



CANADIAN FOOD INSPECTION AGENCY

# Hazardous Building Materials Assessment

National Centre for Animal Diseases – Main Laboratory Building  
Lethbridge, Alberta



May 15, 2019



Public Services and Procurement Canada  
100-167 Lombard Avenue  
Winnipeg Manitoba  
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Attention: Karen Hill  
Senior Environmental Specialist

Hazardous Building Materials Assessment Report for  
Canadian Food Inspection Agency - National Centre for Animal Diseases  
Main Laboratory Building in Lethbridge, Alberta

Dear Ms. Hill:

Dillon Consulting Limited and Outcome Consultants in joint venture (Dillon-Outcome) is pleased to provide Public Services and Procurement Canada (PSPC) with the attached pre-renovation Hazardous Building Materials Assessment report at the Canadian Food Inspection Agency (CFIA) National Centre for Animal Diseases main laboratory building in Lethbridge, Alberta.

If you have any questions or concerns, please contact the undersigned at (403) 215-8880 ext. 4603 or [dmccoll@dillon.ca](mailto:dmccoll@dillon.ca).

Sincerely,

DILLON CONSULTING LIMITED  
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# Executive Summary

Dillon Consulting Limited and Outcome Consultants in joint venture (Dillon-Outcome) was retained by Public Services and Procurement Canada (PSPC) on behalf of the Canadian Food Inspection Agency (CFIA) to conduct a targeted pre-renovation Hazardous Building Materials Assessment (HBMA) at the National Centre for Animal Disease main laboratory building in Lethbridge, Alberta (herein referred to as the “site” or “subject property”). The targeted work area was determined based on the location and scope of work for the proposed air handling unit replacement project as provided by CFIA. The work area included areas surrounding the existing supply fan (SF) units and the heat recovery coil (HRC) units.

The purpose of the pre-renovation HBMA was to identify the presence/absence of hazardous building materials that may require special attention prior to and during the planned renovation in the targeted work area. The substances, including asbestos containing materials (ACMs), lead, mercury, ozone depleting substances, polychlorinated biphenyls (PCBs), radioactive materials, silica, and other materials requiring special handling prior to or during demolition of the subject property.

## Summary of Findings

A summary of the hazardous building materials identified during the assessment is provided below followed by recommendations.

Table ES-1: Summary of Findings

Hazardous Material	Remarks	Estimated Quantity
Asbestos Containing Materials	No friable asbestos-containing building materials were identified to be present within the targeted work area.	
	Non-friable asbestos-containing building materials were identified to be present within the targeted work area in the form of:	
	<ul style="list-style-type: none"> <li>Red/brown duct sealant associated with the supply fans and heat recovery coil units located throughout the work area and the subject property. This material was determined to contain 1.2% Chrysotile asbestos (AS-03A to AS-03D).</li> </ul>	Materials Not Quantified
	<ul style="list-style-type: none"> <li>Black mastic associated with insulation seams within the air handling units throughout the targeted work area. This material was determined to contain 7.2% Chrysotile asbestos (AS-05A to AS-05C).</li> <li>Red/brown sealant within the air handling units. This material was determined to contain 1.2% Chrysotile asbestos (AS-06B to AS-06D).</li> </ul>	Approx. 375 m <sup>2</sup>
	The red/brown sealant was observed to be located on seams of various duct systems including derelict fan units stored in the fan loft level and beneath canvass wrapped fibreglass insulation on ducts. These materials were	Materials Not Quantified

Hazardous Material	Remarks	Estimated Quantity
Lead Paint	<p>generally observed to be in good condition.</p> <p>Non-friable asbestos-containing building materials previously identified to be present in the subject facility include:</p> <ul style="list-style-type: none"> <li>• Texture ceiling plaster (finish) associated with the reception of the subject property (outside the targeted work area).</li> </ul> <p>Presumed asbestos-containing materials (PACMs) were observed to be present in the form of:</p> <ul style="list-style-type: none"> <li>• A built-up-roof (BUR) system associated with the subject property.</li> </ul> <p>Non-regulated asbestos containing materials were determined to be present in the form of:</p> <ul style="list-style-type: none"> <li>• Grey duct sealant on duct associated with HRC-9/HRC-10.</li> <li>• Grey caulking associated with rooftop air intake vents for air handling units (SF-5).</li> </ul> <p>Lead-containing paint (i.e. lead concentrations greater than 90 parts per million - ppm) was identified in the subject property.</p> <ul style="list-style-type: none"> <li>• Green paint on mechanical pipe insulation associated with the air handling units was determined to have a lead concentration of 13,000 ppm.</li> <li>• Grey concrete floor paint located throughout the targeted work area and subject property was determined to have a total lead concentration of 2,300 ppm.</li> <li>• Cream over grey paint associated with air handling units within the work area was determined to have a total lead concentration of 200 ppm.</li> </ul>	<p>Approx. 150 m<sup>2</sup></p> <p>Approx. 70 m<sup>2</sup></p> <p>Approx. 5 linear m Approx. 7 linear m per location</p> <p>Materials Not Quantified</p>
Lead-Containing Materials	<p>Based upon the historic use of lead in construction, lead may be present in the following building materials in the subject property:</p> <ul style="list-style-type: none"> <li>• solder on copper domestic water pipes;</li> <li>• caulking in bell joints on cast iron drainage pipe systems; and</li> <li>• solder used in electrical equipment.</li> </ul> <p>Previously identified lead containing materials present at the subject property include:</p> <ul style="list-style-type: none"> <li>• flashing to plumbing vents on the roof.</li> </ul>	<p>Materials Not Quantified</p>

Hazardous Material	Remarks	Estimated Quantity
Mercury	Mercury vapour is likely present in fluorescent light tubes and metal halide light bulbs located throughout the targeted work area and the subject property. Based on the information provided, disturbance and/or removal of lighting is not required for the proposed air handling unit replacement project.	Not Quantified
	Mercury containing thermostats were observed outside the targeted work area but within the subject property.	Not Quantified
Ozone-Depleting Substances (ODSs)	Equipment which may contain ODSs and other halocarbons were not observed in the targeted work area.	Not Applicable
Polychlorinated Biphenyls (PCBs)	Based on the age of the structure and the limited number of accessible ballasts, PCBs are not suspected to be present at the subject property.	Not Applicable
Radioactive Materials	During the site assessment, smoke detectors and other equipment containing potentially radioactive materials were not observed.	Not Applicable
Silica	Silica is present in poured concrete, structural concrete, ceramic tile, mortars, grouts, drywall, acoustic ceiling tiles, and masonry blocks	Not Quantified

## Recommendations

Recommendations regarding the handling, removal, and disposal of hazardous building materials identified during this assessment are provided below.

### *Asbestos-Containing Materials*

Any work involving the disturbance, repair (*i.e.*, encapsulation), or removal of confirmed ACMs should be conducted by a qualified contractor in accordance with Alberta Government "Alberta Asbestos Abatement Manual" dated October 2012. Removal of duct sealant or insulation mastic may be conducted following "Low Risk" asbestos abatement procedures. It is presumed that the sealants and mastics will be removed and disposed with the associated substrate (*i.e.* metal ducting or fibreglass insulation). It was reported that the textured ceiling and built-up-roofing materials previously identified at the subject property, would not be disturbed as part of the proposed scope of work.

Vermiculite was not observed during the assessment of the subject property. It should be noted Dillon conducted a visual assessment of perforations/holes in the existing masonry block walls, however no intrusive assessments of the masonry blocks was completed. Should vermiculite be discovered during any future demolition activities, work in that area must be stopped and the vermiculite must be sampled and submitted for analysis to determine whether asbestos fibres are present.

Also, should a material suspected to contain asbestos become uncovered or discovered during any future demolition or renovation activities, all work in that area that may disturb the suspect material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if asbestos fibres are present or the material must be handled as asbestos containing.

Samples of building materials were determined by laboratory analysis to contain asbestos fibre concentrations below the provincial guidelines. These included the following:

- Gray duct sealant (samples AS-10A, and AS-10B); and,
- Gray caulking associated with air intake for SF-5 (samples AS-12A, AS-12B, and AS-12C).

If these materials are removed for disposal at a licenced waste facility, the site operator should be notified that these materials contain <1.0 % asbestos, prior to disposal.

The PSPC Asbestos Management Standard requires damaged ACMs to be repaired or removed using specific procedures. The Standard also requires the removal of ACMs that have the potential for being disturbed during renovations or demolition, and that an asbestos management plan (AMP) be prepared. The asbestos repairs or removals must be completed by a qualified contractor, as recommended in the AMP. Based on the previous findings and current assessment an AMP should be developed for this site.

### *Lead-Containing Materials and Lead Paint*

Paint applications determined by laboratory analysis to have lead concentrations below 90 mg/kg (or parts per million) are not considered to be Lead Containing Paints (LCP) in accordance to the Surface Coating Materials Regulations (SOR /2016-193) under the federal Canada Consumer Product Safety Act and can be disposed of at a licenced waste disposal site. Additional toxicity characteristic leachate laboratory analysis (TCLP) is recommended for paint applications that were determined to be LCPs (> 90 ppm) to assist in determining the suitable disposal location (if required). In accordance with the *Alberta User Guide for Waste Managers*, surface coatings (paints) that are determined to have a TCLP concentration of 5.0 mg/L or greater are considered a hazardous material and require special handling and disposal.

Based on the possible presence of lead-containing and solder on copper piping or caulking on cast iron drainage lines, all copper piping or cast iron drainage lines removed during the demolition of the building should be cut above and below any soldered or caulking joints to avoid direct disturbance of the lead solder/caulking. Lead-acid batteries used in emergency lighting should be recycled at an approved environmental depot.

Corrective action or remedial work on materials that may contain lead should be undertaken in a manner so as to avoid generating fine particulate matter or fumes. Airborne lead dust or fumes should not exceed the Alberta occupational exposure limit (OEL) of 0.05 mg/m<sup>3</sup> during the removal of paints, products, and building materials containing any concentration of lead, as detailed in the *Work Safe Alberta Occupational Health and Safety Bulletin: "Lead at The Work Site"*.

### *Mercury*

Prior to the demolition of the building, fluorescent light tubes and mercury vapour lamps should be packaged for recycling to avoid emissions of mercury vapours. If removal is required, mercury containing devices (thermostats) should be carefully removed and properly stored until they can be transported, as per the TDG Regulations, for disposal at a licensed facility.

### *ODSs and Other Halocarbons*

Prior to being removed from service, equipment containing ODSs and other halocarbons should be purged and decommissioned by a licensed refrigeration technician.

### *Polychlorinated Biphenyls (PCBs)*

Based on the age of the subject property and observations made during the site assessment, all “older style” fluorescent lamp ballasts should be checked for PCBs prior to disposal by comparing the ballast manufacturer catalogue numbers to the Environment Canada document “Identification of Lamp Ballasts Containing PCBs”, Report EPS 2/CC/2 (revised), August 1991. PCB containing ballasts identified and removed from the buildings during any future demolition should be handled according to the provincial guidelines.

### *Silica*

Based on the location and scope of work for the proposed air handling unit replacement project, building materials containing silica are not likely to be disturbed. Should materials containing silica be disturbed, ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the Alberta Occupational Health and Safety guidelines (i.e. 0.025 mg/m<sup>3</sup>).

# Introduction

Dillon Consulting Limited and Outcome Consultants in joint venture (Dillon-Outcome) was retained by Public Services and Procurement Canada (PSPC) on behalf of the Canadian Food Inspection Agency (CFIA) to conduct a targeted pre-renovation Hazardous Building Materials Assessment (HBMA) at the National Centre for Animal Disease main laboratory building in Lethbridge, Alberta (herein referred to as the “site” or “subject property”). The targeted work area was determined based on the location and scope of work for the proposed air handling unit replacement project as provided by CFIA. The work area included areas surrounding the existing supply fan (SF) units and the heat recovery coil (HRC) units.

The purpose of the *Pre-demolition Hazardous Materials Assessment* was to identify the presence/absence of hazardous building materials that may require special attention prior to and during the planned air handling unit replacement project at the subject property. The substances, including asbestos containing materials (ACMs), lead, mercury, ozone depleting substances (ODS), polychlorinated biphenyls (PCBs), radioactive materials, silica and other materials requiring special attention prior to or during renovation within the work area of the subject property.

Dillon-Outcome visited the site on March 5 and 6, 2019, to complete the targeted pre-renovation hazardous materials assessment. Blair Murphy and Stephen Veres of CFIA accompanied Dillon-Outcome during a walkthrough of the targeted work areas of the subject property on March 5, 2019, with Stephen Veres accompanying Dillon-Outcome during the site assessment work completed on March 6, 2019. The following presents a summary of Dillon-Outcome’s observations during the site visit, laboratory analytical results of building material sampling, and an interpretation of lab results relative to applicable criteria to guide management and disposal of specific materials prior to or during renovations, construction or demolition at the subject property.

## Scope

To fulfill the objective of the *Pre-demolition Hazardous Materials Assessment*, the following scope of work was completed:

- Reviewed existing hazardous material assessment reports and identified potential gaps in existing information with respect to hazardous building materials;
- Reviewed available building plans and building construction details to gain an understanding of the building materials and construction of the subject property;
- Based on the review of available information and interviews, conducted a site visit to collect representative samples of suspected asbestos-containing building materials (ACMs) and collect representative samples of potentially lead containing paint;
- Identify other miscellaneous hazardous materials including lead-containing materials, mercury containing switches/thermostats, Polychlorinated Biphenyls (PCBs), ozone depleting substances (ODSs) and other halocarbons, silica and radioactive materials;
- Submitted the suspect asbestos samples and paint samples to a certified laboratory for analysis;
- Evaluated the laboratory analysis results;
- Quantify, where reasonable, the identified hazardous materials and provide recommendations for their removal (if present); and,
- Preparation of this report complete with drawings showing sampling locations.

## 3.0 Assessment Limitations

This report reflects the observations made within accessed areas of the subject property and the results of analyses performed on specific materials sampled during the assessment. The analytical results emulate the sampled materials at the specific sample locations.

The assessment for the presence of hazardous building materials was visual in nature of readily visible surfaces within accessible spaces only. Concealed spaces and areas were assessed using existing access panels or hatches, if present. Solid ceilings and walls, flooring, structural elements and interior and exterior finishes were not removed to access concealed areas.

The areas assessed by Dillon-Outcome were limited to the mechanical room spaces with air handling units that are scheduled for upgrades (replacement). A representative from CFIA provided access and information with regards, to the subject property and the targeted assessment areas. Dillon-Outcome did not conduct an assessment of building materials outside of the targeted areas, therefore, should disturbance of building materials be required outside the assessed areas additional sampling and laboratory analysis may be required.

### 3.1 Asbestos

Reasonable effort was made by Dillon personnel to locate and sample accessible suspected ACMs representative of the identified targeted work area at the site; however, for any facility, the existence of unique or concealed materials or debris is a possibility. Historically, some underground utility piping has been known to contain asbestos (e.g. "Transite" pipe). Additionally, certain concealed materials may be present within solid ceiling systems, wall cavities, sub-flooring, etc. that may contain asbestos (e.g. electrical wire insulation, pipe wrap, vapor barrier paper, etc.).

Building materials that may contain asbestos but were not sampled or accessed during this assessment include, but are not limited to the following:

- Roofing materials;
- Sub-grade materials (e.g., buried asbestos cement "Transite" piping);
- Woven tape inside duct connection joints;
- Mechanical (e.g., piping and ducting) insulation within wall cavities, crawlspaces, tunnels, or other concealed space (pipe chases);
- Electrical wiring;
- Insulation materials within fire rated doors;
- HVAC mechanical inner linings and/or inner ducting insulation; and
- Heat shielding, linings, seals, gaskets, etc. inside mechanical or electrical equipment.

The findings presented within this report do not reflect potential ACMs in areas not accessed. Should a material suspected to contain asbestos fibres become uncovered or discovered during demolition or

renovation activities, all work in that area that may disturb the suspect material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if asbestos fibres are present. The material should be handled as a presumed ACM (PACM) until otherwise proven through analytical testing.

### 3.2 Lead

The assessment for the presence of lead and lead-containing materials was visual in nature and on readily accessible areas and surfaces. Areas which may contain lead and lead-containing materials that were not accessed include, but, are not limited to: wall and ceiling cavities, attic spaces, crawlspaces, and buried materials.

Painted surface coating samples of suspected lead containing applications were collected from surfaces of major paint applications where visually different paint colors and/or types were identified. Although the building material surfaces where samples were collected may be covered with more than one coat of paint, an effort was made to sample all layers and the paint samples are described by the surface (visible) color only. The lead content of all painted surfaces similar to that represented by the surface paint color will be presumed to be the same, regardless of differing sub surface paints, if any.

### 3.3 Mercury

The assessment for the presence of mercury or mercury-containing equipment was conducted in readily accessible areas. Areas which may contain mercury or mercury-containing equipment that were not accessed include, but, are not limited to: wall and ceiling cavities, attic spaces, crawlspaces, and internal HVAC systems.

### 3.4 Ozone-Depleting Substances (ODSs)

The assessment for ODSs was limited to a visual review of readily accessible building-related cooling and refrigeration equipment which could contain ODSs and other halocarbons. No testing was conducted. In addition, portable equipment that may contain ODSs and other halocarbons such as water coolers, refrigerators, fire extinguishers, etc., were not included as part of this assessment.

### 3.5 Polychlorinated Biphenyls

Several lamp ballasts, present in fluorescent light fixtures or found stored in the subject property, were assessed for PCB labels or other PCB identifiers using the Environment Canada PCB Guide (August 1991). Conclusions regarding the presence of PCBs in fluorescent fixtures are presented as guidance only concerning the possibility that PCB-containing equipment maybe present. The extent and/or number of fluorescent lamp ballasts containing PCBs, if any, was not positively identified but estimated based on the limited fixtures assessed.

3.6

### Radioactive Components

The visual assessment for the presence of radioactive equipment within the subject property was conducted in accessible areas only. Areas which may contain radioactive components that were not accessed include, but, are not limited to: wall and ceiling cavities, attic spaces, crawlspaces, and unlabelled parts of fire-detection systems.

3.7

### Silica

The assessment for the presence of silica containing building materials was visual in nature and associated with readily accessible areas and surfaces. As silica is present in poured concrete, structural concrete, ceramic tile, mortars, grouts, drywall, acoustic ceiling tiles, and masonry blocks no sampling or analysis was required to determine the presence of these materials within the structure.

## 4.0

## Hazardous Building Materials Assessment

The following sub-sections provide details regarding the various items that were assessed and identified during the assessment. Floor plans showing bulk sample locations within the subject property are provided in Appendix A. Selected photographs taken during the assessment are included in Appendix B. The summary of the bulk samples that were collected including a description of the material, sampling location, type of analysis, and the laboratory analysis results are presented in Appendix C. The laboratory certificates are also presented in Appendix C. Regulatory framework and relevant legislation with respect to the hazardous building materials assessed are presented in Appendix D.

## 4.1

### Building Description

The main laboratory building is two-storey structure constructed in 1987 with a floor area of approximately 8,760 m<sup>2</sup>. It was reported that the 500 Wing portion of the building was erected in the late 1990s. CFIA identified the targeted work areas to be limited to the vicinity of the supply fan (SF) units and heat recovery coil (HRC) units associated with the HVAC system. This area included sections of the basement, main floor, second floor and fan loft. The floors in the mechanical spaces of the basement and main floor of the subject property generally consisted of painted concrete. A grate flooring system was present in the second floor and fan loft sections of the building. The walls were generally painted concrete, masonry block or gypsum board drywall. The roofing system generally consisted of metal sheeting with a narrow section along the peaks that consisted of a built-up roofing system. Dillon-Outcome accessed the roof however it was reported by Mr. Blair Murphy of CFIA that no disturbance of the roofing systems would be required for the air handling unit replacement project and as such, no bulk asbestos samples were recovered.

## 4.2

### Previous Reports and other Documents Review

The following reports and/or documents were made available to Dillon-Outcome for review prior to the site visit:

- Building Condition Report – Canadian Food Inspection Agency Lethbridge Laboratory, prepared by Smith Carter Architects & Engineers, dated July 20, 2009.
- Air Handling Unit Replacement Assessment Report – CFIA Lethbridge Laboratory, prepared by SNC-Lavalin, dated February 2018.
- Asbestos Survey – CFIA Facility, Lethbridge Alberta, prepared by Kontzamanis Graumann Smith MacMillan Inc. (KGS Group), dated March 2018.
- Various site drawings provided by CFIA, prepared by Cohos Evamy & Partners, dated August 31, 1984.

The Smith Carter Building Condition Report (BCR) provides a general overview of hazardous building materials that may be present at the site. No destructive or intrusive samples, or inspection was conducted as part of this assessment. The BCR identifies the potential for non-friable asbestos, lead

containing flashing to plumbing vents on the roof, and ozone depleting substances associated with the roof top heating, ventilation and air-cooling (HVAC) units and refrigeration units. The report states that there was no evidence of PCB containing equipment.

The SNC Lavalin report did not discuss potential hazardous building materials at the site, however this report was used to assist in the determination of the scope of work. Blair Murray of CFIA reported that air handling unit replacement Option 2 as detailed in the SNC Lavalin report was the most probable option for the facility. Dillon-Outcome along with representatives from CFIA used this information to determine the locations and materials that would require assessment and/or sampling for this report.

The KGS Group asbestos survey report included the entire facility. Dillon-Outcome reviewed the information that pertained to the main laboratory facility. The report determined that the ceiling texture plaster located in the reception area of the main laboratory facility was determined to contain asbestos. No other sampled materials were determined to contain asbestos according to the report. The assessment included sampling of vinyl floor tiles/sheeting, mastic associated with the flooring, wall and ceiling finishes (drywall and plaster), insulation compound on ducting, window caulking, refractor (fire brick) material, and spray on insulation.

### 4.3 Asbestos Containing Materials (ACMs)

Asbestos is a name of naturally occurring fibrous minerals with similar chemical and physical properties. Known for its durability, tensile strength, and chemical and fire resistance properties, asbestos was mined and used extensively from the early 1900s until the 1970s. Between the 1970s and late 1980s the use of asbestos was largely phased out in common building materials with limited use in roofing materials, tars, and cement based products.

ACMs are regulated in Alberta under the Province of Alberta's Occupational Health and Safety Act, Regulation and Code and the Alberta Asbestos Abatement Manual (October 2012). ACMs must be removed prior to any demolition or renovation that may potentially disturb the asbestos-containing materials.

For the purposes of managing worker exposure during building maintenance, renovation, and demolition, the Alberta Asbestos Abatement Manual defines an asbestos-containing material (ACM) as a material which contains 1.0% or more by volume of asbestos.

The asbestos assessment included an assessment of both friable and non-friable asbestos building materials. The term friable is applied to a material that can be readily crumbled by hand or moderate pressure. Asbestos materials that are friable have a much greater potential to release airborne asbestos fibers when disturbed.

#### 4.3.1 Methodology

Samples of suspected ACMs were collected by wetting the area to be sampled with water. The material was then removed using hand tools in a manner to limit the release of dust. If required, the area was

cleaned following sampling by wet wiping and/or a HEPA vacuum. Samples were labelled, sealed, and transported to the EMSL Canada Inc. in Mississauga, Ontario for asbestos analysis. EMSL Canada is certified under the National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos analysis. Samples were analyzed to determine asbestos type and percentage content using Polarized Light Microscopy and dispersion staining techniques in accordance with the United States Environmental Protection Agency (USEPA) methodologies. Building materials such as caulking, mastics, flooring, tar papers, etc. were analyzed using PLM and Non-Friable Organically Bound (NOB) Prep. The NOB method reduces organic and other non-ACMs in the samples in order for asbestos fibres to be more visible under the microscope.

#### 4.3.2 Findings

A summary list of the bulk samples collected during the assessment and confirmed to be either ACM or non-ACMs by laboratory analysis (Table C1), and a copy of the accompanying Laboratory Certificate of Analysis are included in Appendix C.

##### 4.3.2.1 Friable Asbestos-Containing Materials

Friable asbestos-containing building materials were not identified to be present in the subject property during this assessment.

##### 4.3.2.2 Non-Friable Asbestos-Containing Materials

Non-friable asbestos-containing building materials were identified to be present in the subject property in the form of:

- Red/brown duct sealant associated with the supply fans and heat recovery coil units located throughout the work area and the subject property. This material was determined to contain 1.2% Chrysotile asbestos (AS-03A to AS-03D).
- Black mastic associated with insulation seams within the air handling units throughout the targeted work area. This material was determined to contain 7.2% Chrysotile asbestos (AS-05A to AS-05C).
- Red/brown sealant within the air handling units. This material was determined to contain 1.2% Chrysotile asbestos (AS-06B to AS-06D).

Non-friable asbestos-containing building materials previously identified to be present in the subject property include:

- Ceiling texture (plaster) located in the reception area (outside of targeted assessment area).

##### 4.3.2.3 Materials Containing Trace Amounts of Asbestos (<1.0%)

The following building materials were sampled in the subject property and found to contain trace amounts of asbestos:

- Grey duct sealant on duct associated with HRC-9/HRC-10 (AS-10A and AS10B).
- Grey caulking associated with rooftop air intake vent for air handling units SF-5 (AS-12A to AS-12C).

##### 4.3.2.4 Presumed Asbestos Containing Materials

The following building materials were observed in the subject property but not sampled, and are listed as presumed asbestos-containing materials (PACMs):

- The built-up tar and gravel roof system.

## 4.3.2.5

## Potential Vermiculite Insulation

Vermiculite is a silicate mineral used in the construction industry as an insulator due to its thermal properties and can be used as attic and/or wall insulation and on the inside of furnaces. Asbestos can often be found within vermiculite insulation.

Intrusive assessments were not completed within masonry block walls at the request of CFIA representatives. It was reported to Dillon-Outcome that the scope of the renovation project would not require the disturbance on these materials. Vermiculite was not observed during the site assessment in existing penetrations, gaps, openings, etc. within masonry blocks inside the subject property. Should vermiculite be encountered during renovation or demolition activities, the work in the area shall be halted and the material shall be tested to determine the presence or absence of asbestos. Confirmed ACMs should be handled accordingly.

## 4.4

## Lead

Lead is soft, malleable, a poor conductor of electricity and has a low melting point. It may be used in its pure metallic form or combined chemically with other elements to form lead compounds. Metallic lead is used to make products such as lead solder, electric storage batteries, ammunition, radiation shields, pipes and sheathes for electric cables. Metallic lead is sometimes combined with other metals such as copper, tin and antimony as lead alloys for use in the manufacture of a variety of metal products.

Inorganic lead compounds (or lead salts) result when lead is combined with an element other than carbon. Inorganic lead compounds may occur as solids or in solutions, and are used in insecticides, pigments, paints, glasses, plastics and rubber compounds. Paint manufacturers historically added lead to paint as a pigment and to accelerate drying times.

Surface Coating Materials Regulations (SOR /2016-193) under the federal Canada Consumer Product Safety Act states that the concentration of total lead in a surface coating material may not exceed 0.009% or 90 ppm when a dried sample is analyzed in accordance with good laboratory practices.

For the purposes of managing worker exposure during building maintenance, renovation, and demolition, the Work Safe Alberta Occupational Exposure Limit (OEL) for lead inhalation is 0.05 mg/m<sup>3</sup>.

## 4.4.1

## Methodology

## 4.4.1.1

## Lead Paint

Bulk paint samples were collected using clean tools to cut a representative sample of each surface, as required. For each sampling location, a sample of paint chips was collected (including all layers of paint where possible). Where the paint was in good condition and adhered to its substrate, and where substrate sampling was possible, e.g., painted wood, loose plaster sections, etc. a sample of paint plus

substrate was also collected. Each sample was stored in a clean plastic bag and transported by courier to the EMSL Canada Inc. laboratory in Mississauga, Ontario for analysis of lead.

4.4.1.2

#### Lead Containing Materials

A visual assessment of the accessible areas within the proposed work area of the subject property as well as an assessment of the exterior of the building was undertaken in order to check for the presence of materials that may contain lead.

4.4.2

### Findings

4.4.2.1

#### Lead Containing Paint

Dillon-Outcome collected four (4) bulk paint chip samples (PB-01 to PB-04) from the targeted work area within the subject property to confirm current disposal requirements. A summary of the sampling locations and analytical results are presented in the attached Table C2 (Appendix C) and are generally discussed below.

Analytical results determined that the total lead concentrations for three (3) of the paint chip samples were above 90 parts per million (ppm). These paints were determined to be Lead Containing Paints (LCP) based on the *Surface Coating Materials Regulation SOR/2016-193*.

- Sample PB-01, green paint chips collected from the mechanical pipe insulation covering materials associated with the air handling unit (SF-1) was determined to have a lead concentration of 13,000 ppm. These materials were observed to be in good to poor condition, with paint peeling and flaking off its substrate in some areas.
- Sample PB-03, dark grey paint chips collected from the concrete floor in the main mechanical room of the subject property was determined to have a lead concentration of 2,300 ppm. This paint was a typical surface coating throughout the targeted work area and was observed to be in good to poor condition, with paint peeling and flaking off its substrate in some areas.
- Sample PB-04, cream and grey paint chips collected from air handling unit SF-5 located in the fan loft level of the subject property was determined to have a lead concentration of 200 ppm. This paint was a typical surface coating in the basement and was observed to be in good to poor condition, with paint peeling and flaking off its substrate in some areas.

Analytical results determined that the total lead concentrations for the fourth paint chip sample was below 90 parts per million (ppm).

- Sample PB-02, white/beige paint chips collected from the gypsum board walls in the main mechanical room of the subject property was determined to have a concentration of <80 ppm. This paint was a typical surface coating throughout the targeted work area and was observed to generally be in good condition.

To determine the proper waste disposal locations, Dillon-Outcome recommends additional leachate toxicity analysis be conducted on the various surface coatings (paint colours) associated with the air handling unit mechanical pipe insulation materials (Sample PB-01) and the surface coating associated with the air handling units (Sample PB-04). Based on the proposed scope of work required for the air handling replacement project it is unlikely that sections of the concrete floor (Sample PB-03) will be removed for disposal. Worker precautions will be required should disturbance of the floor surface coating be required.

A summary of the sampling locations and analytical results are presented in the appended Table C2 (Appendix C).

#### 4.4.2.2 Other Lead-Containing Materials

Based upon the historic use of lead in construction, lead may be present in the following building materials in the subject property:

- Solder on copper domestic water pipes;
- Caulking in bell joints on cast iron drainage pipe systems; and
- Solder used in electrical equipment.

Lead containing flashing to plumbing vents on the roof were previously identified to be present at the subject property. Disturbance of these materials is not expected during the proposed air handling unit replacement project.

These materials should be carefully separated from other building materials.

## 4.5 Mercury Containing Equipment

### 4.5.1 Methodology

An assessment for equipment, which is likely to contain mercury, was completed within the targeted area of the subject property. Information on the type of equipment (i.e., gauges, switches, batteries, thermometers, etc.), model, serial number, and quantities were recorded where available.

### 4.5.2 Findings

Fluorescent light tubes, mercury vapour lamps, and thermostats which may contain mercury, were observed within the subject property.

Based on the scope of the work required for the air handling unit replacement project these materials are not likely to be disturbed. Mercury vapour is likely present in fluorescent light tube mercury vapour lamps observed throughout subject property. Thermostats associated with the heating system within the targeted work area were observed to contain ampoules filled with a red dye alcohol.

## 4.6 Ozone Depleting Substances (ODS)

### 4.6.1 Methodology

An assessment for equipment likely to contain ODSs and other halocarbons was completed within the targeted area of the subject property. Information on the type of equipment, manufacturer and type, and quantity of refrigerants was recorded where available.

### 4.6.2 Findings

Equipment which may contain ODSs and other halocarbons observed in the subject property included refrigeration and freezer units within the various labs.

Dillon-Outcome did not record or observe the manufacturer's information or labels as these units were all located outside the targeted work area of the subject property.

## 4.7 Polychlorinated Biphenyls (PCBs)

### 4.7.1 Methodology

A review for the presence of PCBs in electrical equipment was completed within the targeted areas of the subject property. Equipment that is generally suspected of containing PCBs includes lamp ballasts, transformers, hydraulic fluid, compressors, switchgear, and capacitors manufactured in Canada prior to approximately 1980.

Light ballasts observed throughout the building were of a variety of manufacturers, styles and age. The light ballasts were compared to Environment Canada documentation - *Identification of Lamp Ballasts Containing PCBs* (1991).

### 4.7.2 Findings

Fluorescent light fixtures that house potentially PCB-containing light ballasts were not observed in the subject property during the assessment. Based on the construction date of 1987 it is unlikely that PCB containing ballasts would have been installed in the subject property.

A total of two (2) fluorescent light fixtures were accessible and both were determined to be non-PCB based on the manufacturer's label. It is considered good practice to inspect all ballasts for PCBs prior to removal or disposal. If the presence of PCBs within the ballasts cannot be determined, the ballast should be presumed to contain PCBs unless laboratory testing indicates otherwise. All PCB-containing ballasts,

known or presumed, must be stored and transported in accordance with applicable Provincial and Federal hazardous waste and TDG legislation.

## 4.8 Radioactive Materials/Smoke Detector

### 4.8.1 Methodology

An assessment for equipment likely to contain radioactive materials was completed within the targeted areas of the subject property in accessible areas only. Information on the type of equipment, manufacturer and type, and quantity was recorded where available in accessible areas.

### 4.8.2 Findings

During the site assessment, radioactive containing smoke detectors and other equipment potentially containing radioactive materials were not observed in the targeted areas of subject property.

## 4.9 Silica

### 4.9.1 Methodology

A visual assessment of the accessible areas within the proposed work area of the subject property as well as an assessment of the exterior of the building was undertaken in order to check for the presence of building materials that may contain silica.

### 4.9.2 Findings

During the assessment, silica containing building materials were present throughout the targeted work areas of the subject property. This included concrete, ceramic tile, mortars, grouts, drywall, acoustic ceiling tiles and masonry blocks.

## 5.0 Recommendations

Recommendations regarding the handling, removal, and disposal of hazardous building materials identified during this assessment are provided below.

### 5.1 Asbestos-Containing Materials

Any work involving the disturbance, repair (*i.e.*, encapsulation), or removal of confirmed ACMs should be conducted by a qualified contractor in accordance with the Alberta Asbestos Abatement Manual, dated October 2012.

Removal of sealants and mastics associated with the air handling units, heat recovery coil units and ducting may be conducted following low risk asbestos abatement procedures. Although the insulation materials (paper and fibreglass material) within the air handling units were determined not to contain asbestos the mastic associated with the seams was determined to contain. Generally all insulation materials would be removed and disposed as asbestos waste.

Vermiculite was not observed during the assessment of the subject property. Should vermiculite be discovered during any future demolition activities, work in that area must be stopped and the vermiculite must be sampled and submitted for analysis to determine whether asbestos fibres are present.

Also, should a material suspected to contain asbestos become uncovered or discovered during any future demolition or renovation activities, all work in that area that may disturb the suspect material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if asbestos fibres are present.

Samples of building materials were determined by laboratory analysis to contain asbestos fibre concentrations below the provincial guidelines. These included the following:

- Grey duct sealant on duct work associated with HRC-9/HRC-10; and,
- Grey caulking associated with rooftop air intake vents for air handling units.

Disturbance or removal of these materials should be conducted following procedures to prevent the release of airborne asbestos fibres and with the use of personal protective equipment (PPE) such as respiratory protection. If these materials are removed for disposal at a Construction and Demolition (C&D) site, the C&D site operator should be notified that these materials contain <1.0 % asbestos, prior to disposal.

The PSPC Asbestos Management Standard requires damaged ACMs to be repaired or removed using specific procedures. The Standard also requires the removal of ACMs that have the potential for being disturbed during renovations or demolition, and that an asbestos management plan (AMP) be prepared. The asbestos repairs or removals must be completed by a qualified contractor, as recommended in the AMP. Based on the previous findings and current assessment an AMP should be developed for this site.

## 5.2 Lead-Containing Materials and Lead Paint

Paint applications determined by laboratory analysis to have lead concentrations below 90 mg/kg (or parts per million) are not considered to be Lead Containing Paints (LCP) in accordance to the Surface Coating Materials Regulations (SOR /2016-193) under the federal Canada Consumer Product Safety Act and can be disposed of at a licenced waste disposal site. Additional toxicity characteristic leachate laboratory analysis (TCLP) is recommended for paint applications that were determined to be LCPs (> 90 ppm) to assist in determining the suitable disposal location (if required). In accordance with the *Alberta User Guide for Waste Managers*, surface coatings (paints) that are determined to have a TCLP concentration of 5.0 mg/L or greater are considered a hazardous material and require special handling and disposal.

Based on the possible presence of lead-containing and solder on copper piping or caulking on cast iron drainage lines, all copper piping or cast iron drainage lines removed during the demolition of the building should be cut above and below any soldered or caulking joints to avoid direct disturbance of the lead solder/caulking. Lead-acid batteries used in emergency lighting should be recycled at an approved environmental depot.

Corrective action or remedial work on materials that may contain lead should be undertaken in a manner so as to avoid generating fine particulate matter or fumes. Airborne lead dust or fumes should not exceed the Alberta occupational exposure limit (OEL) of 0.05 mg/m<sup>3</sup> during the removal of paints, products, and building materials containing any concentration of lead, as detailed in the *Work Safe Alberta Occupational Health and Safety Bulletin: "Lead at The Work Site"*.

## 5.3 Mercury

Prior to the demolition of the building, fluorescent light tubes and mercury vapour lamps should be packaged for recycling to avoid emissions of mercury vapours. Mercury containing devices (thermostats) or ampoules should be carefully removed and properly stored until they can be transported, as per the TDG Regulations, for disposal at a licensed facility.

## 5.4 Polychlorinated Biphenyls

Based on the age of the subject property and observations made during the site assessment, fluorescent lamp ballasts are not likely to contain PCBs. Ballast may be checked prior to disposal by comparing the ballast manufacturer catalogue numbers to the Environment Canada document "Identification of Lamp Ballasts Containing PCBs", Report EPS 2/CC/2 (revised), August 1991. PCB containing ballasts identified and removed from the building during any future demolition should be handled in accordance with applicable Provincial and Federal hazardous waste and TDG legislation.

## 5.5 ODSs and Other Halocarbons

Prior to being removed from service, equipment containing ODSs and other halocarbons should be purged and decommissioned by a licensed refrigeration technician.

## 5.6 Silica

Based on the location and scope of work for the proposed air handling unit replacement project, building materials containing silica are not likely to be disturbed. Should materials containing silica be

disturbed, ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the Alberta Occupational Health and Safety guidelines (i.e.  $0.025 \text{ mg/m}^3$ ).

## Closing

Dillon Consulting Limited and Outcome Consultants in joint venture (Dillon-Outcome) has used the degree of care and skill ordinarily exercised under similar circumstances at the time the work was performed by reputable members of the environmental consulting profession practicing in Canada. Dillon-Outcome assumes no responsibility for conditions it was not authorized to investigate or which were beyond its scope of work. There is no warranty expressed or implied by Dillon-Outcome that the work will discover all potential contamination since it may not be possible, even with exhaustive sampling, testing, and analysis, to document all potential contamination on the site.

This report was prepared exclusively for the purposes, project, and site location outlined in the report. The report is based on information provided to, or obtained by Dillon-Outcome as indicated in the report, and applies solely to site conditions and the regulatory and planning frameworks existing at the time of the site investigation. Although Dillon-Outcome conducted a reasonable investigation, Dillon-Outcome's investigation was by no means exhaustive and cannot be construed as a certification of the absence of any contaminants from the site. Rather, Dillon-Outcome's report represents a reasonable review of available information within an established work scope and schedule.

Dillon-Outcome prepared this report for the sole benefit of our client. The material in it reflects Dillon-Outcome's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon-Outcome accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report, by nature, cannot identify all conditions and materials that exist or can occur on the site. Inaccessible areas of the building were not assessed or sampled during the assessment. Deconstructive testing, for the most part, was not completed during the assessment.

If you have any questions regarding the information presented within this report, please contact the undersigned.

Respectfully submitted,

DILLON CONSULTING LIMITED  
AND OUTCOME CONSULTANTS IN JOINT VENTURE  
(DILLON-OUTCOME)



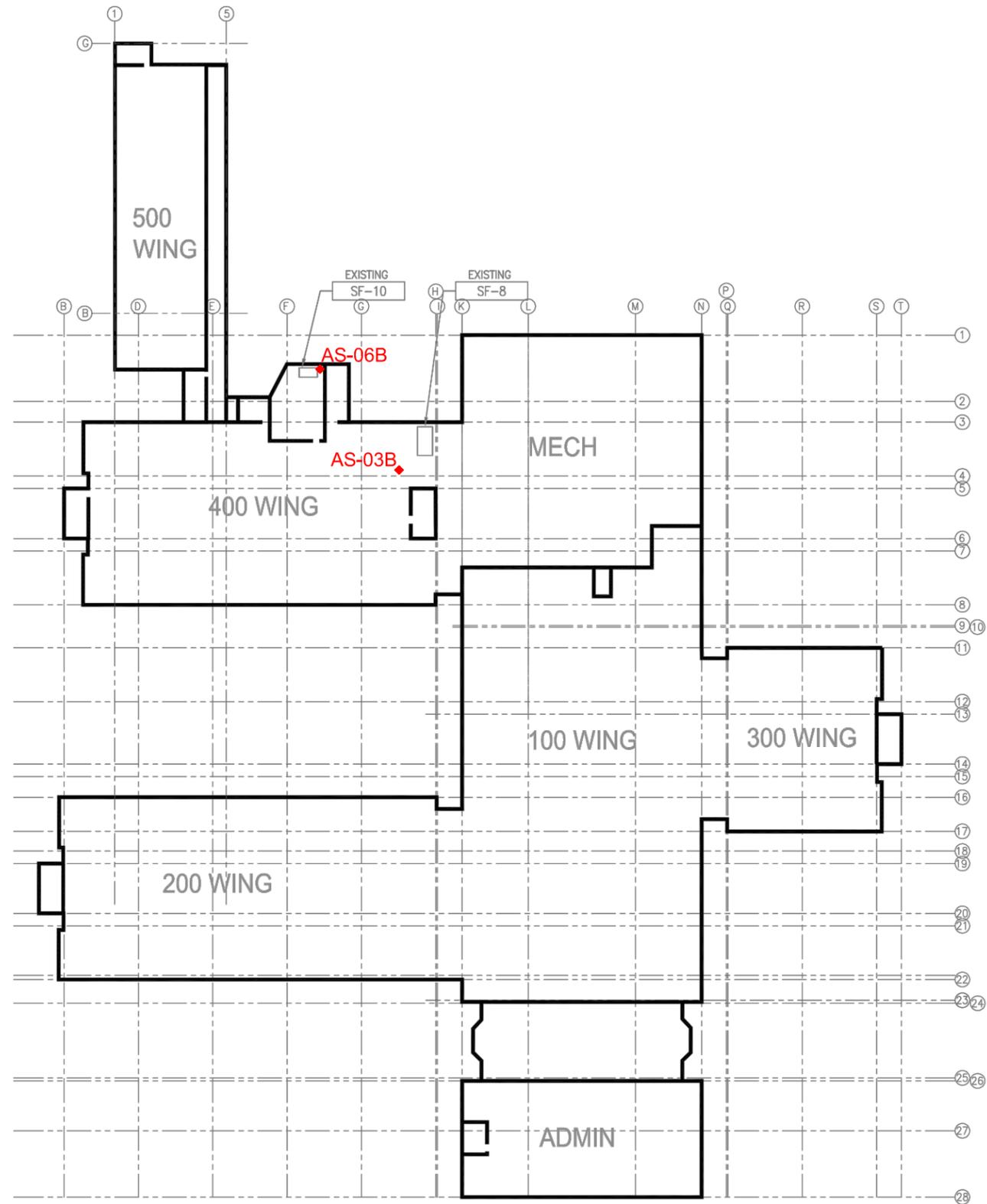
Robert Hochkiewich, C.E.T.  
Report Author



Paul Paulin, P.Eng.  
Senior Technical Review

# Appendix A

## *Drawings*



BASEMENT / CRAWL SPACE FLOOR PLAN

LEGEND

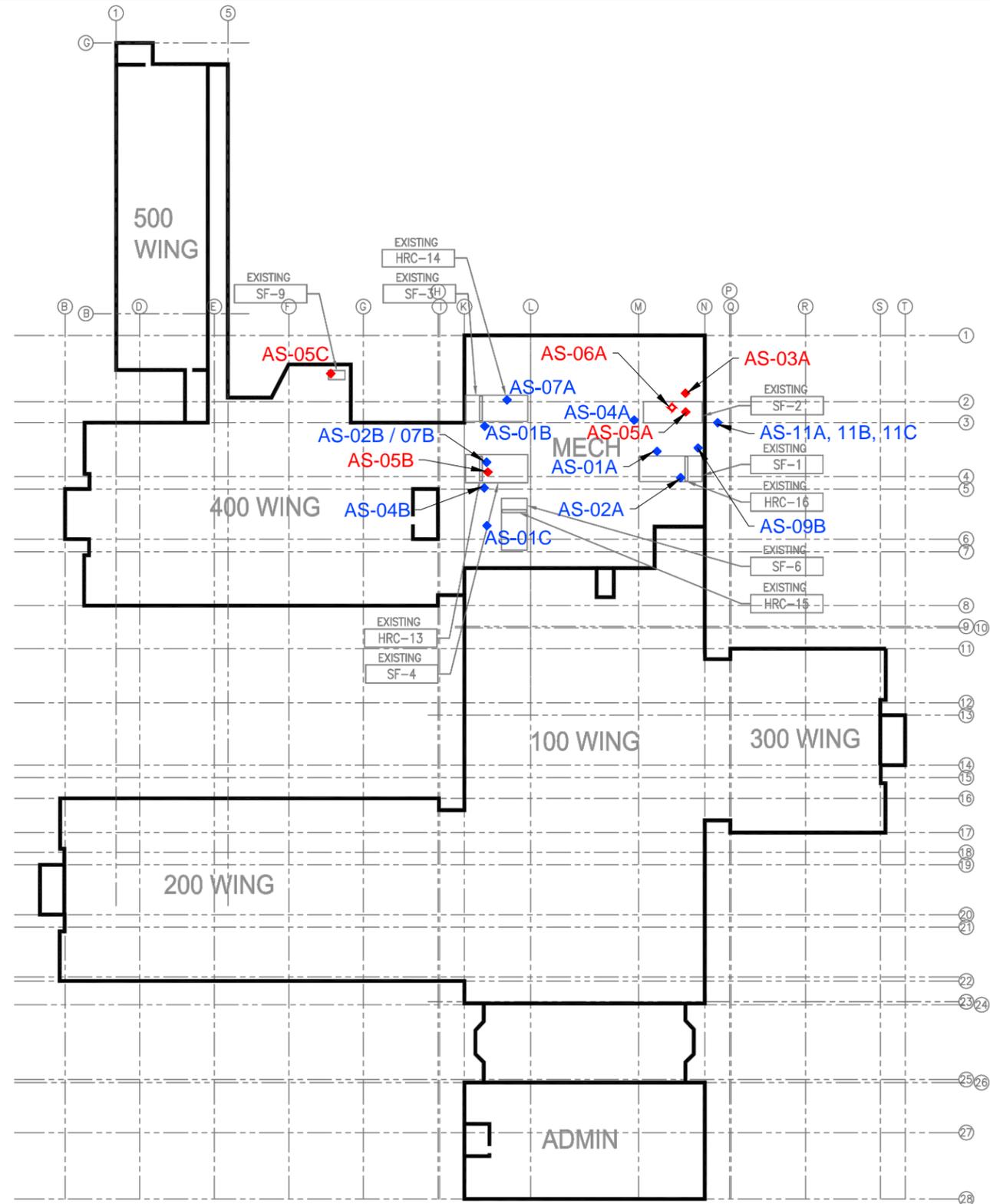
- ◆ BULK SAMPLE LOCATION: NO ASBESTOS DETECTED
- ◆ BULK SAMPLE LOCATION: ASBESTOS CONTAINING MATERIALS
- ◆ BULK SAMPLE LOCATION: TRACE ASBESTOS CONTAINING MATERIAL DETECTED

Drawing Notes

1. ACM locations shown on drawing are for information purposes only and should be read in conjunction with the remainder of the report
2. Infrastructure locations are approximate only.

DATE **April 2019**

PROJECT <b>CANADIAN FOOD INSPECTION AGENCY HAZARDOUS BUILDING MATERIALS ASSESSMENT</b>		PROJECT NO. <b>199339</b>
TITLE NATIONAL CENTRE FOR ANIMAL DISEASES - MAIN LABORATORY BUILDING LETHBRIDGE ALBERTA BASEMENT / CRAWL SPACE FLOOR PLAN - ASBESTOS BULK SAMPLE LOCATIONS		DRAWING NO. <b>1</b>



MAIN FLOOR PLAN

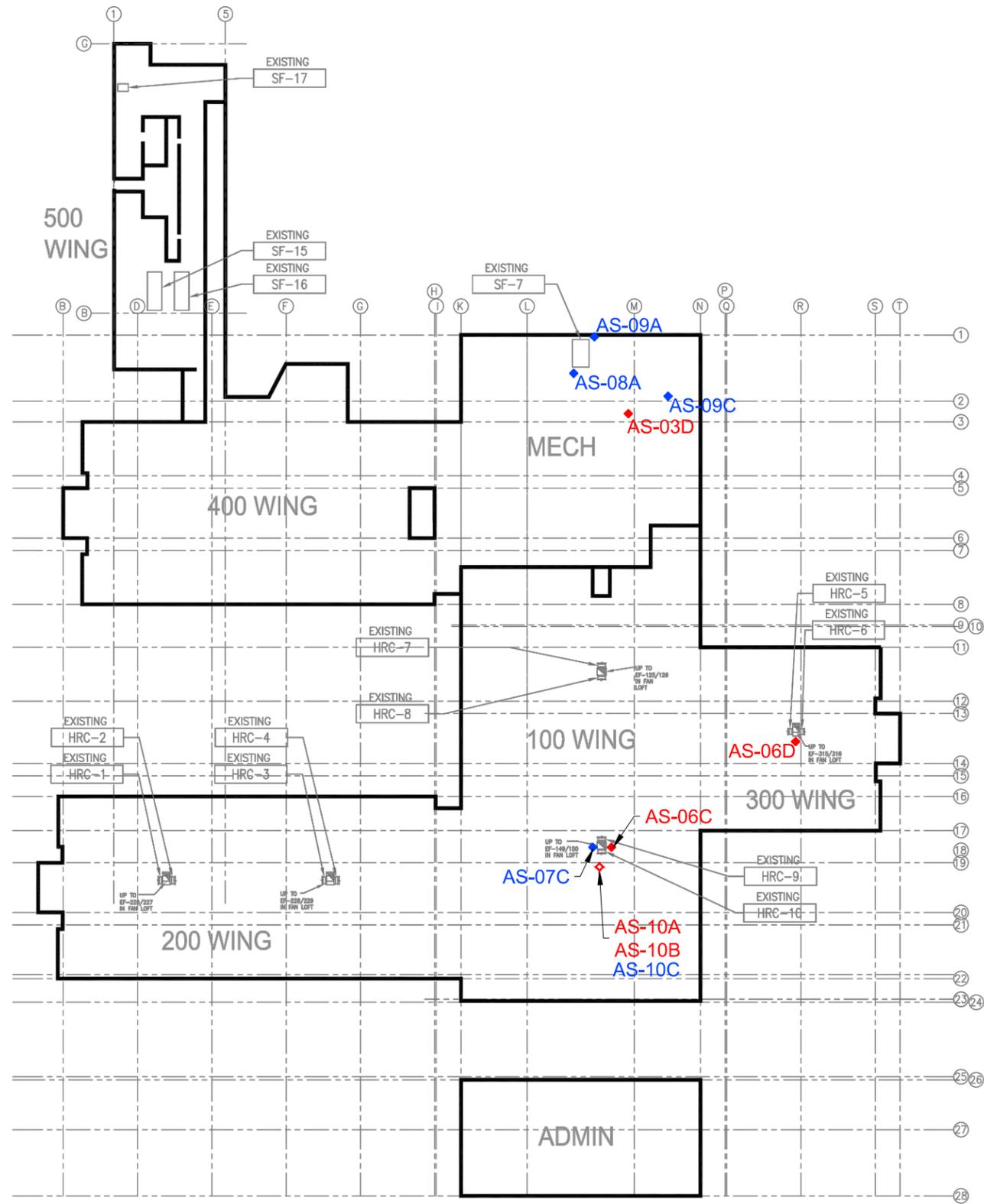
LEGEND

- ◆ BULK SAMPLE LOCATION: NO ASBESTOS DETECTED
- ◆ BULK SAMPLE LOCATION: ASBESTOS CONTAINING MATERIALS
- ◆ BULK SAMPLE LOCATION: TRACE ASBESTOS CONTAINING MATERIAL DETECTED

Drawing Notes

1. ACM locations shown on drawing are for information purposes only and should be read in conjunction with the remainder of the report
2. Infrastructure locations are approximate only.

 	PROJECT <b>CANADIAN FOOD INSPECTION AGENCY          HAZARDOUS BUILDING MATERIALS ASSESSMENT</b>	PROJECT NO. <b>199339</b>
	TITLE NATIONAL CENTRE FOR ANIMAL DISEASES - MAIN LABORATORY BUILDING LETHBRIDGE ALBERTA MAIN FLOOR PLAN - ASBESTOS BULK SAMPLE LOCATIONS	
DATE	April 2019	



SECOND FLOOR / INTERSTITIAL FLOOR PLAN

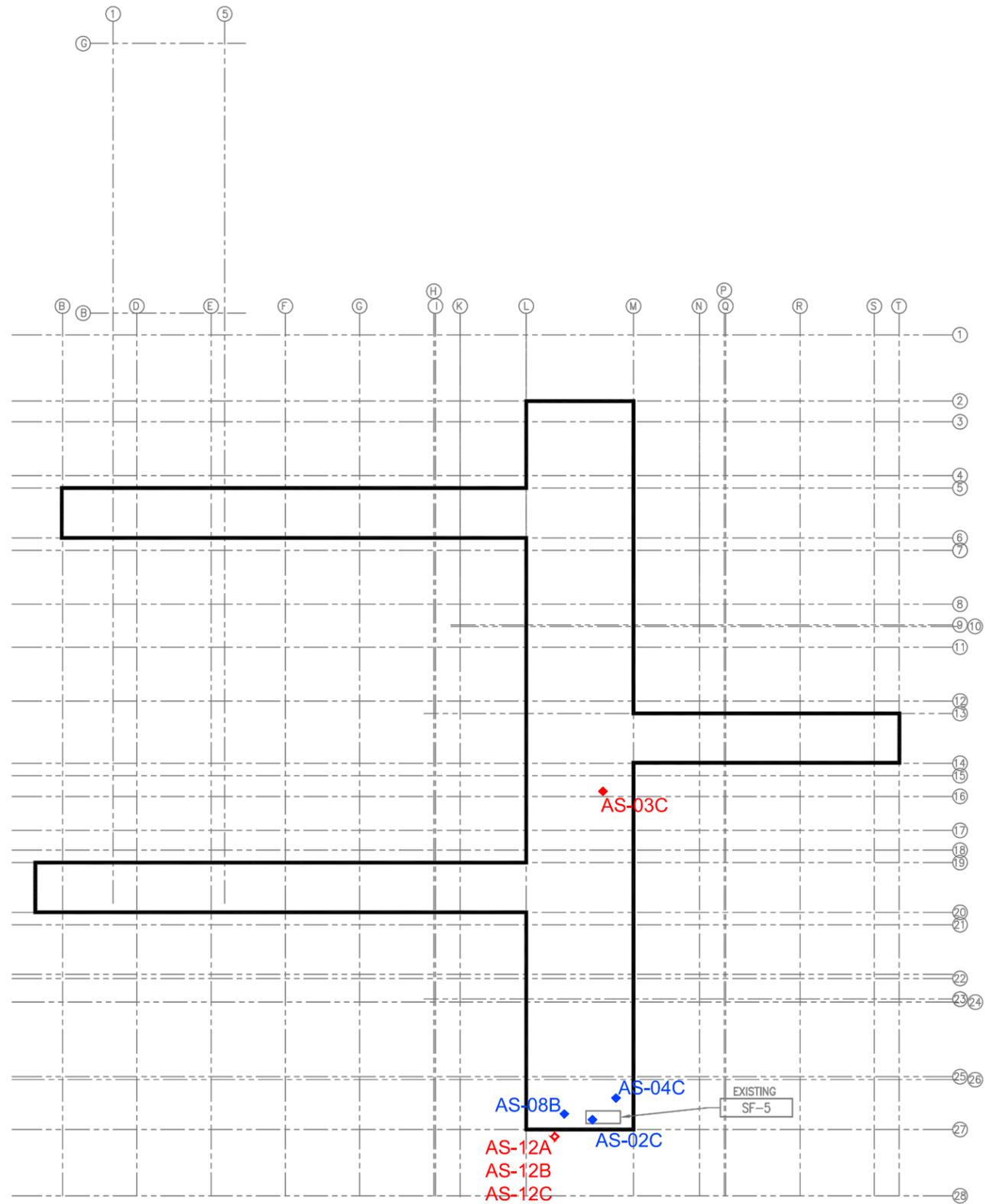
LEGEND

- ◆ BULK SAMPLE LOCATION: NO ASBESTOS DETECTED
- ◆ BULK SAMPLE LOCATION: ASBESTOS CONTAINING MATERIALS
- ◆ BULK SAMPLE LOCATION: TRACE ASBESTOS CONTAINING MATERIAL DETECTED <1.0%

Drawing Notes

1. ACM locations shown on drawing are for information purposes only and should be read in conjunction with the remainder of the report
2. Infrastructure locations are approximate only.

 	<b>PROJECT</b> <b>CANADIAN FOOD INSPECTION AGENCY</b> <b>HAZARDOUS BUILDING MATERIALS ASSESSMENT</b>	<b>PROJECT NO.</b> <b>199339</b>
	<b>TITLE</b> NATIONAL CENTRE FOR ANIMAL DISEASES - MAIN LABORATORY BUILDING LETHBRIDGE ALBERTA SECOND FLOOR / INTERSTITIAL FLOOR PLAN - ASBESTOS BULK SAMPLE LOCATIONS	<b>DRAWING NO.</b> <b>3</b>
<b>DATE</b> April 2019		



**LEGEND**

- ◆ BULK SAMPLE LOCATION: NO ASBESTOS DETECTED
- ◆ BULK SAMPLE LOCATION: ASBESTOS CONTAINING MATERIALS
- ◆ BULK SAMPLE LOCATION: TRACE ASBESTOS CONTAINING MATERIAL DETECTED <1.0%

FAN LOFT FLOOR PLAN

**Drawing Notes**

1. ACM locations shown on drawing are for information purposes only and should be read in conjunction with the remainder of the report
2. Infrastructure locations are approximate only.

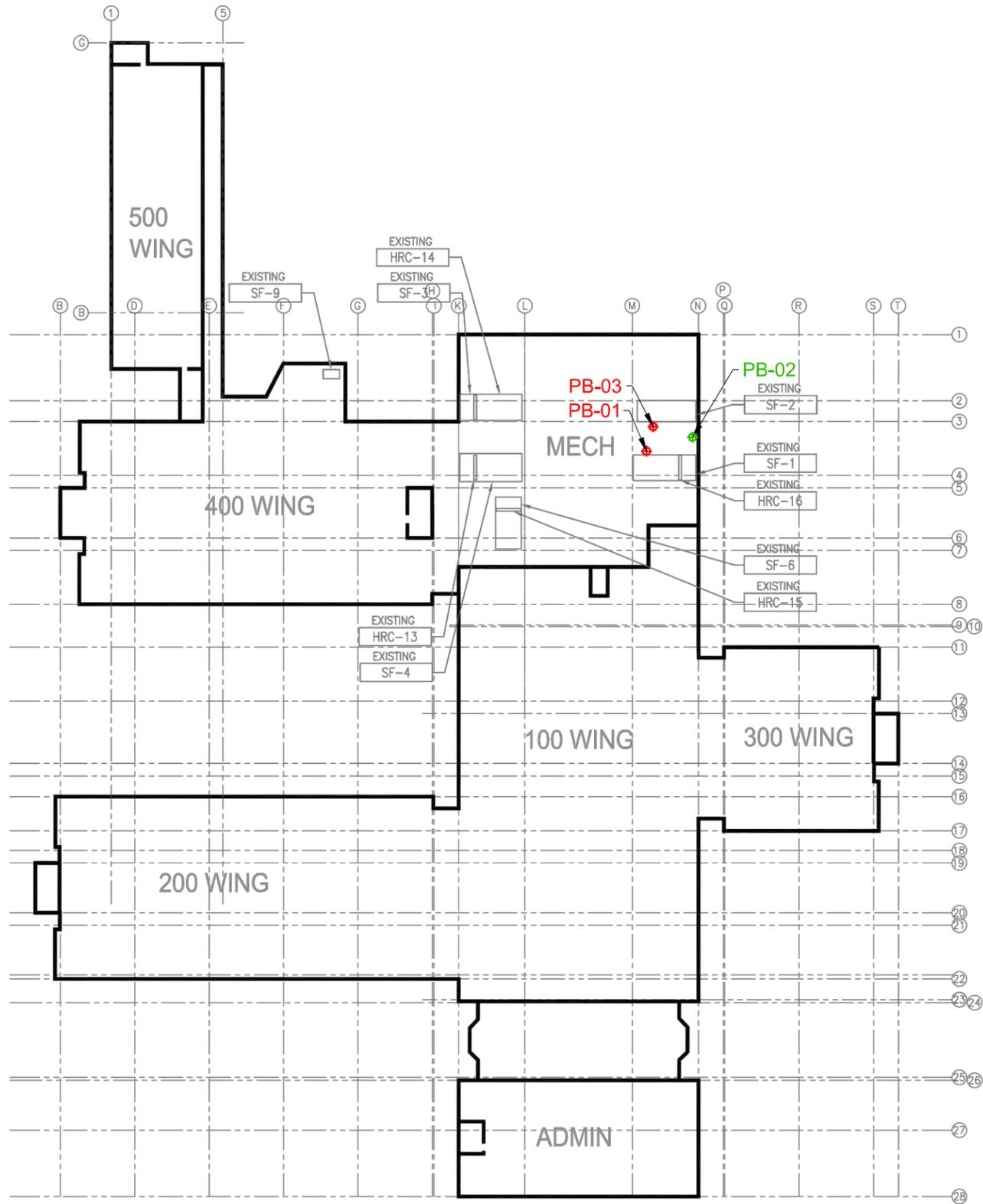
DATE **April 2019**

PROJECT **CANADIAN FOOD INSPECTION AGENCY  
HAZARDOUS BUILDING MATERIALS ASSESSMENT**

TITLE **NATIONAL CENTRE FOR ANIMAL DISEASES - MAIN LABORATORY BUILDING LETHBRIDGE ALBERTA  
FAN LOFT FLOOR PLAN - ASBESTOS BULK SAMPLE LOCATIONS**

PROJECT NO. **199339**

DRAWING NO. **4**



LEGEND

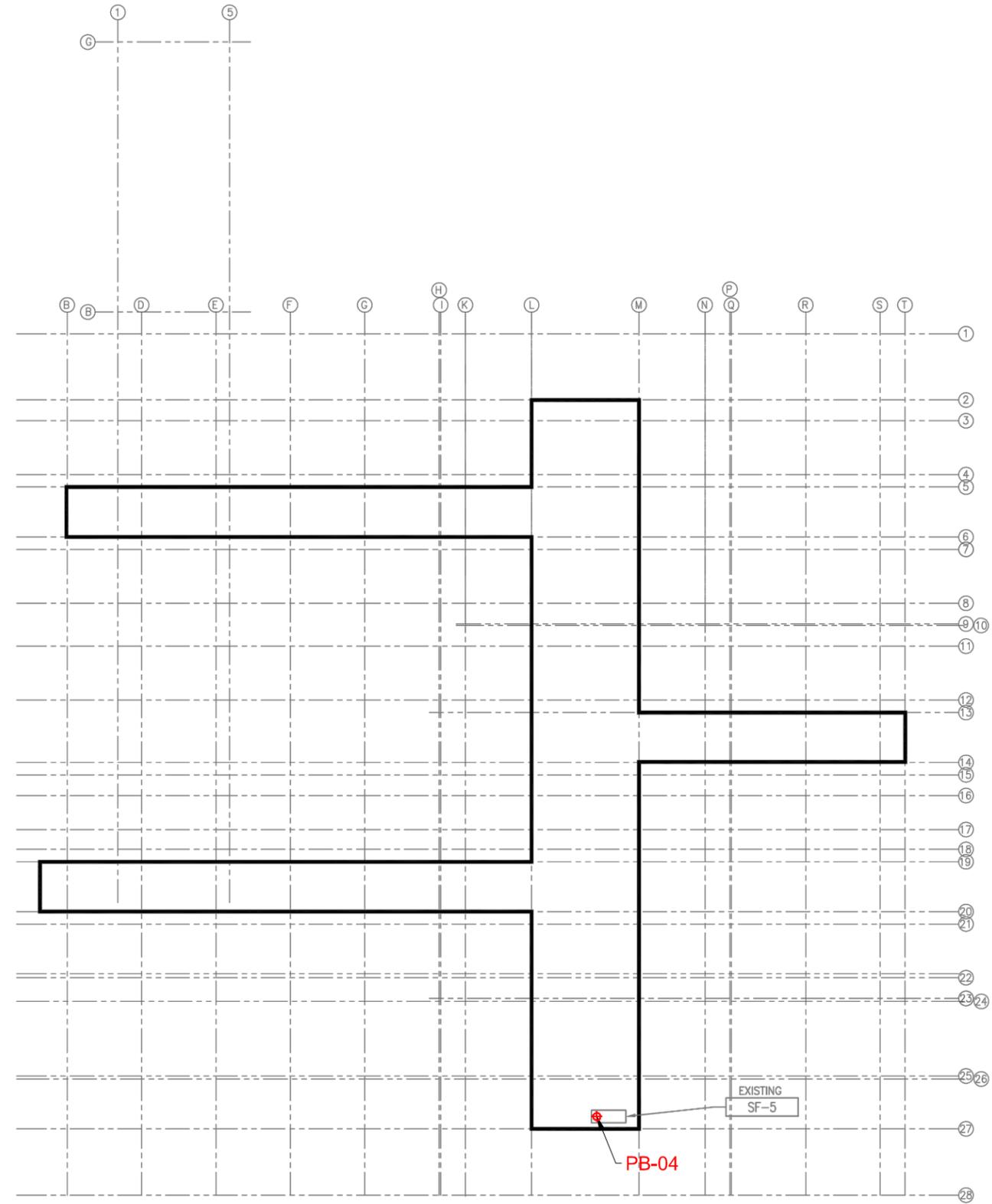
- PAINT SAMPLE LOCATION: NON-LEAD CONTAINING PAINT
- PAINT SAMPLE LOCATION: LEAD CONTAINING PAINT

Drawing Notes

1. Lead Paint Sample locations shown on drawing are for information purposes only and should be read in conjunction with the remainder of the report
2. Infrastructure locations are approximate only.

 <b>DILLON</b> CONSULTING	 <b>outcome</b> CONSULTANTS
DATE	April 2019

PROJECT <b>CANADIAN FOOD INSPECTION AGENCY          HAZARDOUS BUILDING MATERIALS ASSESSMENT</b>		PROJECT NO. <b>199339</b>
TITLE NATIONAL CENTRE FOR ANIMAL DISEASES - MAIN LABORATORY BUILDING LETHBRIDGE ALBERTA MAIN FLOOR PLAN - LEAD PAINT SAMPLE LOCATIONS		DRAWING NO. <b>5</b>



LEGEND

-  PAINT SAMPLE LOCATION: NON-LEAD CONTAINING PAINT
-  PAINT SAMPLE LOCATION: LEAD CONTAINING PAINT

FAN LOFT FLOOR PLAN

- Drawing Notes
- Lead Paint Sample locations shown on drawing are for information purposes only and should be read in conjunction with the remainder of the report
  - Infrastructure locations are approximate only.

 	PROJECT <b>CANADIAN FOOD INSPECTION AGENCY          HAZARDOUS BUILDING MATERIALS ASSESSMENT</b>	PROJECT NO. <b>199339</b>
	TITLE NATIONAL CENTRE FOR ANIMAL DISEASES - MAIN LABORATORY BUILDING LETHBRIDGE ALBERTA FLOOR LOFT FLOOR PLAN - LEAD PAINT SAMPLE LOCATIONS	DRAWING NO. <b>6</b>
DATE <b>April 2019</b>		

## Appendix B

### *Photographic Log*



Photo 1



Photo 2

Sample AS-01 - Mechanical pipe "parging" insulating cement associated with air handling units. No asbestos was identified in samples of this material.

Sample AS-02 - Insulation (fibreglass with black paper) on the interior walls within the air handling units. No asbestos was identified in samples of this material.

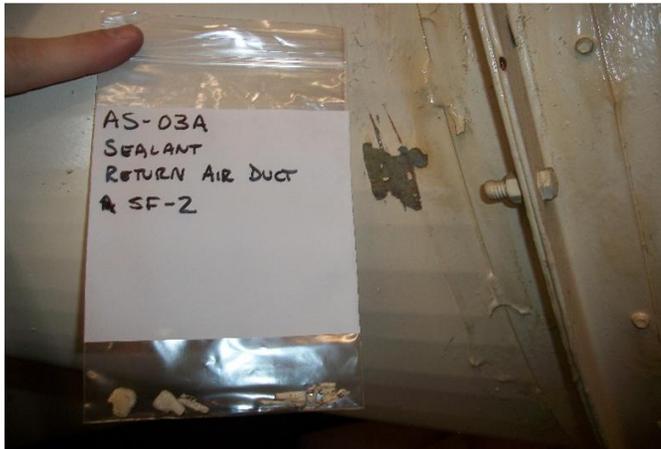


Photo 3



Photo 4

Sample AS-03A - Sealant associated with air duct seams (red/brown). This sample was found to contain 1.2% Chrysotile asbestos fibres, with the laboratory applying positive stop to the subsequent AS-03B and AS-03C samples.

Sample AS-04 - Mastic (brown) on metal duct beneath the canvass jacket and fibreglass insulation. No asbestos was identified in samples of this material.

	SITE PHOTOGRAPHS	PROJECT NO. 19-9339
	Hazardous Building Materials Survey - Canadian Food Inspection Agency National Centre for Animal Diseases in Lethbridge, AB	PHOTO NO. 1,2,3,4
March 2019		

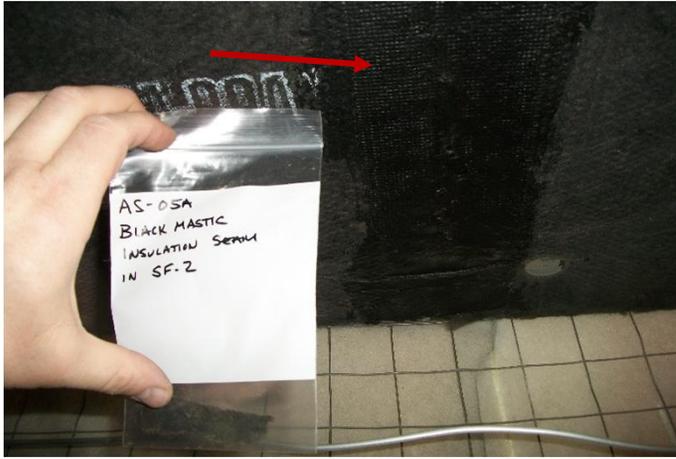


Photo 5

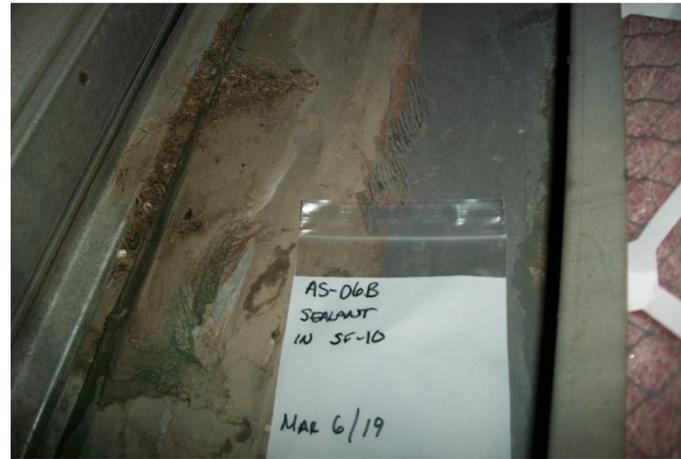


Photo 6

Sample AS-05A - Mastic seams (black) on fibreglass insulated walls within the air handling units. This material was found to contain 7.2% Chrysotile asbestos fibres, with the laboratory applying positive stop to samples AS-05B and AS-05C.

Sample AS-06 - Sealant (brown) on seam within air handling units. These materials were found to contain between 0.75% to 1.2% Chrysotile asbestos fibres.

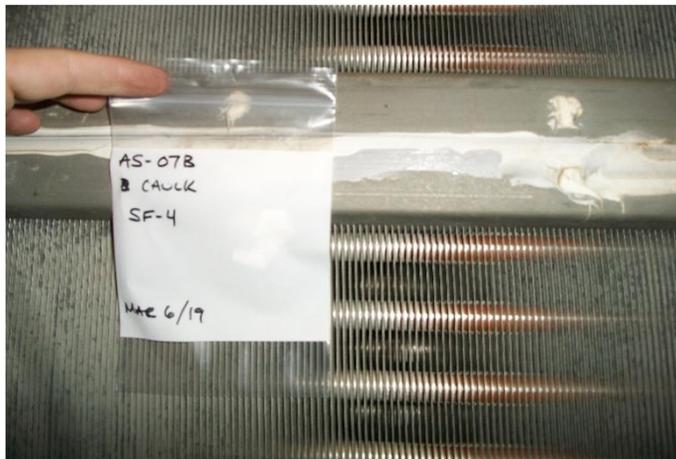


Photo 7



Photo 8

Sample AS-07 - Caulking (white) within the air handling units. No asbestos was identified in samples of this material.

Sample AS-08 - Duct expansion joint (black). No asbestos was identified in samples of this material.

 March 2019	SITE PHOTOGRAPHS	PROJECT NO. 19-9339
	Hazardous Building Materials Survey - Canadian Food Inspection Agency National Centre for Animal Diseases in Lethbridge, AB	PHOTO NO. 5,6,7,8



Photo 9

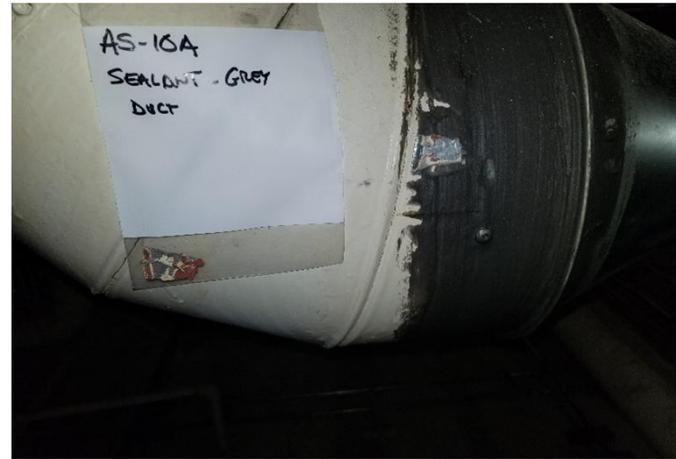


Photo 10

Sample AS-09 - Drywall joint compound (white) on walls. No asbestos was identified in the samples of this material.

Sample AS-10 - Sealant (grey) on duct seams. Trace asbestos was found in samples AS-10A and AS-10B (0.36% and <0.25% Chrysotile respectively). No asbestos was identified in the sample AS-10C.



Photo 11



Photo 12

Sample AS-11 - Caulking (grey) along the exterior air in-take grill. No asbestos was identified in the samples of this material.

Sample AS-12 - Caulking (grey) along the rooftop air in-take grill. Trace asbestos (0.35% to 0.76% Chrysotile) was found in samples of this non-friable material.

 March 2019	SITE PHOTOGRAPHS	PROJECT NO. 19-9339
	Hazardous Building Materials Survey - Canadian Food Inspection Agency National Centre for Animal Diseases in Lethbridge, AB	PHOTO NO. 9,10,11,12

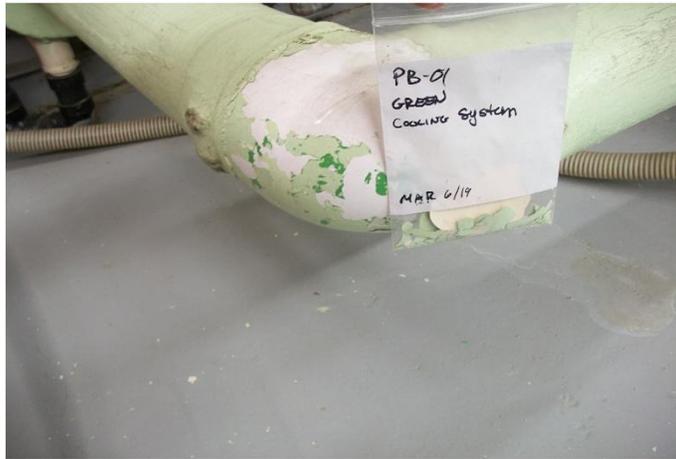


Photo 13

Sample PB-01 - Light green paint on mechanical pipe insulation (cannass jacket and PVC cover). The total lead concentration in this light green paint was determined to be 13,000 ppm.

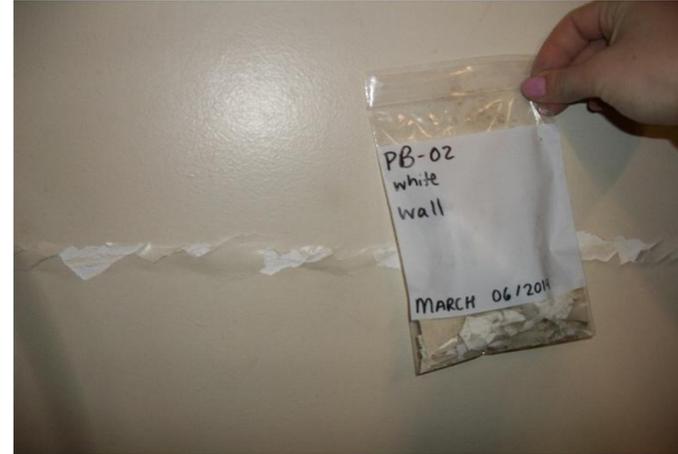


Photo 14

Sample PB-02 - White/beige paint on gypsum board wall in the mechanical room. The total lead concentration in this white/beige paint was determined to be below the detection limit of 80 ppm.

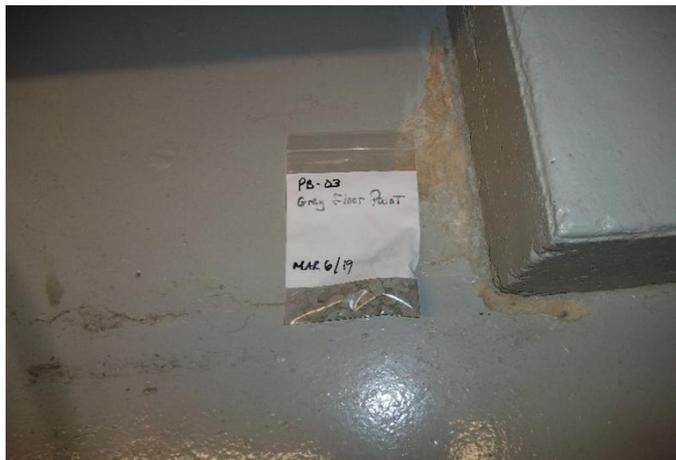


Photo 15

Sample PB-03 - Grey paint on the floor of the mechanical room. The total lead concentration in this grey paint was determined to be 2,300 ppm.

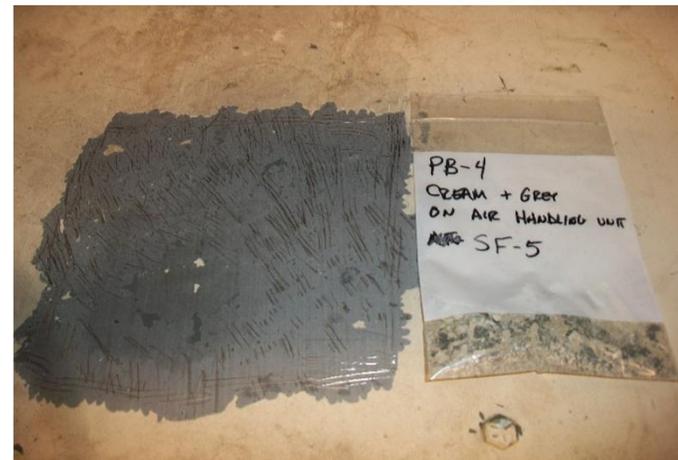


Photo 16

Sample PB-04 - Cream paint overlaying grey paint on air handling unit (SF-5). The total lead concentration in this cream was determined to be 200 ppm.

 March 2019	SITE PHOTOGRAPHS	PROJECT NO. 19-9339
	Hazardous Building Materials Survey - Canadian Food Inspection Agency National Centre for Animal Diseases in Lethbridge, AB	PHOTO NO. 13,14,15,16



Photo 17

View of alcohol containing thermostats observed associated with heating system throughout the site. No mercury containing thermostats were observed with the work area.



Photo 18

View of fluorescent light ballast with manufacturer's label identifying no PCBs present.

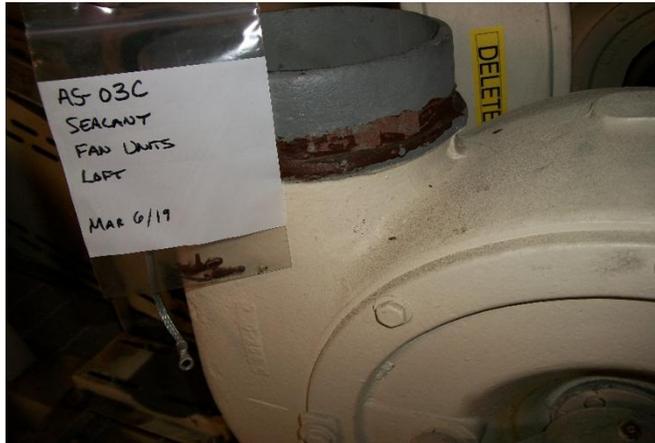


Photo 19

View of ACM sealant (red/brown) on derelict fan unit observed in the Fan Loft Level. Approximately 20 fan units were being stored in this location.



Photo 20

View of ACM sealant (red/brown) on duct underlying fibreglass insulation and canvas jacketing.

 March 2019	SITE PHOTOGRAPHS	PROJECT NO. 19-9339
	Hazardous Building Materials Survey - Canadian Food Inspection Agency National Centre for Animal Diseases in Lethbridge, AB	PHOTO NO. 17,18,19,20

## Appendix C

### *Asbestos and Paint Summary Tables and Laboratory Certificates*

Table C1: Summary of Asbestos-Containing Materials - CFIA National Centre for Animal Diseases, Lethbridge, AB

Sample Identification	Material Description	Location	Analytical Results
AS-01A-Parging	Pipe fitting "parging" insulating cement - grey	Main Floor Mechanical Room - Piping associated with SF-1	None Detected
AS-01A-Insulation	Pipe insulation wrap - yellow	Main Floor Mechanical Room - Piping associated with SF-1	None Detected
AS-01B	Pipe fitting "parging" insulating cement - grey	Main Floor Mechanical Room - Piping associated with SF-3	None Detected
AS-01C	Pipe fitting "parging" insulating cement - grey	Main Floor Mechanical Room - Piping associated with SF-4	None Detected
AS-02A	Air handling unit insulation - black	Main Floor Mechanical Room - Walls within SF-1	None Detected
AS-02B	Air handling unit insulation - black	Main Floor Mechanical Room - Walls within SF-4	None Detected
AS-02C	Air handling unit insulation - black	Fan Loft Level - Walls within SF-5	None Detected
AS-03A	Duct sealant - red/brown	Main Floor Mechanical Room - Seams on the return air duct for SF-2	1.2% Chrysotile
AS-03B	Duct sealant - red/brown	Basement - Seams on the duct associated with SF-8	Positive Stop
AS-03C	Duct sealant - red/brown	Fan Loft Level - Removed blower unit for disposal	Positive Stop
AS-03D	Duct sealant - red/brown	Second Floor Mechanical Room - Seam on the air supply duct associated with SF-7	Positive Stop
AS-04A	Duct mastic - yellow	Main Floor Mechanical Room - Beneath canvass jacketing on duct associated with SF-2	None Detected
AS-04B	Duct mastic - yellow	Main Floor Mechanical Room - Beneath canvass jacketing on duct associated with SF-4	None Detected
AS-04C	Duct mastic - yellow	Fan Loft Level - Beneath canvass jacketing on duct associated with SF-5	None Detected
AS-05A	Mastic on AHU fibreglass insulation - black	Main Floor Mechanical Room - Walls within SF-2	7.2% Chrysotile
AS-05B	Mastic on AHU fibreglass insulation - black	Main Floor Mechanical Room - Walls within SF-4	Positive Stop
AS-05C	Mastic on AHU fibreglass insulation - black	Main Floor (400 Wing) - Walls within SF-9	Positive Stop
AS-06A	Duct sealant - red/brown	Main Floor Mechanical Room - Seam within air handling unit SF-2.	0.75% Chrysotile
AS-06B	Duct sealant - red/brown	Basement Level incinerator Room (400 wing) - seam beneath canvass jacket of the duct associated with SF-10	1.2% Chrysotile
AS-06C	Duct sealant - red/brown	Second Floor (100 Wing) - Seam on duct associated with HRC-9/HRC-10	Positive Stop
AS-06D	Duct sealant - red/brown	Second Floor (300 Wing) - Seam on duct associated with HRC-5/HRC-6	Positive Stop
AS-07A	Caulking - white	Main Floor Mechanical Room - Wall within SF-3	None Detected
AS-07B	Caulking - white	Main Floor Mechanical Room - Floor within SF-4	None Detected

Table C1: Summary of Asbestos-Containing Materials - CFIA National Centre for Animal Diseases, Lethbridge, AB

Sample Identification	Material Description	Location	Analytical Results
AS-07C	Caulking - white	Second Floor (100 Wing) - Seam on HRC-9/HRC-10	None Detected
AS-08A	Expansion fabric - black/beige	Second Floor Mechanical Room - Air handling unit SF-7	None Detected
AS-08B	Expansion fabric - black/beige	Fan Loft Level - Air handling unit SF-5	None Detected
AS-09A	Drywall joint "filler" compound - white	Second Floor Mechanical Room - Wall behind air handling unit SF-7	None Detected
AS-09B	Drywall joint "filler" compound - white	Main Floor Mechanical Room - Wall near air handling unit SF-1	None Detected
AS-09C	Drywall joint "filler" compound - white	Second Floor Mechanical Room - Wall at top of the stairs	None Detected
AS-10A	Duct sealant - grey	Second Floor (100 Wing) - Duct near HRC-9/HRC-10	0.36% Chrysotile
AS-10B	Duct sealant - grey	Second Floor (100 Wing) - Duct near HRC-9/HRC-10	<0.25% Chrysotile
AS-10C	Duct sealant - grey	Second Floor (100 Wing) - Duct near HRC-9/HRC-10	None Detected
AS-11A	Caulking - grey	Exterior - Inlet for SF-2	None Detected
AS-11B	Caulking - grey	Exterior - Inlet for SF-2	None Detected
AS-11C	Caulking - grey	Exterior - Inlet for SF-2	None Detected
AS-12A	Caulking - grey	Rooftop - Air intake for SF-5	0.35% Chrysotile
AS-12B	Caulking - grey	Rooftop - Air intake for SF-5	0.46% Chrysotile
AS-12C	Caulking - grey	Rooftop - Air intake for SF-5	0.76% Chrysotile

**Bold** - indicates asbestos containing material (ACM) 1.0 % by volume or greater as defined by Alberta Asbestos Abatement Manual.

Table C2: Lead Concentrations in Paint - CFIA National Centre for Animal Diseases, Lethbridge, AB

Sample Identification	Material Description	Sample Location	Lead Concentration (ppm)
PB-01	Light Green Over Dark Green Paint on Mechanical Pipe Insulation Substrate	Mechanical Piping - Main Floor Mechanical Room Associated With Air Handling Unit SF-1	13,000
PB-02	White/beige Paint on Drywall Substrate	Drywall Wall - Main Floor Mechanical Room Near Air Handling Unit SF-1	<80
PB-03	Grey Paint on Concrete Substrate	Concrete Floor - Main Floor Mechanical Room	2,300
PB-04	Cream Over Grey Paint on Metal Sheeting Substrate	Air Handling Unit SF-5 - Fan Loft Level	200

Bold - Lead Containing Paint, total lead concentration was determined to be greater than 90 ppm.



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EMSL Canada Order 551902823  
Customer ID: 55DILL77  
Customer PO: 199339-2000  
Project ID:

**Attn:** Paul Paulin  
Dillon Consulting  
1558 Willson Place  
Winnipeg, MB R3T 0Y4

**Phone:** (204) 453-2301  
**Fax:** (204) 452-4412  
**Collected:** 3/ 6/2019  
**Received:** 3/11/2019  
**Analyzed:** 3/18/2019

**Proj:** 199339-2000

## Test Report: Asbestos Analysis of Bulk Materials for OHS Alberta Abatement Manual via EPA600/R-93/116 Method

**Client Sample ID:** AS-01A-Parging

**Lab Sample ID:** 551902823-0001

**Sample Description:** Pipe Parging

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	Gray	10.0%	90.0%	None Detected	

**Client Sample ID:** AS-01A-Insulation

**Lab Sample ID:** 551902823-0001A

**Sample Description:** Pipe Parging

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	Yellow	75.0%	25.0%	None Detected	

**Client Sample ID:** AS-01B

**Lab Sample ID:** 551902823-0002

**Sample Description:** Pipe Parging

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	Gray	15.0%	85.0%	None Detected	

**Client Sample ID:** AS-01C

**Lab Sample ID:** 551902823-0003

**Sample Description:** Pipe Parging

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	Gray	50.0%	50.0%	None Detected	

**Client Sample ID:** AS-02A

**Lab Sample ID:** 551902823-0004

**Sample Description:** Interior Insulation

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Black	0.0%	100%	None Detected	

**Client Sample ID:** AS-02B

**Lab Sample ID:** 551902823-0005

**Sample Description:** Interior Insulation

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Black	0.0%	100%	None Detected	

**Client Sample ID:** AS-02C

**Lab Sample ID:** 551902823-0006

**Sample Description:** Interior Insulation

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/18/2019	Black	0.0%	100%	None Detected	



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EMSL Canada Order 551902823  
Customer ID: 55DILL77  
Customer PO: 199339-2000  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for OHS Alberta Abatement Manual via EPA600/R-93/116 Method

**Client Sample ID:** AS-03A **Lab Sample ID:** 551902823-0007  
**Sample Description:** Duct Sealant Brown/Red

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Red	0.0%	98.8%	1.2% Chrysotile	

**Client Sample ID:** AS-03B **Lab Sample ID:** 551902823-0008  
**Sample Description:** Duct Sealant Brown/Red

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019				Positive Stop (Not Analyzed)	

**Client Sample ID:** AS-03C **Lab Sample ID:** 551902823-0009  
**Sample Description:** Duct Sealant Brown/Red

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019				Positive Stop (Not Analyzed)	

**Client Sample ID:** AS-03D **Lab Sample ID:** 551902823-0010  
**Sample Description:** Duct Sealant Brown/Red

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019				Positive Stop (Not Analyzed)	

**Client Sample ID:** AS-04A **Lab Sample ID:** 551902823-0011  
**Sample Description:** Duct Mastic - Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Yellow	0.0%	100%	None Detected	

**Client Sample ID:** AS-04B **Lab Sample ID:** 551902823-0012  
**Sample Description:** Duct Mastic - Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Yellow	0.0%	100%	None Detected	

**Client Sample ID:** AS-04C **Lab Sample ID:** 551902823-0013  
**Sample Description:** Duct Mastic - Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/18/2019	Yellow	0.0%	100%	None Detected	

**Client Sample ID:** AS-05A **Lab Sample ID:** 551902823-0014  
**Sample Description:** Mastic Black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Black	0.0%	92.8%	7.2% Chrysotile	



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EMSL Canada Order 551902823  
Customer ID: 55DILL77  
Customer PO: 199339-2000  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for OHS Alberta Abatement Manual via EPA600/R-93/116 Method

**Client Sample ID:** AS-05B **Lab Sample ID:** 551902823-0015  
**Sample Description:** Mastic Black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019					Positive Stop (Not Analyzed)

**Client Sample ID:** AS-05C **Lab Sample ID:** 551902823-0016  
**Sample Description:** Mastic Black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019					Positive Stop (Not Analyzed)

**Client Sample ID:** AS-06A **Lab Sample ID:** 551902823-0017  
**Sample Description:** Duct Sealant Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Red	0.0%	99.2%	0.75% Chrysotile	

**Client Sample ID:** AS-06B **Lab Sample ID:** 551902823-0018  
**Sample Description:** Duct Sealant Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Red	0.0%	98.8%	1.2% Chrysotile	

**Client Sample ID:** AS-06C **Lab Sample ID:** 551902823-0019  
**Sample Description:** Duct Sealant Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019					Positive Stop (Not Analyzed)

**Client Sample ID:** AS-06D **Lab Sample ID:** 551902823-0020  
**Sample Description:** Duct Sealant Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019					Positive Stop (Not Analyzed)

**Client Sample ID:** AS-07A **Lab Sample ID:** 551902823-0021  
**Sample Description:** Caulking - White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	White	0.0%	100%	None Detected	

**Client Sample ID:** AS-07B **Lab Sample ID:** 551902823-0022  
**Sample Description:** Caulking - White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	White	0.0%	100%	None Detected	



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EMSL Canada Order 551902823  
Customer ID: 55DILL77  
Customer PO: 199339-2000  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for OHS Alberta Abatement Manual via EPA600/R-93/116 Method

**Client Sample ID:** AS-07C **Lab Sample ID:** 551902823-0023  
**Sample Description:** Caulking - White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/18/2019	White	0.0%	100%	None Detected	

**Client Sample ID:** AS-08A **Lab Sample ID:** 551902823-0024  
**Sample Description:** Expansion Fabric

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	Black/Beige	45.0%	55.0%	None Detected	

**Client Sample ID:** AS-08B **Lab Sample ID:** 551902823-0025  
**Sample Description:** Expansion Fabric

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	Black/Beige	45.0%	55.0%	None Detected	

**Client Sample ID:** AS-09A **Lab Sample ID:** 551902823-0026  
**Sample Description:** Drywall Joint Compound - White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	White	0.0%	100.0%	None Detected	

**Client Sample ID:** AS-09B **Lab Sample ID:** 551902823-0027  
**Sample Description:** Drywall Joint Compound - White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	White	0.0%	100.0%	None Detected	

**Client Sample ID:** AS-09C **Lab Sample ID:** 551902823-0028  
**Sample Description:** Drywall Joint Compound - White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	3/18/2019	White	0.0%	100.0%	None Detected	

**Client Sample ID:** AS-10A **Lab Sample ID:** 551902823-0029  
**Sample Description:** Duct Sealant - Grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Gray	0.0%	99.6%	0.36% Chrysotile	

**Client Sample ID:** AS-10B **Lab Sample ID:** 551902823-0030  
**Sample Description:** Duct Sealant - Grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Gray	0.0%	100%	<0.25% Chrysotile	



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Customer ID: 55DILL77  
Customer PO: 199339-2000  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for OHS Alberta Abatement Manual via EPA600/R-93/116 Method

**Client Sample ID:** AS-10C **Lab Sample ID:** 551902823-0031  
**Sample Description:** Duct Sealant - Grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/18/2019	Gray	0.0%	100%	None Detected	

**Client Sample ID:** AS-11A **Lab Sample ID:** 551902823-0032  
**Sample Description:** Caulking - Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Gray	0.0%	100%	None Detected	

**Client Sample ID:** AS-11B **Lab Sample ID:** 551902823-0033  
**Sample Description:** Caulking - Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Gray	0.0%	100%	None Detected	

**Client Sample ID:** AS-11C **Lab Sample ID:** 551902823-0034  
**Sample Description:** Caulking - Brown

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/18/2019	Gray	0.0%	100%	None Detected	

**Client Sample ID:** AS-12A **Lab Sample ID:** 551902823-0035  
**Sample Description:** Caulking - Grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Gray	0.0%	99.6%	0.35% Chrysotile	

**Client Sample ID:** AS-12B **Lab Sample ID:** 551902823-0036  
**Sample Description:** Caulking - Grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/16/2019	Gray	0.0%	99.5%	0.46% Chrysotile	

**Client Sample ID:** AS-12C **Lab Sample ID:** 551902823-0037  
**Sample Description:** Caulking - Grey

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	3/18/2019	Gray	0.0%	99.2%	0.76% Chrysotile	



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EMSL Canada Order 551902823  
Customer ID: 55DILL77  
Customer PO: 199339-2000  
Project ID:

**Test Report: Asbestos Analysis of Bulk Materials for OHS Alberta Abatement Manual via  
EPA600/R-93/116 Method**

---

**Analyst(s):**

Kira Ramphal PLM Grav. Reduction (16)  
Michelle Lung PLM (7)  
PLM Grav. Reduction (6)  
Natalie D'Amico PLM (2)

**Reviewed and approved by:**

Matthew Davis or other approved signatory  
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 03/18/2019 11:36:47



EMSL CANADA, INC.  
LABORATORY • PRODUCTS • TRAINING

**Asbestos Chain of Custody**  
**EMSL Order Number (Lab Use Only):**

551902823

PHONE:

FAX:

Company : Dillon Consulting Limited		EMSL Customer ID: 55DILL36	
Street: 1558 Willson Place		City: Winnipeg	
Zip/Postal Code: R3T 0Y4	State/Province: Manitoba	Country: Canada	
Telephone #: 204-453-2301 ext. 4035		Email Address: ppaulin@dillon.ca, rhochkievich@dillon.ca	
Project Name/Number: 199339 - 2000		EMSL Project ID (Internal Use Only):	
Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email		Purchase Order:	State/Province Samples Taken: Lethbridge, AB
EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different - If Bill to is Different note instructions in Comments** Third Party Billing requires written authorization from third party			
<b>Turnaround Time (TAT) Options* - Please Check</b>			
<input type="checkbox"/> 3 Hour <input type="checkbox"/> 6 Hour <input type="checkbox"/> 24 Hour <input type="checkbox"/> 48 Hour <input type="checkbox"/> 72 Hour <input type="checkbox"/> 96 Hour <input checked="" type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week <small>*For TEM Air 3 hours through 6 hours, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.</small>			
<b>PCM - Air</b> <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> IRSST PCM <b>PLM - Bulk (reporting limit)</b> <input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input type="checkbox"/> 400 PTCT (<0.25%) <input type="checkbox"/> 1000 PTCT (<0.1%) <input checked="" type="checkbox"/> PLM EPA NOB (<1%) <input type="checkbox"/> 400 PTCT (<0.25%) <input type="checkbox"/> 1000 PTCT (<0.1%) <input type="checkbox"/> IRSST PLM <input type="checkbox"/> NIOSH 9002 (<1%) <input type="checkbox"/> Other		<b>TEM - Air</b> <input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II <b>TEM - Bulk</b> <input type="checkbox"/> TEM EPA NOB <input type="checkbox"/> IRRST TEM (NYS 198.4) <b>TEM - Dust</b> <input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 <b>TEM - Water</b> <input type="checkbox"/> EPA 100.2 (All fibre sizes) <input type="checkbox"/> EPA 100.2 (fibres >10µm)	
		<b>Soil/Rock/Vermiculite</b> <input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.25%) <input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.1%) <input type="checkbox"/> TEM EPA 600/R-93/116 with milling prep (<0.1%) <input type="checkbox"/> TEM EPA 600/R-93/116 with milling prep (<0.01%) <input type="checkbox"/> ASTM D7521 Sieve Method <input type="checkbox"/> TEM Qualitative via Filtration Prep <input type="checkbox"/> TEM Qualitative via Drop Mount Prep <input type="checkbox"/> Cincinnati Method EPA 600/R-04/004 - PLM/TEM* <small>*(required for vermiculite in BC and NS)</small>	
		<b>Asphalt</b> <input type="checkbox"/> PLM EPA Gravimetric with milling prep (<0.25%)	
<input type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Groups		Filter Pore Size (Air Samples): <input checked="" type="checkbox"/> 0.8µm <input type="checkbox"/> 0.45µm	
Samplers Name: Robert Hochkievich, Brittannie Watson		Sampler's Signature:	
Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
	AS-01 to 12		March 6, 2019
	SEE ATTACHED TABLE !!!!		
Client Sample # (s):		Total # of Samples: 37	
Relinquished (Client): Dillon Consulting		Date: March 6, 2019	Time: 13:00
Received (Lab):		Date:	Time:

PIEB



**EMSL Canada Inc.**

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EMSL Canada Or	551902794
CustomerID:	55DILL77
CustomerPO:	19-9339-2000
ProjectID:	

Attn: **Rob Hochkievich**  
**Dillon Consulting**  
**1558 Willson Place**  
**Winnipeg, MB R3T 0Y4**

Phone: (204) 453-2301  
 Fax: (204) 452-4412  
 Received: 03/11/19 10:34 AM  
 Collected: 3/6/2019

Project: 19-9339-2000

**Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)\***

<i>Client SampleDescription</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Weight</i>	<i>RDL</i>	<i>Lead Concentration</i>
PB-01 551902794-0001	3/6/2019 Site: Piping - green	3/14/2019	0.2458 g	410 ppm	13000 ppm
PB-02 551902794-0002	3/6/2019 Site: Wall - white/beige	3/14/2019	0.2488 g	80 ppm	<80 ppm
PB-03 551902794-0003	3/6/2019 Site: Floor - grey	3/14/2019	0.2404 g	83 ppm	2300 ppm
PB-04 551902794-0004	3/6/2019 Site: Air handling unit - cream/grey	3/14/2019	0.2447 g	82 ppm	200 ppm

Rowena Fanto, Lead Supervisor  
 or other approved signatory

\*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Cert #2845.08; AIHA-LAP, LLC - ELLAP #196142

Initial report from 03/18/2019 08:56:38



EMSL ANALYTICAL, INC.  
LABORATORY • PRODUCTS • TRAINING

**Lead (Pb) Chain of Custody**  
**EMSL Order ID (Lab Use Only):**

PHONE: ( )  
FAX: ( )

551902794

Company : <b>Dillon Consulting Ltd.</b>		EMSL-Bill to: <input type="checkbox"/> Same <input type="checkbox"/> Different <small>If Bill to is Different note instructions in Comments**</small>		
Street: <b>1558 Willson Place</b>		<i>Third Party Billing requires written authorization from third party</i>		
City: <b>Winnipeg</b>	State/Province: <b>MB</b>	Zip/Postal Code: <b>R3T 0Y4</b>	Country: <b>Canada</b>	
Report To (Name): <b>Rob Hochkievich</b>		Telephone #: <b>204-294-5051</b>		
Email Address: <b>rhochkievich@dillon.ca</b>		Fax #:	Purchase Order:	
Project Name/Number: <b>19-9339-2000</b>		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email		
U.S. State Samples Taken:		CT Samples: <input checked="" type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt		
<b>Turnaround Time (TAT) Options* - Please Check</b>				
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour	
<input type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input checked="" type="checkbox"/> 1 Week	<input type="checkbox"/> 2 Week	
<small>*Analysis completed in accordance with EMSL's Terms and Conditions located in the Price Guide</small>				
Matrix	Method	Instrument	Reporting Limit	Check
<b>Chips</b> <input type="checkbox"/> % by wt. <input type="checkbox"/> mg/cm <sup>2</sup> <input checked="" type="checkbox"/> ppm (mg/kg)	SW846-7000B	Flame Atomic Absorption	0.01%	<input checked="" type="checkbox"/>
<b>Air</b>	NIOSH 7082	Flame Atomic Absorption	4 µg/filter	<input type="checkbox"/>
	NIOSH 7105	Graphite Furnace AA	0.03 µg/filter	<input type="checkbox"/>
	NIOSH 7300M/NIOSH 7303	ICP-OES	0.5 µg/filter	<input type="checkbox"/>
<b>Wipe*</b> ASTM <input type="checkbox"/> non ASTM <input type="checkbox"/> <small>*if no box checked, non-ASTM Wipe assumed</small>	SW846-7000B	Flame Atomic Absorption	10 µg/wipe	<input type="checkbox"/>
	SW846-6010B or C	ICP-OES	1.0 µg/wipe	<input type="checkbox"/>
<b>TCLP</b>	SW846-1311/7000B/SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW846-1311/SW846-6010B or C	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
<b>SPLP</b>	SW846-1312/7000B/SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW846-1312/SW846-6010B or C	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
<b>TTLC</b>	22 CCR App. II, 7000B/7420	Flame Atomic Absorption	40 mg/kg (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW846-6010B or C	ICP-OES	2 mg/kg (ppm)	<input type="checkbox"/>
<b>STLC</b>	22 CCR App. II, 7000B/7420	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW846-6010B or C	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
<b>Soil</b>	SW846-7000B	Flame Atomic Absorption	40 mg/kg (ppm)	<input type="checkbox"/>
	SW846-6010B or C	ICP-OES	2 mg/kg (ppm)	<input type="checkbox"/>
<b>Wastewater</b> Unpreserved <input type="checkbox"/> Preserved with HNO <sub>3</sub> pH < 2 <input type="checkbox"/>	SM3111B/SW846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.9	Graphite Furnace AA	0.003 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.7	ICP-OES	0.020 mg/L (ppm)	<input type="checkbox"/>
<b>Drinking Water</b> Unpreserved <input type="checkbox"/> Preserved with HNO <sub>3</sub> pH < 2 <input type="checkbox"/>	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.9	Graphite Furnace AA	0.003 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	<input type="checkbox"/>
<b>TSP/SPM Filter</b>	40 CFR Part 50	ICP-OES	12 µg/filter	<input type="checkbox"/>
	40 CFR Part 50	Graphite Furnace AA	3.6 µg/filter	<input type="checkbox"/>
<b>Other:</b>				<input type="checkbox"/>
<b>Name of Sampler:</b> R. Hochkievich, B. Watson		<b>Signature of Sampler:</b>		
<b>Sample #</b>	<b>Location</b>	<b>Volume/Area</b>	<b>Date/Time Sampled</b>	
PB-01	Piping - green		March 6, 2019	
PB-02	Wall - white/beige		March 6, 2019	
<b>Client Sample #s</b>	PB-01 - PB-04		<b>Total # of Samples:</b> 4	
<b>Relinquished (Client):</b>	R. HOCHKIEVICH	<b>Date:</b> MAR 8/19	<b>Time:</b> 12:05	
<b>Received (Lab):</b>		<b>Date:</b>	<b>Time:</b>	
<b>Comments:</b> SAMPLES MAY REQUIRE TCLP ANALYSIS				

11 MAR 19 10:34 AM

P1EB



# Appendix D

## *Regulatory Background*

Table D-1: Summary of Applicable Regulations, Guidelines and Other Reference Documents

Potential Hazardous Material	Regulations, Guidelines, Codes of Practice and Other Reference Documentation
Asbestos	<ul style="list-style-type: none"> <li>• <i>Alberta Asbestos Abatement Manual</i>, Government of Alberta, October 2012.</li> <li>• <i>Transportation of Asbestos as a Waste</i>, Government of Alberta, January 2018.</li> <li>• Public Services and Procurement Canada Asbestos Management Standard, June 2017.</li> <li>• Federal Treasury Board of Canada Secretariat Hazardous Substances Directive – II, Section 2.9 as it relates to asbestos management.</li> </ul>
Paint	<ul style="list-style-type: none"> <li>• <i>Surface Coating Materials Regulation</i> SOR/2016-193, Canada Consumer Product Safety Act</li> <li>• <i>Lead at The Work Site</i> – Occupational Health and Safety Bulletin CH071, Work Safe Alberta, November 2013.</li> <li>• <i>Alberta User Guide for Waste Managers</i>, Government of Alberta, August 1996.</li> <li>• Guideline: Lead on Construction Projects (prepared by the Ontario Ministry of Labour), April 2011.</li> </ul>
PCB-containing equipment	<ul style="list-style-type: none"> <li>• Environment Canada document “Identification of Lamp Ballasts Containing PCBs”, Report EPS 2/CC/2 (revised) August 1991.</li> <li>• Province of Alberta Environmental Protection and Enhancement Act – Waste Control Regulation, 192/1996</li> <li>• Dangerous Goods Transportation Handling Act (Alberta) and Regulations</li> <li>• <i>Federal Storage of PCB Material Regulations</i>.</li> </ul>
Mercury-containing equipment	<ul style="list-style-type: none"> <li>• Canada Wide Standard for Mercury Containing Lamps.</li> <li>• Canada Wide Standards for Mercury Emissions.</li> <li>• Government of Alberta <i>Management of Used Mercury Vapour Lams and Mercury Containing Articles</i> (May 2012).</li> </ul>
Ozone-depleting substances and other Halocarbons	<ul style="list-style-type: none"> <li>• Federal <i>Halocarbon Regulations</i>.</li> <li>• Federal Halocarbon Regulations Compliance Guide - Refrigeration &amp; Air-conditioning Systems.</li> <li>• Environmental <i>Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems</i>, Government of Canada.</li> <li>• Federal Halocarbon Regulations Compliance Guide - Fire Extinguishing Systems.</li> <li>• Province of Alberta Environmental Protection and Enhancement Act – Ozone Depleting Substances and Halocarbons Regulation, 181/2000.</li> </ul>
Radioactive Materials	<ul style="list-style-type: none"> <li>• <i>Hazardous Products Act, R.S., c. H-3</i>.</li> <li>• <i>Transportation of Dangerous Goods Act, 1992</i>.</li> <li>• <i>Nuclear Safety and Control Act</i>.</li> <li>• <i>Transport and Packing of Nuclear Substances Regulations, SOR/2000-208</i>.</li> <li>• <i>Controlled Products Regulations, SOR/88-66</i>.</li> <li>• <i>Nuclear Substances and Radiation Services Regulations, SOR/2000-207</i>.</li> <li>• <i>General Nuclear Safety and Control Regulations, SOR/2000-202</i>.</li> <li>• <i>Radiation Protection Regulations, SOR/2000-203</i>.</li> </ul>

Potential Hazardous Material	Regulations, Guidelines, Codes of Practice and Other Reference Documentation
Silica	<ul style="list-style-type: none"> <li>• <i>Crystalline Silica at the Work Site</i> – Occupational Health and Safety Bulletin CH059, Work Safe Alberta, November 2009</li> </ul>

### Asbestos-Containing Materials

Regulatory control of asbestos in the workplace is governed by Alberta's Occupational Health and Safety Act, Regulation, and Code and the Alberta Asbestos Abatement Manual, dated October 2012.

For the purposes of managing worker exposure during building maintenance, renovation, and demolition, the Alberta Asbestos Abatement Manual defines an asbestos-containing material (ACM) as a material which contains 1.0% or more by volume of asbestos.

ACMs must be removed prior to any demolition or renovation that may potentially disturb the asbestos-containing materials in accordance with Alberta Government's *Asbestos Containing Materials (ACMs) in Buildings to be Demolished* document (ASB003, dated February 2017).

The Alberta waste regulations require the disposal of asbestos waste in a double sealed container, properly labeled and free of cuts, tears or punctures. The waste must be disposed of at provincially licensed waste property, which has been properly notified of the presence of asbestos waste.

The transport of asbestos waste to the disposal site is covered by the federal Transportation of Dangerous Goods Act. Asbestos waste is to be handled by a licensed waste hauler.

### Vermiculite

Vermiculite is a naturally occurring clay-mineral that expands to many times its original volume when subjected to high temperature. The expanded material is light-weight, non-combustible (fire-resistant) odourless, and absorbent. Vermiculite has been used in numerous applications, including loose-fill insulation in attics and masonry block wall construction.

Health Canada issued a health bulletin in March 2004 to inform Canadians about the potential risks associated with certain asbestos-containing vermiculite insulation. However, there is currently no evidence of risk if insulation is undisturbed and sealed behind wallboards and floorboards, isolated in an attic or otherwise kept from exposure to the interior environment.

## Paint

In Canada, the Surface Coating Materials Regulations (SOR/2005-109) under the federal Hazardous Products Act provides a concentration of lead that must not be exceeded in surface coatings that are presently sold in this country. This value was reduced from 600 ppm to 90 ppm in October 2010. However, it is important to note that there is not a direct correlation between the concentrations of lead in a material to the potential occupational exposure if the material is disturbed.

Guidance for handling lead containing materials is provided in Work Safe Alberta Occupational Health and Safety Bulletin "Lead at The Work Site", (November 2013)

Worker exposures should not exceed the time-weighted average (TWA) occupational exposure limit (OEL) for airborne lead dust or fumes of  $0.05 \text{ mg/m}^3$ . The TWA is the applicable regulated occupational exposure limit in NB and is based on the time-weighted average concentration for a conventional 8-hour work day and a 40-hour work week, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse health effects.

Furthermore, in the absence of a Alberta guideline, the Ontario Ministry of Labour (MOL) document entitled Guideline: Lead on Construction Project (April 2011), provides procedures for removing lead paint where work on lead containing materials are likely to produce airborne lead dust or fumes, for example during welding, torch cutting, sanding and sand blasting. If these operations are likely to occur during building renovations or demolition, it is recommended that the removal of lead paint be carried out in accordance with procedures outlined in the Ontario guideline.

## Lead

Lead is soft, malleable, a poor conductor of electricity and has a low melting point. It may be used in its pure metallic form or combined chemically with other elements to form lead compounds. Metallic lead is used to make products such as lead solder, electric storage batteries, ammunition, radiation shields, pipes and sheathes for electric cables. Metallic lead is sometimes combined with other metals such as copper, tin and antimony as lead alloys for use in the manufacture of a variety of metal products.

Organic lead compounds contain a lead atom covalently bonded to carbon. Common examples of organic lead compounds include lead "soaps" such as lead oleates, high-pressure lubricants, and anti-knock agents in gasoline.

Inorganic lead compounds (or lead salts) result when lead is combined with an element other than carbon. Examples are lead oxide, lead chromate, lead carbonate and lead nitrate. Inorganic lead compounds may occur as solids or in solutions, and are used in insecticides, pigments, paints, glasses, plastics and rubber compounds. Paint manufacturers historically added lead to paint as a pigment and to accelerate drying times.

Lead may affect the health of workers if it is in a form that may be inhaled, ingested or absorbed through the skin. Lead dust consists of small, solid particles of metallic lead or lead compounds that are generated by sanding, grinding, polishing and sawing operations. Lead fume is produced in significant amounts when solid lead or materials containing lead are heated to temperatures above 500 °C, as in welding and flame cutting or burning.

### Mercury

The Government of Alberta has developed the Acceptable Industry Practice for the "*Management of Used Mercury Vapour Lamps and Mercury Containing Articles*" (May 2012). Mercury is commonly found in buildings as mercury vapour lighting, in thermometers, thermostats and some electrical switches. Mercury can also be found in minor amounts in fluorescent lamp tubes and in paints and adhesives. Mercury or mercury vapour within light fixtures, thermometers, thermostats and electrical switches poses no risk to workers or occupants provided the mercury containers remain intact and undisturbed. Prior to demolition, remove mercury containers and store in a safe location.

Canadian Council of Ministers of the Environment (CCME) has developed Canada-Wide Standards for mercury-containing lights and mercury emissions. The goal of the standards is to reduce release of mercury into the environment.

### Polychlorinated Biphenyls (PCBs)

The past use of PCBs (as coolants and lubricants) in electrical equipment such as transformers, fluorescent light ballasts, and capacitors was common throughout North America. From the 1930s to the 1970s, PCBs were widely used in a number of industrial materials, including sealing and caulking compounds, inks and paint additives. PCBs do not readily degrade and have been identified to bioaccumulate. In 1976, the federal *Environment Contaminants Act* prohibited the use of PCBs in heat transfer equipment installed after September 1, 1977, and in transformers and capacitors installed after July 1, 1980. For federal sites, the PCB Regulations (2008) applies.

The Environment Canada document "Identification of Lamp Ballasts Containing PCBs" Report EPS 2/CC/2 (revised) August, 1991, can be used as a guide to identify PCB capacitors in fluorescent light ballasts and high intensity discharged (HID) light fixtures.

As of September 5, 2008, under Subsection 93(1) of the *Canadian Environmental Protection Act*, (CEPA), Federal PCB regulations impose specific deadlines for the elimination of all PCBs in concentrations at or above 50 mg/kg under the Canada Gazette Part II (SOR/2008-273). The regulation requires the elimination of all PCBs and PCB-containing materials currently in-use and limits the period of time PCB materials can be stored before being eliminated. Other aspects of the regulation govern the labelling and reporting of stored PCB materials and equipment as well as improved practices for the management of PCBs that remain in use (i.e., those with PCB concentrations less than 50 mg/kg) until their eventual elimination.

### ODSs and other Halocarbons

Ozone-depleting substances (ODSs) are chemical agents such as specific chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs) used in various refrigeration equipment including air-conditioning, heat pump, refrigeration or freezer units that can damage the ozone layer. They have also been used in solvents, as aerosol additives in the production of foam insulation and in fire extinguishing equipment. The use of refrigerants (including those that are ODSs or contain ODSs) is regulated by Alberta Regulation 181/2000, *Ozone Depleting Substances and Other Halocarbons Regulation – Environmental Protection and Enhancement Act*. The regulation imposes restrictions on the purchasing of refrigerants and on the servicing, dismantling, disposing of or decommissioning of equipment containing refrigerants or halon fire extinguishing agents.

### Radioactive Materials

Radioactive components are listed under the current Federal Transportation of Dangerous Goods Act (TDG Act). Substances with a specific radioactivity greater than 70 kBq/kg are included under Class 7, Radioactive Materials within the TDG Act and must be transported in accordance with the provisions under the Act. The Nuclear Safety and Control Act (1997, c.9), Nuclear Substances and Radiation Devices Regulations (SOR/2000-207) states that radioactive substances that do not contain more than 185 kBq of americium 241 or where it is in a commercial or industrial facility, more than 740 kBq of americium 241 is considered an exempt radioactive source under the Act. It should be noted that these levels may be reached if more than 20 radioactive smoke detection devices are collected and stored together.