

DESIGNATED HAZARDOUS SUBSTANCES INSPECTION



**FORMER WWII POW CAMP 30
CENTRAL CAFETERIA BUILDING
2020 LAMBS ROAD
BOWMANVILLE, ONTARIO**

**FOR
MUNICIPALITY OF CLARINGTON
BY**



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Report AR107-24



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March 6, 2024

Report No. AR107-24

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Dear Mr. Grigg

EXECUTIVE SUMMARY

Designated Hazardous Substances Inspection
Former WWII POW Camp 30
Central Cafeteria Building
2020 Lambs Road
Bowmanville, Ontario

We are pleased to present our report of a designated hazardous substance inspection (DHSI) conducted at the captioned building. This work was outlined in our proposal AP107-24 dated February 08, 2024 and the work was subsequently authorized by Purchase Order No. 12783 dated February 28, 2024.

Camp 30, a former prisoner-of-war (POW) camp, is a 42.5-hectare campus located at the northwest corner of Lambs Road and Concession Street East in Bowmanville. The central part of the campus hosts six heritage buildings, one of which is owned by the *Town of Clarington*. This is the former Central Cafeteria building, which is an 8,200-sf steel-framed brick structure consisting of a ground floor with a triple height ceiling space, and a partial basement level.

The building is presently vacant and in a derelict condition, with signs of water damage, and corrosion of steel in some locations. Vandalism has also taken place and graffiti is rampant. The building has remained unheated in the recent years.

It is understood that the municipality is exploring options for restoration of said Central Cafeteria building. The objective of this study was to determine whether any

hazardous building materials, including designated substances, as defined by the *Ontario Occupational Health and Safety Act*, were present within the building, requiring special handling or abatement prior to, or during any restoration work.

The assessment included a visual inspection of accessible areas and collection of samples of building material for analysis. The results of our inspection are summarized as follows:

- Any material containing 0.5% or more of asbestos fibres by dry weight is considered to be an asbestos-containing material (ACM), according to *Ontario Regulation 278/05 – the Regulation Respecting Asbestos on Construction Projects and in Repair Operations*. Based on the visual observations of our inspection and the results of laboratory analysis, five materials have tested positive for asbestos fibres over the said 0.5% limit. They include Boiler Insulation, Pipeline Wrapping *Air-Cell* Insulation, Pipe Joint Insulation on fittings including elbows, valves and tees; Wall and Ceiling Plaster, Caulking on the window frames. In addition, there is a Fire Door with a core that should be assumed to contain asbestos. Prior to any restoration work, asbestos abatement will likely be required. Removal of the thermal insulation materials in the Basement would constitute a **Type 3** Operation. Removal of the Plasters would also constitute a **Type 3** Operation. Removal of the Caulking and Fire Door would constitute a **Type 1** Operation under *Ontario Regulation 278/05*.
- All eleven samples of both interior and exterior paintwork of the building have tested positive for lead-based paint. For restoration purposes, the peeling paintwork will likely need to be removed. This should be done in accordance with the *Environmental Abatement Council of Ontario (EACC) 2014 Lead Guideline* procedures. Exposure to lead-containing materials is also regulated under *Ontario Regulation 490/09, Designated Substances -Regulation Respecting Lead made under the Occupational Health and Safety Act*. Care must be taken to prevent personnel exposure to airborne lead-containing paint dusts. Such work should follow procedures outlined in the Ministry of Labour *Guideline for Lead on Construction Projects*.
- Only one sample from an exterior door frame has tested positive for mercury-based paint. For restoration purposes, precautions must be taken to prevent personnel exposure any airborne mercury-laden dust. Exposure to airborne

mercury is regulated under *Ontario Regulation 490/09– Regulation respecting Mercury – made under the Occupational Health and Safety Act*.

- Silica (including free crystalline silica) is a component of concrete and brick surfaces noted in the investigated areas. Silica is generally assumed in such materials, and not tested for. Exposure to airborne silica is regulated under *Ontario Regulation 845/90, Regulation respecting Silica - made under the Occupational Health and Safety Act*. Precautions must be taken to prevent silica-containing particles from becoming airborne during the disturbance of these materials through the restoration work.

Any asbestos, lead or mercury wastes resulting from removals should be appropriately handled and disposed of at a registered landfill or at an appropriate recycling facility per *Ontario Regulation 347/90* provisions, as amended by *O. Reg. 326/03*.

We trust you will find this report to be complete within our terms of reference. This executive summary is part of, and must be reviewed with the complete inspection report.

Should you have any questions regarding the information contained in the report, or require further assistance, please contact our office.

Sincerely

AiMS Environmental



Mohamed M. Jagani, P. Eng., PE, QP_{ESA}
Senior Consultant

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1.0 INTRODUCTION

AiMS Environmental (AiMS) was retained by the *Municipality of Clarington* to conduct a designated hazardous substances inspection (DHSI) at a building located within Camp 30 off 2020 Lambs Road in Bowmanville, Ontario. A Key Plan of the site is shown in *Drawing 1*.

Camp 30 is a 42.5-hectare campus located at the northwest corner of Lambs Road and Concession Street East in Bowmanville. The central part of the campus hosts six existing buildings in a ring formation, all of which have been designated as heritage structures by the Clarington Heritage Committee and the Province of Ontario.

Only one of the six buildings is owned by the *Town of Clarington*, namely, the former Central Cafeteria building, which is an 8,200-sf steel-framed brick structure consisting of a ground floor with a triple height ceiling space and a partial basement level.

The building is presently vacant and in a derelict condition, with signs of water damage, and corrosion of steel in some locations. Vandalism has also taken place.

The building has not been occupied and has remained unheated in recent years.

It is understood that the municipality is exploring options for restoration of said Central Cafeteria building. The objective of this study was to determine whether any hazardous building materials, including designated substances, as defined by the *Ontario Occupational Health and Safety Act*, were present within the building, requiring special handling or abatement prior to or during the restoration work.

1.1 Purpose of Work

Designated Substances area regulated under *Ontario Regulation 490/09 – Designated Substances*, made under the *Ontario Health and Safety Act*. Under these regulations, a building owner must determine if there are any hazardous materials on site prior to any construction (restoration) or demolition activity.

Hazardous Materials or "Designated Substances" is a collective term for eleven listed organic and inorganic building contaminants defined in the Act, which are listed below and their descriptions are provided under *Supplement 1* in this report:

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

The term "building contaminants" is generally interpreted to include those materials that would normally be transferable under a real estate transaction. The building owner must provide a list of designated hazardous substances present or identified in his building to any contractors and subcontractors prior to work on-site, for instance, during the bidding process.

An owner who fails to comply with said regulations is liable to the constructor and every contractor and subcontractor who suffers any loss or damages due to non-compliance.

1.2 Scope of Work

The scope of our inspection entails a walk-through visual survey of the interior of the building to identify any suspect building contaminants. Confirmation of suspect building materials is performed by conducting appropriate laboratory analysis of bulk samples of suspect material.

Where necessary, bulk samples of materials suspected to contain lead or asbestos are taken, in order to determine whether they are present within the building material.

Interior and exterior paint surfaces are field-checked for lead, and verification samples are submitted to a laboratory for further analysis of lead and mercury.

Other designated substances, such as silica, if suspected, are generally identified by visual observation only.

2.0 BUILDING DESCRIPTION AND HISTORY

Historically, the Camp 30 originally hosted a Boys Training School from 1925. During World War II the Department of National Defence appropriated the property and used it as one of Canada's prisoner-of-war (POW) camps. The central part of the campus hosts six existing buildings in a ring formation. The architectural styling of the campus buildings, demonstrates Prairie Style features which are rare and unique in Ontario and Canada, therefore, all been designated as heritage structures by the Clarington Heritage Committee and the Province of Ontario.

The subject Central Cafeteria building is an 8,200-sf steel-framed brick structure consisting of a large open concept Ground Floor with a triple height ceiling space and a partial Basement level. This building has brick and hollow-block structural walls covered with smooth plaster in poor condition. The roof slabs consist of wood frame plaster-over-wire lathe construction. There is a central brick chimney.

The steel columns and joists have some spray-applied fireproofing, and are encased in plaster bulkheads. The ceilings are composed of plaster-over-wire-lathe. There is peeling paintwork on the walls and ceilings throughout the building.

The flat roofs appear to be composed of tar-and-gravel over shingles.

The building is presently vacant and in a derelict condition, with signs of water damage, and corrosion of steel in some locations. Vandalism has also taken place and graffiti is rampant.

The building has remained unheated in the recent years.

This building was inspected by our staff on February 15, 2024. Photographs were taken for future reference some of which are reproduced in *Appendix A*.

Heating within the building was provided by two hot water boilers located in the central part of the Basement. The boilers are insulated with parging cement material suspected to contain asbestos and sampled. The boiler exhausts are not insulated.

There is a red-painted Fire Door leading to the central area of the Basement where the boilers are located. The core of the Fire Door is assumed to contain asbestos.

A network of hot water supply pipelines leads from the boilers to various parts of the basement as well as the Ground Floor, and a tunnel that leads to service other buildings.

In the Basement area, virtually all of these heating pipelines are wrapped with corrugated cardboard air-cell insulation known to contain asbestos. In addition, the parging cement insulations over the pipe fittings including elbows, valves and tees are suspected to contain asbestos.

The heating pipelines on the Ground Floor are not insulated. These pipelines are arranged in a raft formation to provide radiant heat. Peeling paintwork exists over these pipelines.

Domestic hot water supply in the building was provided by one central hot water tank heater in the basement area. This tank is not insulated.

Electrical switches and breakers are mounted on a plywood wall panels in one section of the Basement. No PCB fluids were suspected to be associated with the electrical equipment. No asbestos-containing mounting panels were observed.

Interior finishes in the building are limited to smooth plaster over the walls and ceilings, which is considerably damaged, with grey texture coat exposed underneath the plaster in various places.

There is a north addition in which some partition and washroom walls are constructed with drywall (and joint compound), and there are 1 by 1-ft surface-mounted ceiling tiles. All of these finishes were sampled.

There are no flooring finishes of note over the cement floors throughout the building.

The large metal windows were boarded up and had no visible panes, however, some of the caulking was still accessible and sampled.

Illumination with the building was previously achieved by fluorescent light fixtures. Virtually all of these fixtures appeared to have been vandalized and gutted with no visible fluorescent lamps or ballasts.

3.0 METHODS

Sampling was carried out only for those compounds deemed to have a likely source of origin in the area under study.

Sample analysis was performed by *EMC Scientific Inc.*, an independent accredited laboratory in Mississauga, Ontario.

Sampling locations are shown on *Drawing 2* and *Drawing 3* and details of laboratory analyses are reproduced in *Appendix B*. Materials which were similar in appearance or texture to others tested were considered to be of like materials.

3.1 Investigated Areas

The inspection included all easily accessible interior and exterior areas of the building.

3.2 Sampling Methodologies

Identification of suspect substances, using bulk sampling and laboratory analysis, was conducted only for suspect asbestos and lead contamination. Other materials were identified by visual observation only.

4.0 FINDINGS

4.1 Summary of Designated Hazardous Substances Investigated

Based on the history and usage of the building, the following designated hazardous substances were suspected to be present in the building: asbestos, lead, mercury and silica. No other designated substances were suspected or observed.

Samples were collected as described in the following paragraphs:

4.1.1 Asbestos Containing Material

Based on the age of the building, asbestos could be expected in some of the building materials. Therefore, a total of 37 bulk samples of suspected asbestos-containing materials were collected of the various finishes including:

- Boiler Insulation
- Air-Cell Pipeline Insulation
- Parging Cement Insulation
- Plaster (including underlying Texture Coat)
- Drywall Joint Compound
- Ceiling Tiles
- Roof Tar Material
- Mortar
- Window Caulking

All 37 samples were submitted for laboratory bulk asbestos analyses. A schedule of bulk samples collected is included in *Appendix B*.

In addition to the above, the Fire Door leading from the boilers in the Basement is assumed to have an asbestos-containing core.

4.1.2 Lead-Containing Materials

Based on the age of the building, lead was suspected to be present in the building's paintwork.

Eleven samples of peeling paint were therefore collected from various surfaces, including walls, ceilings, door frames, columns and foundation walls, and submitted to the laboratory for lead content analysis.

4.1.3 Silica-Containing Materials

Silica (including free crystalline silica) may be a component of concrete and brick materials noted in the investigated areas. Its presence is generally assumed.

4.1.4 Mercury-Containing Materials

Mercury was also suspected in the building's paintwork and the eleven samples of peeling paint were collected for lead were also subjected to mercury content analysis.

4.1.5 Other Hazardous Materials

Polychlorinated Biphenyls (PCBs) were commonly used as dielectric insulating fluid in electrical equipment such as transformers and capacitors, and in the fluorescent and high-intensity discharge (HID) lamp ballasts. The production of PCBs in the North America started in 1929 and was banned at the beginning of 1979. After 1981, no manufacturers produced fluorescent and HID lamps with PCB-containing ballasts. PCBs are not a designated substance under the *Occupational Health and Safety Act*.

The ballasts within the older fluorescent light fixtures can contain Polychlorinated Biphenyl's (PCBs) and the fluorescent tubes and high-intensity discharge light bulbs can have mercury coating on their interior surfaces. In this building, virtually all of the fluorescent light fixtures appeared to have been vandalized such that no lamps or ballasts were evident.

Mold can occur in sections of the building in which wet or humid conditions persist or flooding occurs. It is not regulated as a designated hazardous substance under the building *Occupational Health and Safety Act*. Appropriate precautions should be taken to control exposure should any mold be encountered during demolition.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Asbestos-Containing Materials (ACM)

An Asbestos-Containing Material (ACM) is defined by O. Reg. 278/05 *Regulation Respecting Asbestos on Construction Projects and in Repair Operations* - as a material that contains 0.5% or more asbestos by dry weight. ACMs are placed into two general classes, “friable” and “non-friable” ACMs. Friable ACMs are those materials that when dry can be crumbled, pulverized and reduced to powder by hand pressure.

Typical friable ACMs include acoustical or decorative texture coats, fireproofing and thermal insulation. Non- friable ACMs are much more durable as they are held together by a binder such as cement, vinyl or asphalt. Typical non-friable ACMs include floor tiles, fire blankets, roofing materials and cementitious products such as wallboards, pipes or siding.

It has been recognized that hazardous situations may exist in buildings where asbestos-containing materials are found. This is especially true where asbestos fibres may become airborne as a result of material ageing, physical damage, and water damage or air movement.

Based on the visual observations of our inspection and the results of laboratory analysis, asbestos fibres were confirmed in samples of the following building materials:

- Boiler Insulation: Friable parging cement insulation over the two boilers in the Basement (Samples HA07-01 through HA07-01, Chrysotile 50%)
- Pipeline Insulation: Friable *Air-Cell* insulation wrapping insulation on the straight sections of pipelines throughout the Basement (Samples HA06-01 through HA06-01, Chrysotile 40-60%, Amosite 0-10%).
- Pipe Joint Insulations: Friable thermal insulation parging cement materials on heating pipeline joints, elbows, valves, and tees throughout the Basement (Sample HA08-01 through HA08-01, Chrysotile 60%).
- Plaster: Friable, flat (smooth) wall and ceiling plaster found throughout the Ground Floor including grey underlying texture coat (Samples HA01-01 through HA01-07, Chrysotile 0 to 1%).

- Caulking: Friable caulking on the exterior window frames (HA10-01 through HA10-03, Chrysotile 0-1%).

No asbestos fibres were detected in any of the other materials sampled including drywall joint compound, ceiling tiles and roofing material.

In addition to the above, there is a Fire Door in the Basement with a core likely to contain asbestos, and therefore assumed ACM.

Prior to any restoration work, asbestos abatement will likely be required.

Removal of the thermal insulation materials (boiler, pipeline and joint insulations) in the Basement would constitute a **Type 3** Operation. Removal of the plasters would also constitute a **Type 3** Operation. Removal of the Caulking and Fire Door would constitute a **Type 1** Operation under *Ontario Regulation 278/05*.

Finally, we note that there are remnants of grey plaster texture coat on the walls and ceilings in the Basement. Additional sampling of these materials should be conducted for verification purposes.

Should any other suspected ACMs be encountered within the building at a later date, they should be tested and addressed in accordance with *Ontario Regulation 278/05*.

Any Asbestos-containing waste must be handled and disposed of in accordance with *R.R.O. 1990, Regulation 347, as amended by O. Reg. 326/03 - General - Waste Management*.

5.2 Lead-Containing Materials

Historically, the federal *Hazardous Products Act* classified any paintwork containing more than 0.5% by weight or 5,000 ppm of lead, as lead-based paint.

A revised section of the said Act, known as the *Surface Coating Materials Regulation* limits the permissible lead content in surface coating materials including interior paint to 0.06% or 600 ppm.

The results of laboratory testing showed all eleven paint samples analyzed had reported lead concentrations ranging from 2,450 ppm to 60,300 ppm, which exceeded the said 600 ppm limit and therefore the paint would be classified as lead-based paint.

In structures constructed prior to 1980, lead may also be present in water pipelines and associated soldered joints.

For restoration purposes, the peeling paintwork in the building will likely need to be removed. This should be done in accordance with the *Environmental Abatement Council of Ontario* (EACC) 2014 Lead Guideline procedures. Exposure to lead-containing materials is also regulated under *Ontario Regulation 490/09, Designated Substances -Lead made under the Occupational Health and Safety Act*. Care must be taken to prevent personnel exposure to airborne lead-containing paint dusts. Such work should follow procedures outlined in the Ministry of Labour *Guideline for Lead on Construction Projects*.

Any lead-containing waste material should be handled and disposed of according to *Ontario Regulation 347/90* as amended by *O. Reg. 326/03* and may be subject to Leachate Criteria (Schedule 4) of this Regulation.

5.3 Silica-Containing Materials

Silica (including free crystalline silica) is a component of concrete and brick surfaces noted in the investigated areas.

Silica is generally assumed in such materials, and not tested for. Exposure to airborne silica is regulated under *Ontario Regulation 490/09, Regulation respecting Silica - made under the Occupational Health and Safety Act*. Precautions must be taken to prevent silica-containing particles from becoming airborne during the disturbance of these materials through renovation or demolition projects.

5.4 Mercury-Containing Materials

The federal *Surface Coating Materials Regulation* limits the permissible mercury content in surface coating materials including interior paint to 10 ppm. Of the eleven paint samples analysed only one sample, notably Sample MP01, from an exterior door frame, with a reported mercury content of 21.8 ppm, tested positive

for mercury-based paint. For restoration purposes, precautions must be taken to prevent personnel exposure any airborne mercury-laden dust.

Exposure to airborne mercury is regulated under *Ontario Regulation 490/09–Regulation respecting Mercury – made under the Occupational Health and Safety Act*.

Any mercury-containing waste material must be handled and disposed of in accordance with *Ontario Regulation 347/90* as amended by *O. Reg. 326/03* and may be subject to Leachate Criteria (Schedule 4) of this Regulation.

5.5 Other Hazardous Materials

The ballasts within the older fluorescent light fixtures can contain PCBs and the fluorescent tubes and HID light bulbs can have mercury coating on their interior surfaces. In this building, virtually all of the fluorescent light fixtures appeared to have been vandalized such that no lamps or ballasts were evident. Nevertheless, it is recommended to check all the fixtures and if ballasts are found within, care should be taken for proper disposal of such units.

No other hazardous materials of note were observed in this building, although mold can develop in areas of high humidity or flooding. Contractors are advised to take appropriate precautions to control exposure should any mold be encountered in course of the demolition.

6.0 SUPPLEMENT 1 -DESCRIPTION OF DESIGNATED SUBSTANCES

The term "Designated Hazardous Substances" refers collectively to a list of eleven organic and inorganic building contaminants defined under *Section 30* of the *Occupational Health and Safety Act*. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

The listed designated substances are briefly described in the following paragraphs:

6.1 Acrylonitrile

Acrylonitrile or ACN (also known as vinyl cyanide) is an explosive, flammable liquid used in the manufacture of acrylic fibres, rubber-like materials and pesticide fumigants. Exposure to acrylonitrile occurs mostly from breathing it in the air. Acrylonitrile primarily affects the nervous system and lungs. If it is spilled on the skin, the skin will turn red and blisters may form.

6.2 Arsenic

Arsenic is a naturally occurring element widely distributed in the earth's crust. In the environment, arsenic is combined with oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic is used in metallurgy for hardening copper, lead and certain metal alloys; in pigment production, in the manufacture of certain types of glass, in insecticides, fungicides, and rodent poisons, as a by-product in the smelting of copper ores, and as a dopant material in semiconductor manufacturing. Exposure to high levels of inorganic arsenic can give you a sore throat or irritated lungs. Ingesting high levels of inorganic arsenic can result in death. Lower levels of arsenic can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet. Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. Skin contact with inorganic arsenic may cause redness and swelling.

6.3 Asbestos

Asbestos is the name given to a group of six different fibrous minerals (amosite, chrysotile, crocidolite, and the fibrous varieties of tremolite, actinolite, and anthophyllite) that occur naturally in the environment. Asbestos minerals have separable long fibers that are strong and flexible enough to be spun and woven and are heat resistant. Because of these characteristics, asbestos has been used for a wide range of manufactured goods, mostly in building materials (roofing shingles, ceiling and floor tiles, paper products, and asbestos cement products), friction products (automobile clutch, brake, and transmission parts), heat-resistant fabrics, packaging, gaskets, and coatings. Some vermiculite or talc products may contain asbestos. Exposure to asbestos usually occurs by breathing contaminated air in workplaces that make or use asbestos. Asbestos is also found in the air of buildings containing asbestos that are being torn down or renovated. Asbestos exposure can cause serious lung problems and cancer.

6.4 Benzene

Benzene, or Benzol, is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia.

6.5 Coke Oven Emissions

Coke Oven Emissions refers to the benzene soluble fraction of total particulate matter (BSFPM) of the substances released into the atmosphere from metallurgical coke ovens including condensed vapours and solid particulates.

6.6 Ethylene Oxide

Ethylene oxide is a flammable gas with a somewhat sweet odor. It dissolves easily in water. Ethylene oxide is a man-made chemical that is used primarily to make ethylene glycol (a chemical used to make antifreeze and polyester). A small amount (less than 1%) is used to control insects in some stored agricultural products and a very small amount is used in hospitals to sterilize medical equipment and supplies. Exposure to ethylene oxide can cause irritation of the eyes, skin, nose, throat, and lungs, and damage to the brain and central nervous system.

6.7 Isocyanates

Isocyanates are a group of low molecular weight aromatic and aliphatic compounds containing the isocyanate group (-NCO). They are widely used in the manufacture of flexible and rigid foams, fibres, coatings such as paints and varnishes, and elastomers. Isocyanates are powerful irritants to the mucous membranes of the eyes, gastrointestinal and respiratory tracts. Exposure usually manifests in symptoms such as excessive tear secretion, dry throat, dry cough, chest pains and difficulty in breathing. Direct skin contact with isocyanates can also cause marked skin irritation and rashes.

6.8 Lead

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing. Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead affects the digestive system and causes anaemia. It is a cumulative poison and a common occupational disease. Lead compounds may be carcinogenic and teratogenic.

6.9 Mercury

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas. Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments. Mercury is a neurotoxin and that high levels of exposure can lead to serious illness. Mercury, at high levels, may damage the brain, kidneys, and developing fetus.

6.10 Silica

Industrial sand and gravel, often called "silica," "silica sand," and "quartz sand," includes sands and gravels with high silicon dioxide (SiO₂) content. These sands are used in glassmaking; for foundry, abrasive, and hydraulic fracturing (frac) applications; and for many other industrial uses. The specifications for each use vary, but silica resources for most uses are abundant. Silicon is not particularly toxic but finely divided silicates or silica cause major damage to lungs.

6.11 Vinyl Chloride

Vinyl chloride is a colorless, flammable gas at normal temperatures with a mild, sweet odor. It is a manufactured substance that is used to make polyvinyl chloride (PVC). PVC is used to make a variety of plastic products, including pipes, wire and cable coatings, and the furniture and automobile upholstery. Breathing high levels of vinyl chloride for short periods of time can cause dizziness, sleepiness, unconsciousness, and at extremely high levels can cause death. Breathing vinyl chloride for long periods of time can result in permanent liver damage, immune reactions, nerve damage, and liver cancer.

7.0 LIMITATIONS

The information and recommendations detailed in this report were carried out by trained professional and technical staff in accordance with generally accepted environmental and industrial hygiene work practices and procedures.

In preparation of this report, **AiMS Environmental** has relied on information including testing services provided by independent laboratories. Except as expressly set out in this report, **AiMS Environmental** has not independently verified any information provided by any named third parties.

The collection of samples at the location noted is consistent with the scope of work agreed-upon with the person or entity to whom this report is addressed and the information obtained concerning prior site investigations.

As conditions between samples may vary, the potential remains for the presence of unknown additional contaminants for which there were no known indicators. Conclusions are based on site conditions at the time of inspection and can only be extrapolated to an undefined limited area around inspected locations. The extent of the limited area depends on building construction and conditions. **AiMS Environmental** cannot warrant against undiscovered environmental liabilities. If any information becomes available that differs from the findings in this report, we request that we be notified immediately to reassess the conclusions provided herein.

8.0 CLOSURES AND SIGNATURES

AiMS Environmental, its officers and employees, have no present or contemplated interest in the subject property. Our compensation for preparing this environmental report is not contingent upon any of the findings or our observations and conclusions.

The individual professionals involved in the completion of this Phase II ESA are provided in the Statement of Assessor Qualifications attached at the end of this report.

Where both an electronic file and hard copy of this Report has been submitted to the Client, only the signed and sealed copy shall be considered the original document. In the event of a dispute or discrepancy, the hard copy shall govern and be correct.

We trust you will find this report to be complete within our terms of reference. Should you have any questions regarding the information contained in the report, or require further assistance, please contact our office.

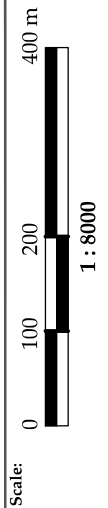
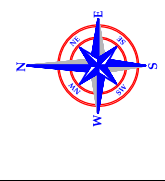
Sincerely,

AiMS Environmental



Mohamed M. Jagani, P. Eng., PE, QP_{ESA}
Senior Consultant



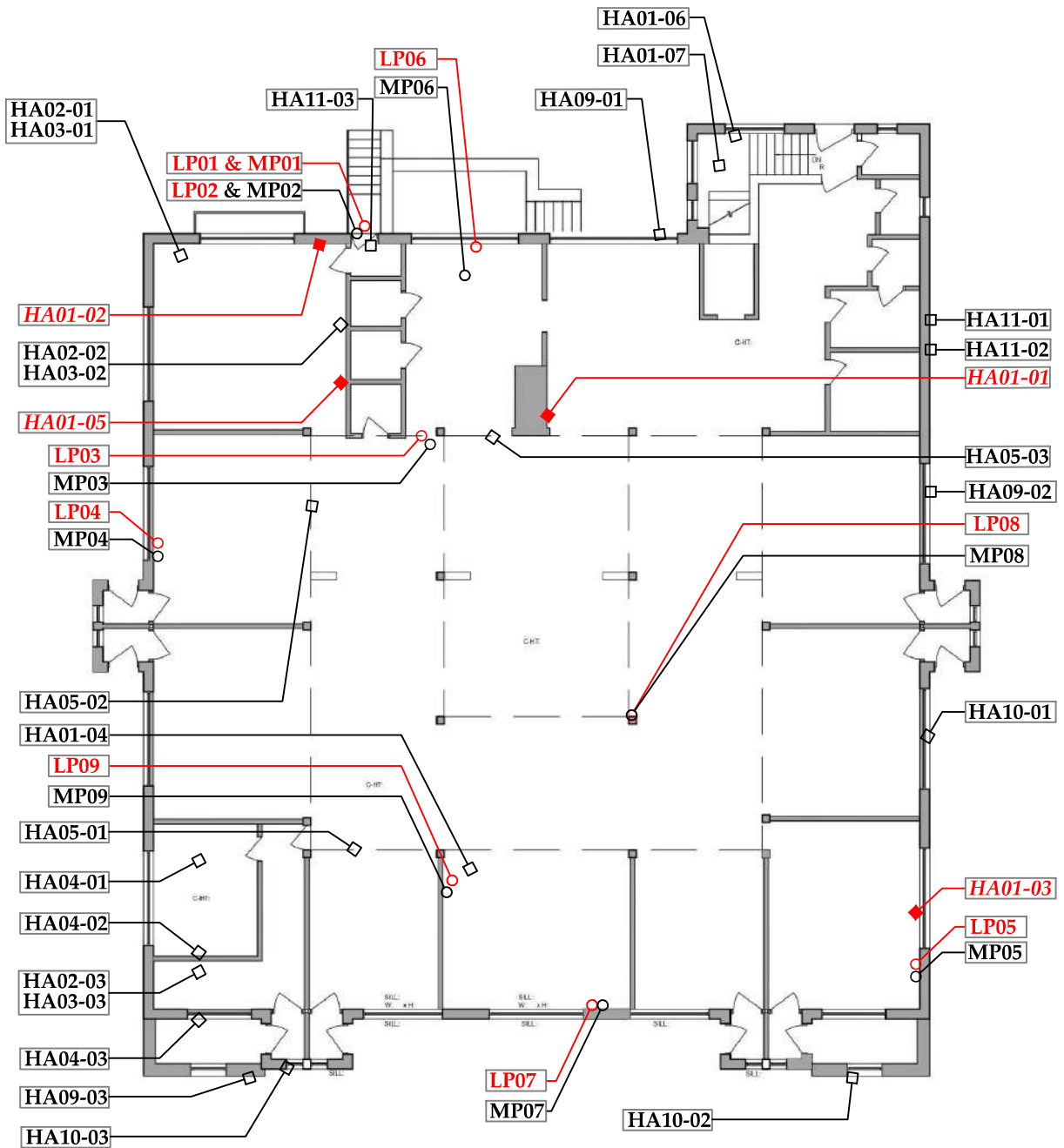


Drawing Title: KEY PLAN		Completed by: SR		Drawing No.: 1	
Address: CAMP 30, 2020 LAMBS ROAD, BOWMANVILLE, ONTARIO		Paper Size: 8.5 x 11 in		Reviewed by: MJ	
File Name: AR107-24 D001		Date: 2024/03/04		Project No.: AR107-24	



LEGEND

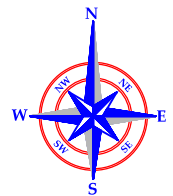
- Property Limits



GROUND FLOOR PLAN

LEGEND

- | | |
|--|--|
| <p>LP01/MP01 Suspected Lead/Mercury Sampling Location & Sample No.</p> <p>LP01/MP01 Sample confirmed to contain Lead concentration exceeding 90ppm & Mercury concentration exceeding 10ppm</p> | <p>HP01-01 Suspected Asbestos Sampling Location & Sample No.</p> <p>HP01-01 Sample confirmed to contain Asbestos</p> |
|--|--|



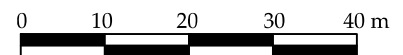
Drawing Title:
**SAMPLE LOCATION PLAN
GROUND FLOOR**

Address: **2020 Lambs Road, Camp 30
Bowmanville, Ontario**

File Name:
AP107-24 D002

Project No.:
AP107-24

Scale:



1 : 900

Paper Size:
8.5 x 11 in

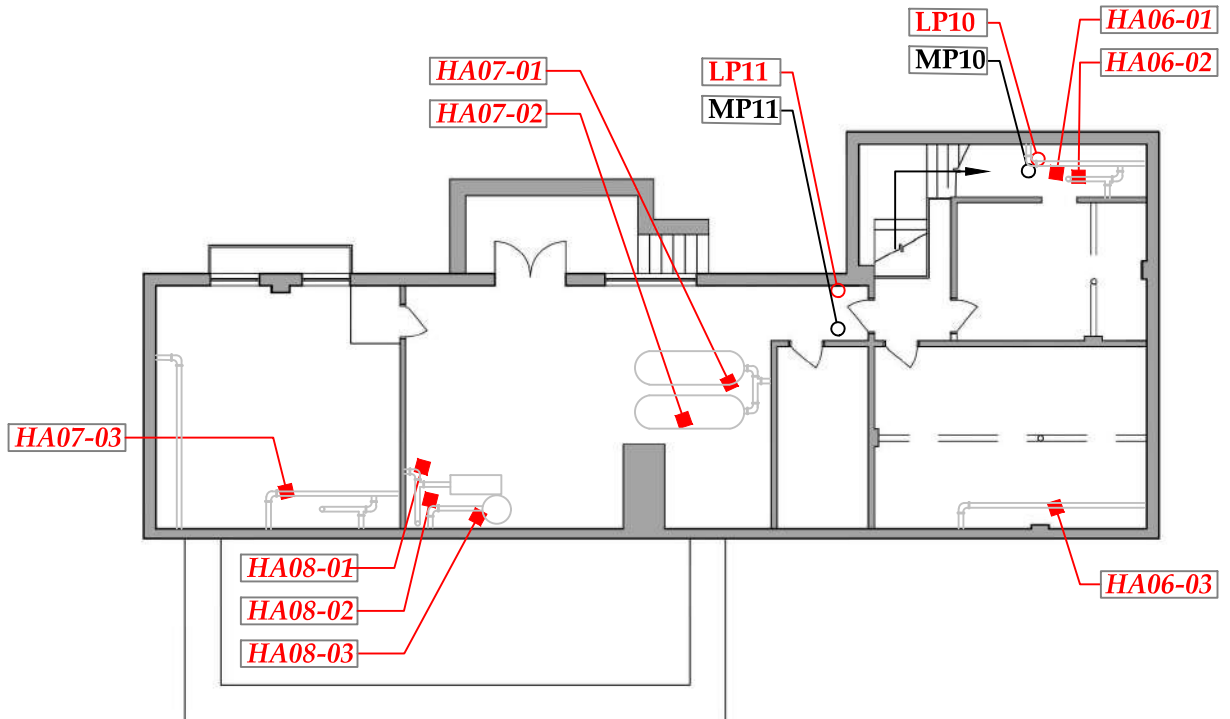
Date:
2024/02/26

Completed by:
SR

Reviewed by:
MJ

Drawing No.:

2



BASEMENT PLAN

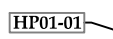
LEGEND



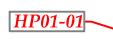
Suspected Lead/Mercury Sampling Location & Sample No.



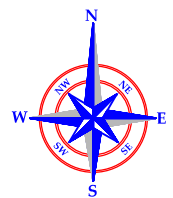
Sample confirmed to contain Lead concentration exceeding 90ppm & Mercury concentration exceeding 10ppm



Suspected Asbestos Sampling Location & Sample No.



Sample confirmed to contain Asbestos



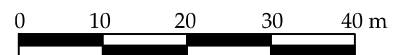
Drawing Title:
**SAMPLE LOCATION PLAN
BASEMENT FLOOR**

Address: **2020 Lambs Road, Camp 30
Bowmanville, Ontario**

File Name:
AP107-24 D003

Project No.:
AP107-24

Scale:



1 : 900

Paper Size:
8.5 x 11 in

Completed by:
SR

Drawing No.:

Date:
2024/02/26

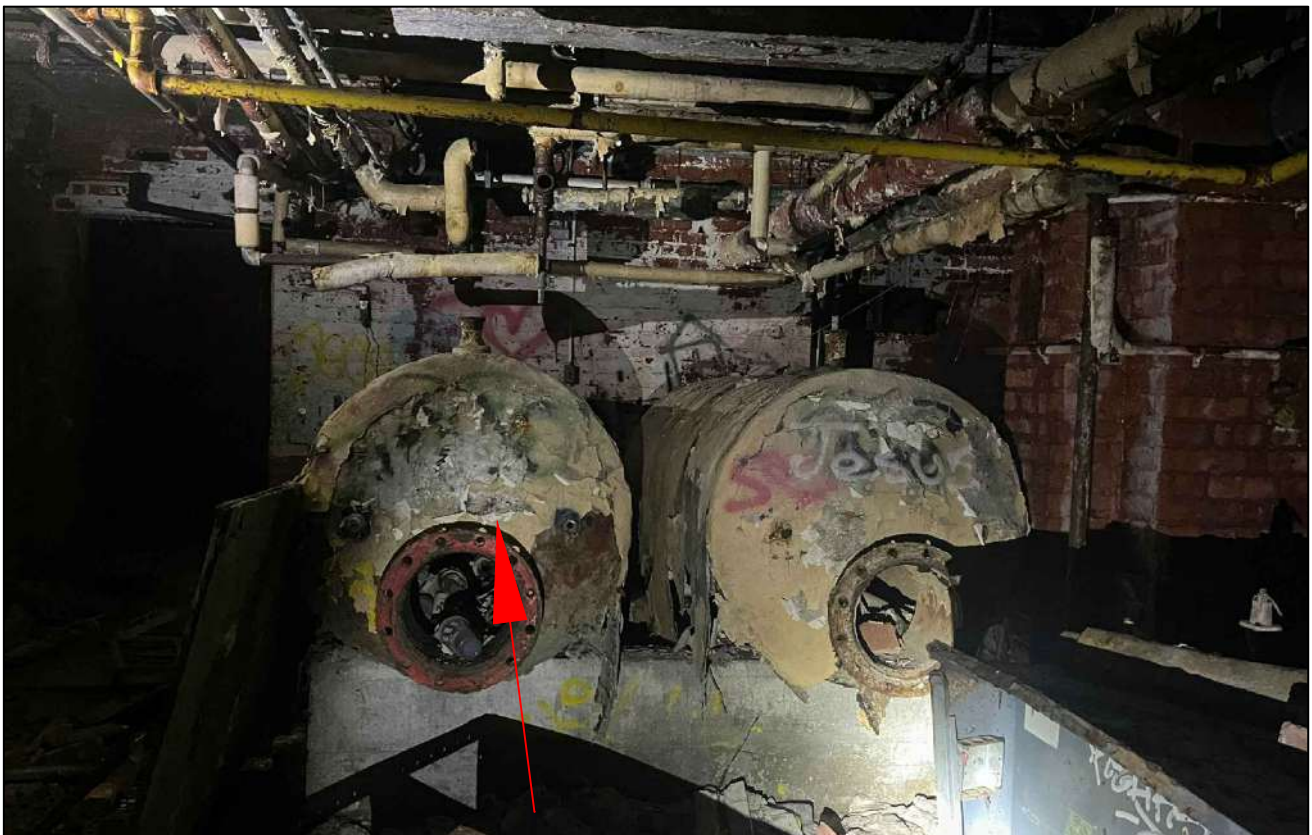
Reviewed by:
MJ

3

APPENDIX A
INSPECTION PHOTOGRAPHS



Photograph 1 Asbestos Containing Boiler Insulation



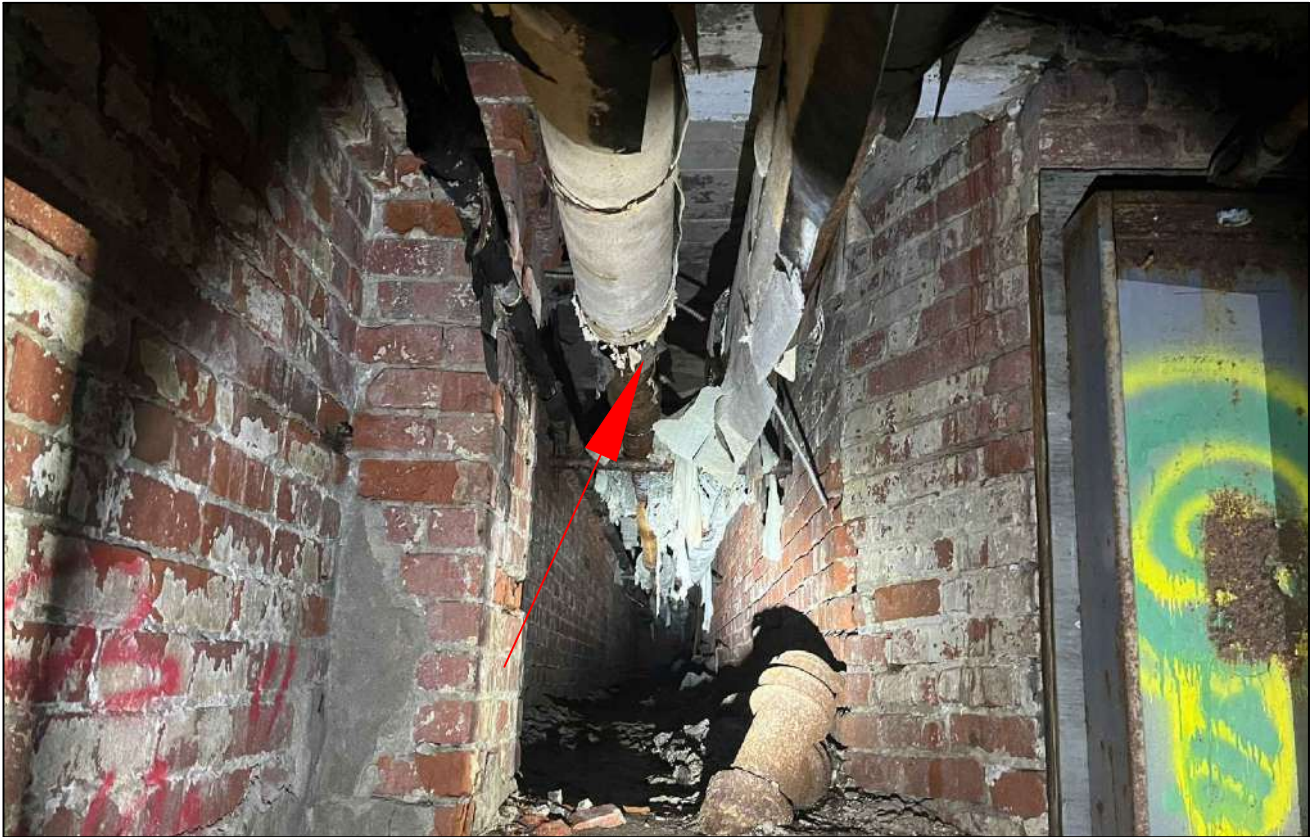
Photograph 2 Asbestos Containing Boiler Insulation



Photograph 3 Air-Cell and Parging Cement Insulation in Boiler Room



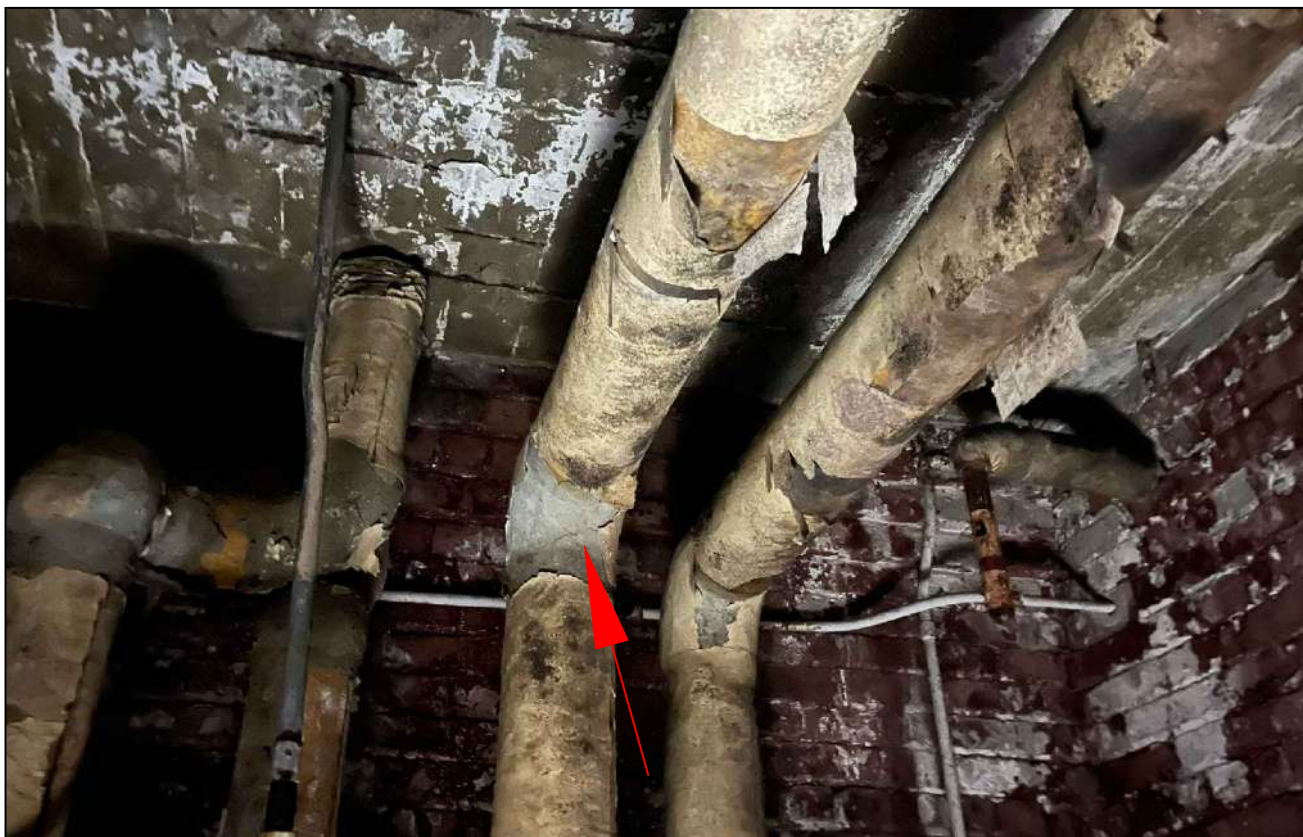
Photograph 4 Air-Cell and Parging Cement Insulation in South East Basement Room



Photograph 5 Air-Cell and Parging Cement on Pipe Insulation leading to Tunnel in South East Basement Room



Photograph 6 Parging Cement Insulation on Pipe Elbow in Boiler Room



Photograph 7 Parging Cement Insulation on Pipe Elbow in Boiler Room



Photograph 8 Asbestos Containing Flat Plaster on Interior North wall at Entrance



Photograph 9 Asbestos Containing Flat Plaster on Kitchen Wall



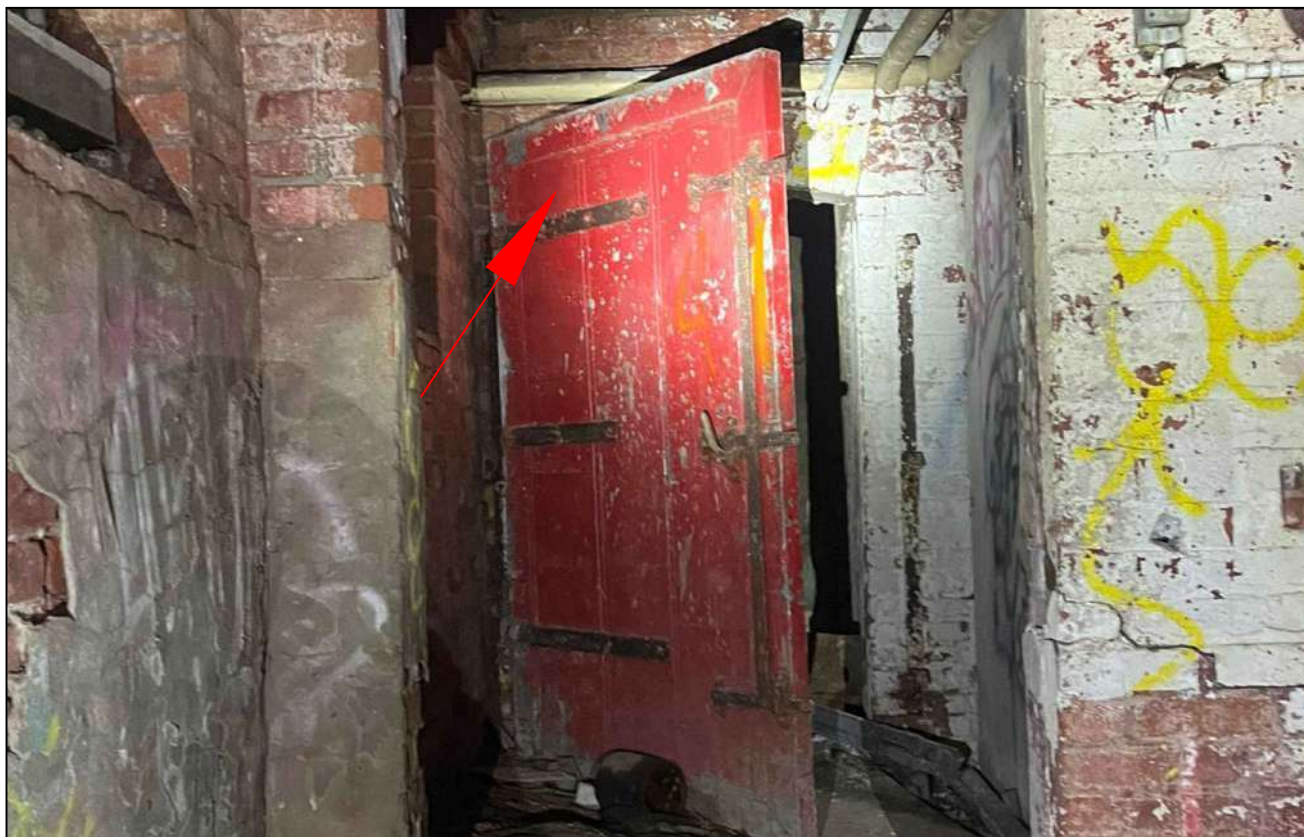
Photograph 10 Asbestos Containing Lower Ceiling Plaster on Interior North West wall



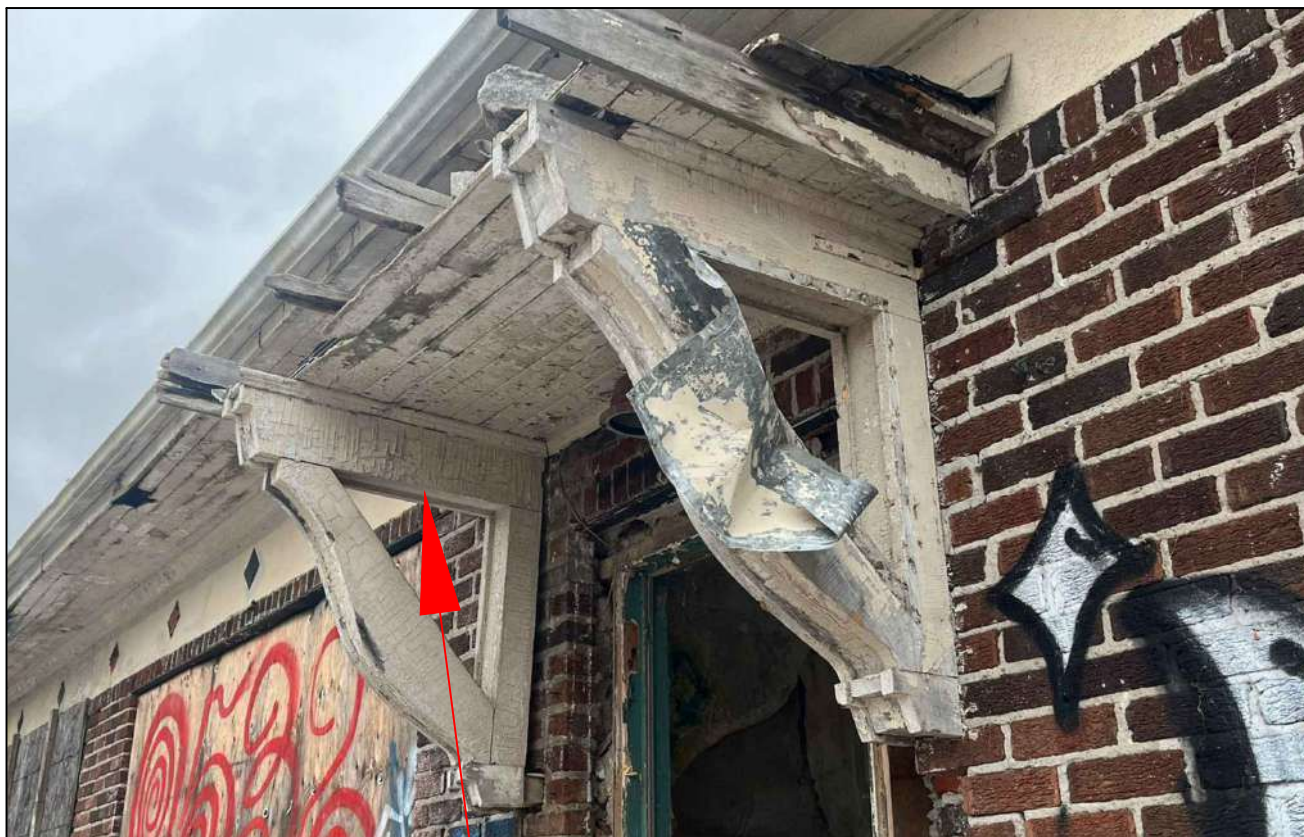
Photograph 11 Asbestos Containing on Window Caulking on Exterior East Wall



Photograph 12 Asbestos Containing on Window Caulking on Exterior South Wall



Photograph 13 Fire Rated Door with Assumed Asbestos Core in Basement



Photograph 14 Lead and Mercury Containing paint on the North Entrance Canopy



Photograph 15 Peeling Lead Containing paint on Hot Water Lines



Photograph 16 Lead Containing paint on South East Interior Wall



Photograph 17 Lead Containing paint on Interior South Lower Ceiling



Photograph 18 Lead Containing paint on Interior South Wall



Photograph 19 Lead Containing paint on Interior West Wall



Photograph 20 Lead Containing paint on South East Column

APPENDIX B
LABORATORY CERTIFICATES OF ANALYSES

SCHEDULE OF SAMPLESTable 1 Schedule of Paint Samples for Lead and Mercury Analysis

Sample No.	Description	Location
01-LP01	Off White Door paint	North Entrance door paint
02-LP02	Green Door frame Paint	North Entrance door frame
03-LP03	White paint	Radiator lines on walls
04-LP04	White Wall Paint	West wall
05-LP05	White Wall Paint	South East wall
06-LP06	White Wall Paint	North wall
07-LP07	White Wall Paint	South Wall
08-LP08	White Wall Paint	Column at the South East
09-LP09	White Wall Paint	Lower Ceiling on South
10-LP10	White Wall Paint	Basement Door frame
11-LP11	White Wall Paint	Basement wall
12-MP01	Off White Door paint	North Entrance door paint
13-MP02	Green Door frame Paint	North Entrance door frame
14-MP03	White paint	Radiator lines on walls
15-MP04	White Wall Paint	West wall
16-MP05	White Wall Paint	South East wall
17-MP06	White Wall Paint	North wall
18-MP07	White Wall Paint	South Wall
19-MP08	White Wall Paint	Column at the South East
20-MP09	White Wall Paint	Lower Ceiling on South
21-MP10	White Wall Paint	Basement Door frame
22-MP11	White Wall Paint	Basement wall

Table 2 Schedule of Bulk Samples for Asbestos Analysis

Sample No.	Description	Location
23-HA01-01	Wall plaster	Kitchen wall
24-HA01-02	Wall plaster	North West Wall at entrance
25-HA01-03	Wall plaster	South East wall
26-HA01-04	Lower Ceiling plaster	South Wall
27-HA01-05	Lower Ceiling plaster	North West Wall
28-HA01-06	Wall plaster	Basement Stairwell Landing Wall
29-HA01-07	Wall plaster	Basement Stairwell Landing Ceiling
30-HA02-01	12x12 Ceiling Tile	North West Entrance Room
31-HA02-02	12x12 Ceiling Tile	North West Entrance Room
32-HA02-03	12x12 Ceiling Tile	Bathroom on South West side
33-HA03-01	Ceiling Tile Mastic	North West Entrance Room
34-HA03-02	Ceiling Tile Mastic	North West Entrance Room
35-HA03-03	Ceiling Tile Mastic	Bathroom on South West side
36-HA04-01	Dry Wall Joint Compound	Bathroom on South West side
37-HA04-02	Dry Wall Joint Compound	Bathroom on South West side
38-HA04-03	Dry Wall Joint Compound	Bathroom on South West side
39-HA05-01	Spray-applied Fire Proofing on Beam	South West Side outside Bathroom
40-HA05-02	Spray-applied Fire Proofing on Beam	North West side
41-HA05-03	Spray-applied Fire Proofing on Beam	North Side outside Kitchen
42-HA06-01	Pipeline Insulation	Basement North East Room
43-HA06-02	Pipeline Insulation	Basement North East Room
44-HA06-03	Pipeline Insulation	Basement South West Room
45-HA07-01	Boiler Insulation	Boiler Room
46-HA07-02	Boiler Insulation	Boiler Room
47-HA07-03	Boiler Insulation	Boiler Room
48-HA08-01	Parging Cement on Pipe Elbow	Boiler Room
49-HA08-02	Parging Cement on Pipe Elbow	Boiler Room
50-HA08-03	Parging Cement on Pipe Elbow	Boiler Room
51-HA09-01	Cement mortar on exterior brick work	North wall
52-HA09-02	Cement mortar on exterior brick work	East Wall
53-HA09-03	Cement mortar on exterior brick work	South Wall
54-HA10-01	Caulking on windows- exterior	East Side
55-HA10-02	Caulking on windows- exterior	South Side
56-HA10-03	Caulking on windows- exterior	South Side

Sample No.	Description	Location
57-HA11-01	Roof Tar material	East Side
58-HA11-02	Roofing Material	East Side
59-HA11-03	Roofing Material	North Side Entrance

C.O.C.: -

REPORT No: 24-004660 - Rev. 0

Report To:

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

CADUCEON Environmental Laboratories

2378 Holly Lane
 Ottawa, ON K1V 7P1

Attention: Alister Haddad

DATE RECEIVED: 2024-Feb-20
 DATE REPORTED: 2024-Feb-22
 SAMPLE MATRIX: Paint Chips

CUSTOMER PROJECT: Camp 30, 2020 Lambs Rd., Bowr
 P.O. NUMBER: AR107-24

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
ICP/OES (Solid)	11	OTTAWA	NHOGAN	2024-Feb-21	D-ICP-02	EPA 6010

R.L. = Reporting Limit
 NC = Not Calculated

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

Client I.D.	Sample I.D.	Date Collected	Parameter	Units	R.L.
			Lead	µg/g	5
					-
LP01 Entrance door/ off-white ext	24-004660-1	2024-Feb-15			47400
LP02 Entrance door/ green	24-004660-2	2024-Feb-15			5790
LP03 Radiator lines - white	24-004660-3	2024-Feb-15			2730
LP04 West wall - interior area	24-004660-4	2024-Feb-15			2450
LP05 East wall - interior area	24-004660-5	2024-Feb-15			8650
LP06 North wall - interior area	24-004660-6	2024-Feb-15			13900
LP07 South wall - interior area	24-004660-7	2024-Feb-15			60300
LP08 Central column	24-004660-8	2024-Feb-15			56600
LP09 Lower ceiling on SW side	24-004660-9	2024-Feb-15			10800
LP10 Basement door frame white	24-004660-10	2024-Feb-15			5030
LP11 Basement foundation walls white	24-004660-11	2024-Feb-15			2690



Michelle Dubien
Data Specialist

C.O.C.: -

REPORT No: 24-004656 - Rev. 0

Report To:

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

CADUCEON Environmental Laboratories

2378 Holly Lane
 Ottawa, ON K1V 7P1

Attention: Alister Haddad

DATE RECEIVED: 2024-Feb-20
 DATE REPORTED: 2024-Feb-21
 SAMPLE MATRIX: Paint Chips

CUSTOMER PROJECT: Camp 30, 2020 Lambs Rd., Bowr
 P.O. NUMBER: AR107-24

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Mercury (Solid)	11	OTTAWA	TBENNETT	2024-Feb-21	D-HG-01	EPA 7471A

R.L. = Reporting Limit

NC = Not Calculated

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

Client I.D.	Sample I.D.	Date Collected	Parameter
			Units
			R.L.
			-
MP01 Entrance door/ off-white ext	24-004656-1	2024-Feb-15	21.8
MP02 Entrance door/ green	24-004656-2	2024-Feb-15	3.14
MP03 Radiator lines - white	24-004656-3	2024-Feb-15	0.20
MP04 West wall - interior	24-004656-4	2024-Feb-15	1.06
MP05 East wall - interior	24-004656-5	2024-Feb-15	1.25
MP06 North wall - interior	24-004656-6	2024-Feb-15	0.08
MP07 South wall - interior	24-004656-7	2024-Feb-15	0.47
MP08 Central column - interior	24-004656-8	2024-Feb-15	0.18
MP09 Lower ceiling on SW side	24-004656-9	2024-Feb-15	0.97
MP10 Basement door frame white	24-004656-10	2024-Feb-15	0.79
MP11 Basement foundation walls white	24-004656-11	2024-Feb-15	0.61



Michelle Dubien
Data Specialist

Laboratory Analysis Report

To:

Sujeena Rajkarnikar
 AiMS Environmental
 1020 Denison Street, Unit 111
 Markham, Ontario
 L3R 3W5

EMC LAB REPORT NUMBER: A100855r*

Job/Project Name: Camp 30, 2020 Lambs Rd, Bowmanville

Job No: AR107-24

Analysis Method: Polarized Light Microscopy – EPA 600

Number of Samples: 37

Date Received: Feb 16/24

Date Reported: Feb 27/24

Analyst: Rahul Patel

Reviewed By: Malgorzata Sybydlo

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
HA01-01	A100855-1	Flat wall plaster / kitchen wall	2 Phases: a) Off white, plaster b) Grey, plaster	ND Chrysotile 0.5	1	100 98.5
HA01-02	A100855-2	Flat wall plaster / north west wall at entrance	3 Phases: a) White, joint compound b) Off white, plaster c) Grey, plaster	ND ND Chrysotile 0.5	1	100 100 98.5
HA01-03	A100855-3	Flat wall plaster / south east wall	2 Phases: a) White, plaster b) Grey, plaster	ND ND	1	100 99
HA01-04	A100855-4	Flat wall plaster / lower ceiling plaster south	Off white, plaster	ND		100
HA01-05	A100855-5	Flat wall plaster / lower ceiling plaster north west	2 Phases: a) White, plaster b) Grey, plaster	Chrysotile 1 Chrysotile 0.5		99 99.5
HA01-06	A100855-6	Flat plaster / basement stairwell landing wall	Grey, plaster	ND	1	99
HA01-07	A100855-7	Flat plaster / basement stairwell landing ceiling	Grey, plaster	ND	1	99
HA02-01	A100855-8	Ceiling tile/ north wall Ceiling tile/north wall in entrance room	Brown, ceiling tile	ND	90	10
HA02-02	A100855-9	Ceiling tile/ north west wall in entrance room	Brown, ceiling tile	ND	90	10

EMC LAB REPORT NUMBER: A100855
Client's Job/Project Name/No.: AR107-24
Analyst: Rahul Patel

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
HA02-03	A100855-10	Ceiling tile / bathroom on south west	Brown, ceiling tile	ND	90	10
HA03-01	A100855-11	Ceiling tile mastic / north wall in entrance room	Brown, mastic	ND		100
HA03-02	A100855-12	Ceiling tile mastic / north west wall in entrance room	Brown, mastic	ND		100
HA03-03	A100855-13	Ceiling tile mastic / bathroom on south west	Brown, mastic	ND		100
HA04-01	A100855-14	Drywall joint compound / bathroom area	2 Phases: a) White, caulking b) White, joint compound	ND ND ND		100 100 100
HA04-02	A100855-15	Drywall joint compound / bathroom area	White, joint compound	ND		100
HA04-03	A100855-16	Drywall joint compound / bathroom area	White and off white, joint compound	ND		100
HA05-01	A100855-17	Spray applied fire proofing on beam / north west beam outside washroom	Grey, cementitious material	ND		100
HA05-02	A100855-18	Spray applied fire proofing on beam / south west entrance	Grey, cementitious material	ND		100
HA05-03	A100855-19	Spray applied fire proofing on beam / beam outside kitchen room	Grey, cementitious material	ND		100
HA06-01	A100855-20	Pipeline insulation in basement	Grey, fibrous material	Chrysotile	60	10
HA06-02	A100855-21	Pipeline insulation in basement	2 Phases: a) Grey, paper b) Off white, fibrous material	Chrysotile Chrysotile	60 40	10 40

EMC LAB REPORT NUMBER: A100855
Client's Job/Project Name/No.: AR107-24
Analyst: Rahul Patel

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
HA06-03				Amosite	10	
HA07-01	A100855-22	Pipeline insulation in basement	Grey, paper	Chrysotile	60	10
HA07-02	A100855-23	Boiler insulation	Grey, parging cement	Chrysotile	50	40
HA07-03	A100855-24	Boiler insulation	Grey, parging cement	Chrysotile	50	40
HA08-01	A100855-25	Boiler insulation	Grey, parging cement	Chrysotile	50	40
HA08-02	A100855-26	Pipe elbow in boiler room	Grey, parging cement	Chrysotile	50	40
HA08-03	A100855-27	Pipe elbow in boiler room	Grey, parging cement	Chrysotile	50	40
HA09-01	A100855-28	Pipe elbow in boiler room	Grey, parging cement	Chrysotile	50	40
HA09-02	A100855-29	Cement mortar on exterior brickwall	Grey, cementitious material	ND		100
HA09-03	A100855-30	Cement mortar on exterior brickwall	Grey, cementitious material	ND		100
HA10-01	A100855-31	Cement mortar on exterior brickwall	Grey, cementitious material	ND		100
HA10-02	A100855-32	Exterior - caulking	Grey, caulking	Chrysotile	1	99
	A100855-33	Exterior - caulking	2 Phases: a) White, caulking b) Grey, cementitious material	ND ND		100 100

EMC Scientific Inc. 5800 Ambler Drive • Suite 100 • Mississauga • Ontario • L4W 4J4 • T. 905 629 9247 • F. 905 629 2607
 EMC Scientific Inc. is Accredited by NVLAP (NVLAP Code 201020-0) for Bulk Asbestos Analysis

EMC LAB REPORT NUMBER: A100855
Client's Job/Project Name/No.: AR107-24
Analyst: Rahul Patel

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
HA10-03	A100855-34	Exterior - caulking	White, caulking	ND		100
HA11-01	A100855-35	Roofing from east side	3 Phases: a) Black, tar b) Black, tar with fibres c) Black, fibrous material with tar	ND ND ND	20 80	100 80 20
HA11-02	A100855-36	Roofing from east side	3 Phases: a) Black, tar b) Black, tar with fibres c) Black, fibrous material with tar	ND ND ND	20 80	100 80 20
HA11-03	A100855-37	Roofing from north side	3 Phases: a) Black, tar b) Black, tar with fibres c) Black, fibrous material with tar	ND ND ND	20 80	100 80 20

Note:

- 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.
 - 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).
 - 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.
 - The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.
- * Description/location has been changed as requested on March 6, 2024.