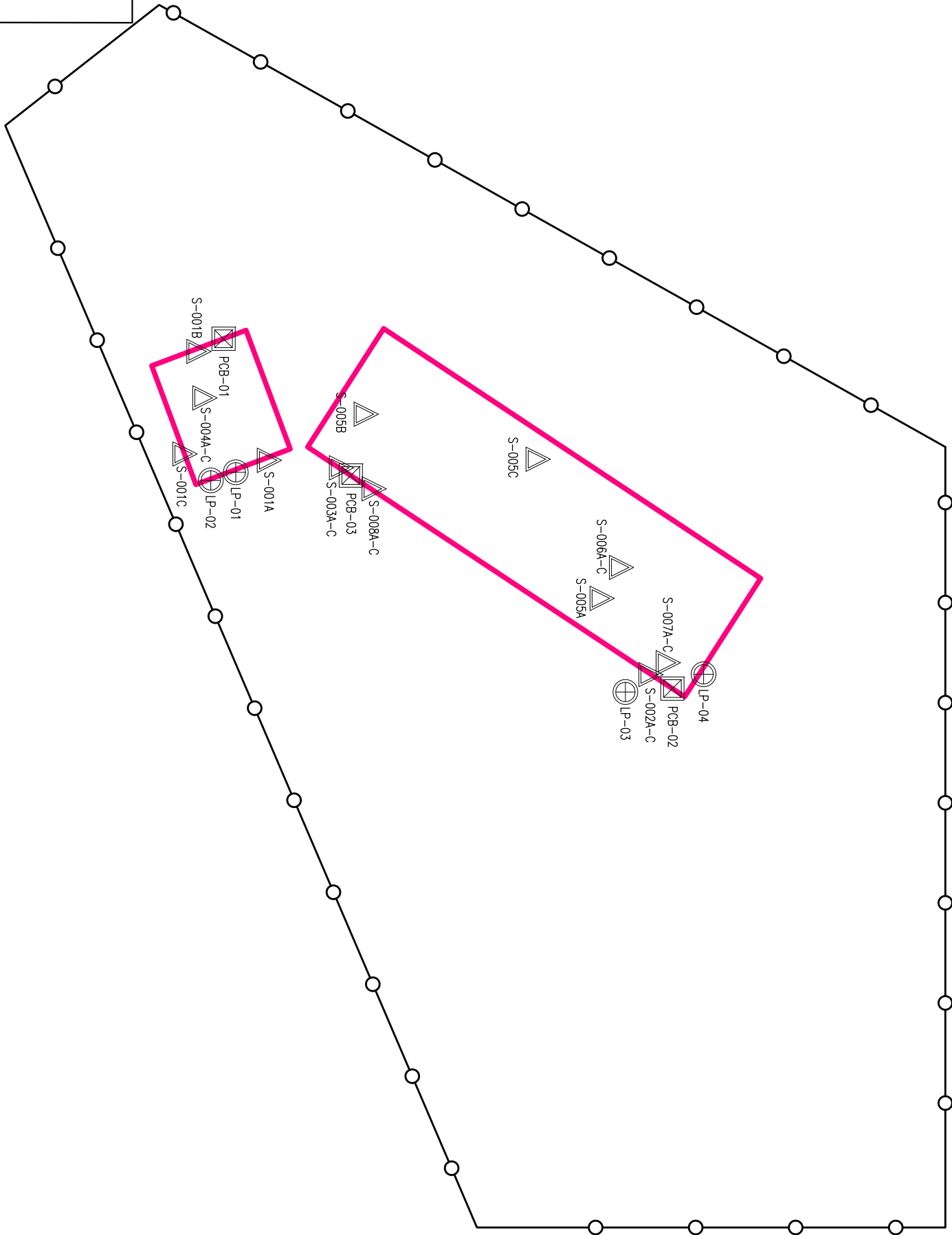
FIGURES

Figure F1: Site Location Plan

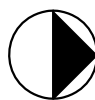
Figure F2: Sample Location Plan – Trailer and Shed

LEGEND

- (S-0004C) ASBESTOS SAMPLE LOCATION
- (PCB-00) PCB SAMPLE LOCATION
- (LP-000) PAINT SAMPLE LOCATION
- LIMITS OF THE SURVEY



PROJECT NORTH



TULLOCH
ENGINEERING

ISSUED FOR
REPORT
MAY 16, 2019

PROJECT:
DS & HMS
CANADIAN COAST GUARD - MCTS FACILITY
HIGHWAY 69, POINTE AU BARIL



DRAWING:
SAMPLE LOCATION PLAN

ENGINEER'S SEAL

1		MAY 16, 2019	RM	ISSUED FOR FINAL
No.	DATE	BY	ISSUES / REVISIONS	
DRAWN BY:		CHECKED BY:		PROJECT No. :
RM		TM		19-1349
DESIGNED BY:		APPROVED BY:		DRAWING No.
RM		TM		F2
SCALE:		DATE:		
NTS		MAY 16, 2019		REVISION No.

APPENDIX A

EMC Certificate of Analysis - Asbestos

Caduceon Certificate of Analysis - Lead

Caduceon Certificate of Analysis – PCB

EMC Certificate of Analysis - Mould

To:

Rod Morrison
 Tulloch Engineering
 71 Black Road, Unit 8
 Sault Sainte Marie, Ontario
 P6B 0A3

EMC LAB REPORT NUMBER: A48939

Job/Project Name: CCG Point Au Baril

Analysis Method: Polarized Light Microscopy – EPA 600

Date Received: May 9/19

Date Analyzed: May 13/19

Analyst: Jack Eastwood, *Analyst*

Reviewed By: Fajun Chen, Ph.D., *Laboratory Director*

Job No: 19-1349

Number of Samples: 24

Date Reported: May 13/19



Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
S-001A	A48939-1	Grey caulking/exterior shed	Grey, caulking	ND		100
S-001B	A48939-2	Grey caulking/exterior shed	Grey, caulking	ND		100
S-001C	A48939-3	Grey caulking/exterior shed	Grey, caulking	ND		100
S-002A	A48939-4	White caulking/exterior trailer	White, caulking	ND		100
S-002B	A48939-5	White caulking/exterior trailer	White, caulking	ND		100
S-002C	A48939-6	White caulking/exterior trailer	White, caulking	ND		100
S-003A	A48939-7	Grey caulking/exterior trailer	Grey, caulking	ND	0.5	99.5
S-003B	A48939-8	Grey caulking/exterior trailer	Grey, caulking	ND	0.5	99.5
S-003C	A48939-9	Grey caulking/exterior trailer	Grey, caulking	ND	0.5	99.5
S-004A	A48939-10	Brown sheet vinyl flooring/trailer	2 Phases: a) Brown, vinyl flooring b) Brown, cellulose backing	ND ND	5 95	95 5
S-004B	A48939-11	Brown sheet vinyl flooring/trailer	2 Phases: a) Brown, vinyl flooring b) Brown, cellulose backing	ND ND	5 95	95 5
S-004C	A48939-12	Brown sheet vinyl flooring/trailer	2 Phases:			

EMC LAB REPORT NUMBER: A48939
Client's Job/Project Name/No.: 19-1349
Analyst: Jack Eastwood, *Analyst*

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
			a) Brown, vinyl flooring b) Brown, cellulose backing	ND ND	5 95	95 5
S-005A	A48939-13	Beige VFT/trailer	2 Phases: a) Beige, vinyl floor tile b) Yellow, mastic	Chrysotile ND	1	99 100
S-005B	A48939-14	Beige VFT/trailer	NA	NA		
S-005C	A48939-15	Beige VFT/trailer	NA	NA		
S-006A	A48939-16	Paper ceiling panel/trailer	Grey, layered paper	ND	90	10
S-006B	A48939-17	Paper ceiling panel/trailer	Grey, layered paper	ND	90	10
S-006C	A48939-18	Paper ceiling panel/trailer	Grey, layered paper	ND	90	10
S-007A	A48939-19	Pink VFT/trailer	2 Phases: a) Pink, vinyl floor tile b) Black, mastic	ND ND		100 100
S-007B	A48939-20	Pink VFT/trailer	2 Phases: a) Beige, vinyl floor tile b) Black & yellow, mastic	Chrysotile ND	1	99 100
S-007C	A48939-21	Pink VFT/trailer	NA	NA		
S-008A	A48939-22	Black putty/exterior trailer	Black, caulking	ND	1	99
S-008B	A48939-23	Black putty/exterior trailer	Black, caulking	ND	1	99
S-008C	A48939-4	Black putty/exterior trailer	Black, caulking	ND	1	99

EMC LAB REPORT NUMBER: A48939
Client's Job/Project Name/No.: 19-1349
Analyst: Jack Eastwood, *Analyst*

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 Ontario 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.

C.O.C.: ---

REPORT No. B19-12806

Report To:

EMC Scientific Inc.
 5800 Ambler Dr. #100,
 Mississauga ON L4W 4J4 Canada

Attention: Alister Haddad

Caduceon Environmental Laboratories

2378 Holly Lane
 Ottawa Ontario K1V 7P1
 Tel: 613-526-0123
 Fax: 613-526-1244

DATE RECEIVED: 10-May-19

JOB/PROJECT NO.: CCG Point Au Baril

DATE REPORTED: 13-May-19

P.O. NUMBER: 19-1349

SAMPLE MATRIX: Paint Chips

WATERWORKS NO.

Parameter	Lead				
Units	µg/g				
R.L.	5				
Reference Method	EPA 6010				
Date Analyzed/Site	13-May-19/O				

Client I.D.	Sample I.D.	Date Collected				
LP-01 Red PC/ Shed Dr	B19-12806-1	08-May-19	23700			
LP-02 Wht PC/ Shed Trim	B19-12806-2	08-May-19	3200			
LP-03 Gry PC/ Wood Stps	B19-12806-3	08-May-19	15			
LP-04 Vrn PC/ Trlr Skrt	B19-12806-4	08-May-19	1400			

R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie



Greg Clarkin, BSc., C. Chem
 Lab Manager - Ottawa District

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

C.O.C.: ---

REPORT No. B19-12809

Report To:

EMC Scientific Inc.
 5800 Ambler Dr. #100,
 Mississauga ON L4W 4J4 Canada

Attention: Alister Haddad

Caduceon Environmental Laboratories

2378 Holly Lane
 Ottawa Ontario K1V 7P1
 Tel: 613-526-0123
 Fax: 613-526-1244

DATE RECEIVED: 10-May-19

JOB/PROJECT NO.: CCG Point Au Baril

DATE REPORTED: 15-May-19

P.O. NUMBER: 19-1349

SAMPLE MATRIX: Bulk

WATERWORKS NO.

Parameter	Poly-Chlorinated Biphenyls (PCB's)				
Units	µg/g				
R.L.	1				
Reference Method	EPA 8082				
Date Analyzed/Site	15-May-19/K				

Client I.D.	Sample I.D.	Date Collected				
PCB-01 Gry Chlkg / Shd	B19-12809-1	08-May-19	< 1			
PCB-02 W Clkg/ Trl Ext	B19-12809-2	08-May-19	< 1			
PCB-03 W Clkg/ Trl Ext	B19-12809-3	08-May-19	< 1			

R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill, B-Barrie



Greg Clarkin, BSc., C. Chem
 Lab Manager - Ottawa District

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

Laboratory Analysis Report

To:

Rod Morrison
Tulloch Engineering
71 Black Road, Unit #8
Sault Ste. Marie, Ontario
P6B 0A3

EMC LAB REPORT NUMBER: 71403
Job/Project Name: CCG Point Au Baril
Job/Project No: 19-1349 **No. of Samples:** 1
Sample Type: Bulk **Date Received:** May 9/19
Analysis Method(s): Direct Microscopic Examination
Date Analyzed: May 13/19 **Date Reported:** May 14/19
Analyst: Weizhong Liu, Ph.D., *Mycologist*
Approved By: Fajun Chen, Ph.D., *Principal Mycologist*



Client's Sample ID	Lab Sample No.	Date Sampled	Description/Location	Mould Identified, in Rank Order	Mould Growth
Bulk-01	309580	May 8/19	Ceiling board/shed	<i>Graphium-like</i> <i>Penicillium</i>	Moderate

Note:

- Mould growth is subjectively assessed with description terms sparse, moderate and abundant.
- The presence of spores (lacking other fungal structures associated) is assessed as following: a few spores (< 10 spores average per microscopic field at 400X), some spores (10 - 100 spores average per microscopic field at 400X), many spores (> 100 spores average per microscopic field at 400X).
- The presence of a few spores generally represents settled spores on the surface of the sample rather than indicating mould growth.
- The results are only related to the samples analyzed.