DEMOLITION WASTE SURVEY
ENVIRONMENT CANADA FACILITY
1082 AIRPORT ROAD, IQALUIT, NUNAVUT

Prepared for:

Public Works and Government Services Canada
9700 Jasper Avenue, Suite 1000
Edmonton, Alberta
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Prepared by:

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350600-505

5 November 2013

Public Works and Government Services Canada
Western Region – Real Property Services
5th floor, Telus Plaza North
10025 Jasper Avenue
Edmonton, AB
T5J 1S6

Attention: Ms. Liana Smith
Project Officer

Re: **Demolition Waste Survey**
Environment Canada Facility
1082 Airport Road, Iqaluit, Nunavut

Dear Ms. Smith:

We are pleased to submit our report on the above.

We trust that the enclosed is suitable for your current purposes. Please call if you have any questions.

Yours very truly,

SENES CONSULTANTS

Charles Gravelle, P.Eng. (ON, NT/NU)
Senior Project Manager

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AT REAR OF REPORT

1.0 INTRODUCTION

SENES Consultants Limited (SENES) was retained by Public Works and Government Services Canada (PWGSC) to conduct a demolition waste survey of the Environment Canada Trailer Facility, located at 1082 Airport Road, Iqaluit in Nunavut (see Figure 1). The building in question is a single storey wood frame trailer structure, with metal cladding and gently sloped metal roof. The interior is typically sheeted with gypsum board or wood/cellulose on the walls and ceiling and vinyl sheet flooring and carpet on the floor.

It is our understanding that the primary goal of the demolition waste survey is to identify and quantify all building materials and infrastructure including hazardous building materials and associated components of the Environment Canada Trailer Facility prior to demolition.

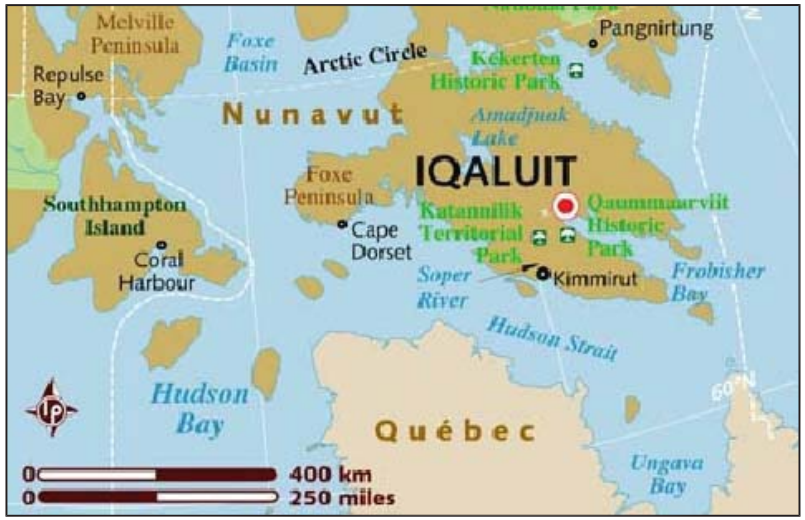
The design construction floor plan is provided in Appendix A while photographs of the primary building features and building materials are provided in Appendix B.

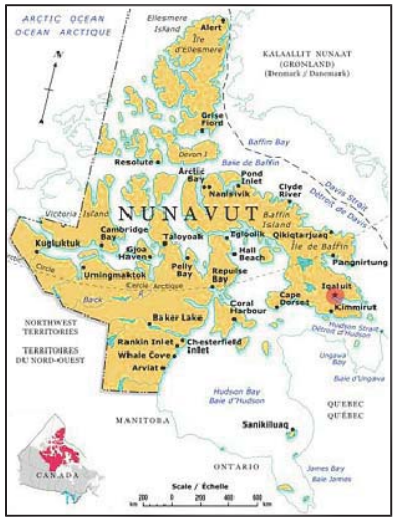
1.1 SCOPE OF WORK

The scope of work for our investigation included:

- obtaining representative bulk samples of materials suspected of containing asbestos and samples of paint suspected of containing lead;
- laboratory analyses of bulk samples for asbestos content and analysis of paint chip samples for lead content; and
- prepare a comprehensive report that details the type and amount of hazardous and non-hazardous material within the above mentioned facility, and;
- prepare as part of this comprehensive report, a Class B Cost Estimate for the abatement and demolition works for the site.

The Class B Estimate for the abatement and demolition work will be provided under separate cover. The field component of the demolition waste survey was undertaken by our Mr. Jason Mauchan and Ms. Kelly Smith on 26 and 27 August 2013.





SENES Consultants

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

DEMOLITION WASTE SURVEY

ENVIRONMENT CANADA, BLDG. 1082
IQALUIT, NUNVUT

SITE LOCATION

Drawn By:	I.S.Z.	Approved By:	J.M.	Project No:	350600-505
Date:	SEPT. 2013	Scale:	AS SHOWN	Drawing No:	FIGURE 1

Sep 19, 2013 – 2:44pm – USER plandry
Z:\350000 Series\350600-505 Iqaluit\dwg\350600-505 FIGURE 3.dwg

2.0 BACKGROUND INFORMATION ON HAZARDOUS MATERIALS

The Government of Nunavut *Occupational Health & Safety Regulations* requires that an employer provide any information, instruction, training and supervision that is necessary to protect the health and safety of workers. "Hazardous materials" which require special handling during construction or demolition activities include asbestos, lead, silica, mercury, polychlorinated biphenyls (PCBs), ozone-depleting substances (ODS), man-made mineral fibres (MMMF) mould and urea formaldehyde foam insulation (UFFI).

Other regulatory requirements (and guidelines) which apply to control of exposure to hazardous materials are referenced in the sections below.

2.1 ASBESTOS

Asbestos has been widely used in buildings, both in friable applications (materials which can be crumbled, pulverized or powdered by hand pressure, when dry) such as pipe and tank insulation, sprayed-on fireproofing and acoustic texture material and in non-friable manufactured products such as floor tile, gaskets, cement board and so on. The use of asbestos in friable applications was curtailed around the mid-1970s and, as such, most buildings constructed prior to about 1975 contain some form of friable construction material with an asbestos content. The use of asbestos in certain non-friable materials continued beyond the mid-1970s.

Control of exposure to asbestos is governed in Nunavut by the *Guideline for the Management of Waste Asbestos*. Disposal of asbestos waste (friable and non-friable materials) is governed by the *Guideline for the General Management of Hazardous Waste in Nunavut*.

Public Works and Government Services Canada (PWGSC) Departmental Policy 057 – *Asbestos Management* provides requirements for asbestos management in federal buildings. This document states:

- *"Public Works and Government Services Canada shall comply with all federal, provincial, territorial and municipal regulations, statutes and requirements with regard to asbestos containing materials (ACM) in government owned or leased buildings and facilities."*

PWGSC DP 057 – *Asbestos Management* - defines asbestos-containing material and classifies asbestos work operations into three types (Type 1,2 and 3) and specifies procedures to be followed in conducting Type 1 and 2 asbestos work. Type 3 procedures are not included in the standard procedures provided in DP 057.

DP 057 states that procedures for Type 3 work are developed for the particular work to be undertaken, and the specific circumstances and worksite. These procedures are to be developed in compliance with the National Master Specification, Section 13282, Asbestos Abatement (maximum precautions).

The Nunavut Occupational Health and Safety Regulations (Draft – September 1, 2010) contains requirements for asbestos management and abatement in Part 24. Sections of this draft regulation state the following with respect to asbestos abatement and demolition:

> "Asbestos process" means any activity that may release asbestos dust, and includes
> (a) the sawing, cutting or sanding of asbestos-containing materials,
> (b) the repair, maintenance, replacement or removal of asbestos surfaces,
> (c) the cleaning or disposal of asbestos materials,
> (d) the mixing or application of asbestos shorts, cements, grouts, putties or similar compounds,
> (e) the storing or conveyance of materials containing asbestos, and
> (f) the demolition of structures containing asbestos.
>
> Where an asbestos process is undertaken, an employer shall ensure that
> (a) the area is effectively isolated or otherwise enclosed to prevent the escape of asbestos dust to any other part of the work site;
> (b) a warning notice is conspicuously displayed indicating that asbestos work is in progress;
> (c) all asbestos-containing materials removed are placed in appropriate receptacles that are impervious to asbestos and that are clearly labelled "Asbestos"; and
> (d) the receptacles referred to in paragraph (c) are handled and transported in a manner that will protect them from physical damage.

DP 057 and the Nunavut Draft Regulation classify removal of more than a minor amount of friable asbestos-containing material as "Type 3" and "High Risk" work, respectively.

2.2 LEAD

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints.

The *Environmental Guideline for Waste Lead and Lead Paint* – Department of the Environment, Government of Nunavut revised March 2011 states that "Products that contain lead in excess of 500 parts per million (0.05% by weight) are considered hazardous waste and shall be managed in accordance with this guideline".

2.3 MERCURY

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), "silent switches" and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four foot) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been used by many manufacturers historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The Nunavut *Occupational Health and Safety Regulations (Draft) September 2010* sets a contamination limit of 0.025mg/m^3(for inorganic forms, including metallic mercury).

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word "TOP" stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

Waste light tubes generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of The

Environmental Guideline for Mercury-Containing Products and Waste Mercury – Department of the Environment, Government of Nunavut November 2010.

Waste mercury from mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g., switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

2.4 SILICA

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

2.5 PCBS

Any equipment containing PCBs such as transformers, switchgear, light ballasts and capacitors, which is removed from service due to age, failure or as a result of decommissioning, is considered to constitute a PCB waste. Although current federal legislation (effective 1 July 1980) has prohibited the manufacture and sale of new equipment containing PCBs since that time, continued operation of equipment supplied prior to this date and containing PCBs is still permitted. Handling, storage and disposition of such equipment is, however, tightly regulated and must be managed in accordance with provincial and federal government requirements as soon as it is taken out of service or becomes unserviceable.

In most institutional, commercial facilities and in smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and HID light ballasts. Small transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

PCB wastes are prohibited from shipment to disposal facilities in the United States. Out-of-Territory facilities that will accept PCB waste solids and liquids for destruction include the Alberta Special Waste Management facility operated by Earth Tech (Canada) Inc. in Swan Hills, Alberta, and the Bennett Environmental facility in Quebec.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCBs Regulations* (discussed below). Amendments to the federal PCB regulations were passed into law on 17 September 2008. The key aspects of the new *PCBs Regulations* (superseding the Chlorobiphenyls Regulations and the Storage of PCB Materials Regulations), enacted under the *Canadian Environmental Protection Act* (CEPA), are the establishment of end of use dates for all equipment containing PCBs and storage/disposal requirements.

Exceptions are provided for fluorescent light ballasts and pole-mounted transformers where an end of use date of 31 December 2025 has been specified. The regulations also limit the storage of PCB material to a maximum of one year from the date the regulations came into effect or one year following removal of the equipment from service, whichever is the later date.

The regulations also allow for the filing of applications for exemption from the applicable end of use dates specified above. There are a number of circumstances under which an application may be filed. The maximum end of use date cannot, however, extend beyond 31 December 2014. In addition to the above, there are several other requirements, including filing of annual reports, notification for changes in inventories for stored PCBs, and so forth.

2.6 OZONE-DEPLETING SUBSTANCES

The Federal Halocarbon Regulations, 2003 (FHR 2003) were published in August 2003 under the authority of the Canadian Environmental Protection Act, 1999. The purpose of the FHR 2003 is to reduce and prevent emissions of ozone-depleting substances and of their halocarbon alternatives to the environment from air-conditioning, refrigeration, fire-extinguishing and solvent systems that are:

- located on federal or aboriginal lands; or
- owned by federal departments, boards and agencies, Crown corporations, or federal works and undertakings.

Contractor responsibilities under the FHR 2003 include the following:

- only a certified and licensed technician may install, service, leak test or charge halocarbon containing equipment;

- if a leak test is conducted on a piece of air conditioning or refrigeration equipment, the contractor is to affix a notice containing all of the information as required in Schedule 2, item 2 of the FHR 2003, including: a) name and address of owner of the system, b) name of operator of the system, c) specific location of the system, d) description of the system, e) name of certified person, f) certificate number, g) name of employer of certified person, h) type of halocarbon in the system, i) charging capacity of the system, and j) date of last two leak tests;

- no halocarbons are to be knowingly released from a refrigeration or air conditioning system, or from a fire extinguishing system (unless to fight a fire). If any work is done on an air conditioning, refrigeration, or fire extinguishing system that may result in a release of a halocarbon, the halocarbon shall first be recovered into a container designed for that purpose;

- in the event that a halocarbon-containing system must be charged, a leak test is to first be performed. If a leak is detected for a halocarbon-containing system, the owner of the equipment (and contract authority) must be informed of the leak as soon as possible. In the case of a leak resulting in a release of greater that 100 kg, or of unknown weight from a unit with a capacity equal to or greater than 100 kg, the contractor must report the release within 24 hrs to Environment Canada at (867) 920-8130 via the Northwest Territories Department of Environment and Natural Resources emergency spill line for the Northwest Territories and Nunavut; and

- upon servicing a halocarbon-containing system, the service log book for the unit is to be completed by the contractor. Before dismantling, decommissioning or destroying any halocarbon-containing system; the halocarbon(s) will be recovered and a notice shall be affixed to the system. The notice shall meet the requirements listed in Schedule 2, Item 3 of the FHR 2003.

2.7 MAN-MADE MINERAL FIBRES

Man-made mineral fibres (MMMF), also known as Synthetic Vitreous Fibres (SVF), include mineral wool (rock wool and slag wool), glass wool (fibre glass) and refractory ceramic fibres (RCF). MMMFs have been produced and widely used in Canada for the past 60 years and are commonly used in the construction industry as insulation and fire protection material.

Measures to control worker exposure and the spread of dust created during the disturbance of MMMF-containing materials are provided in *Synthetic Vitreous Fibres Guidelines for Construction*, 2005, a document prepared by The Construction Safety Association of Ontario (CSAO). The following recommendations are made in the CSAO guideline for the removal, maintenance and demolition of materials which contain MMMF:

- Where practicable, the insulation should be lightly misted with water before and during removal.
- The work area should be isolated by safety tape and warning signs.
- In most situations, a United States National Institute for Occupational Safety and Health (NIOSH) approved N95 air-purifying respirator, dust-resistant safety goggles, and disposable coveralls will provide adequate protection. However, if the activity generates substantial amounts of dust, a more protective respirator may be necessary. For example, major demolition may require a full-facepiece respirator or a supplied-air respirator instead of a half-facepiece air-purifying respirator.
- All waste material should be placed in covered, sealed waste disposal containers as it is removed. If the material is wet, it should be placed in waterproof containers.
- Material to be removed should be handled carefully and not thrown about. Rough handling will release dust and fibres into the air.
- Before maintenance or removal, ventilation duct openings and other openings that could permit the spread of fibres should be temporarily sealed.

- Work areas should be kept clean and scrap material removed as often as necessary to keep the area clean.

2.8 MOULD

Moulds are forms of fungi that are found everywhere both indoors and outdoors all year round. Outdoors, moulds live in the soil, on plants and on dead and decaying matter. More than 1000 different kinds of indoor moulds have been found in buildings. Moulds spread and reproduce by making spores, which are all small and light-weight, able to travel through air, capable of resisting dry, adverse environmental conditions, and hence capable of surviving a long time. Moulds need moisture and nutrients to grow and their growth is stimulated by warm, damp and humid conditions.

Recommended work practices are outlined in *Mould Guidelines for the Canadian Construction Industry*. Standard Construction Document CCA 82 2004. Canadian Construction Association.

2.9 UFFI

Urea formaldehyde foam insulation (UFFI) is a polymer manufactured at point-of-use by blending urea formaldehyde resin with a phosphoric acid catalyst and compressed air at a nozzle tip. This nozzle was used to inject the freshly mixed foam product into enclosed wall cavities. UFFI was introduced in Canada in the l970s. In response to concerns about the health effects of formaldehyde gas, the installation of UFFI was banned in Canada in 1980.

2.10 HEATING OIL

Heating oils are regulated under the Used Oil and Waste Fuel Management Regulations provisions of the Nunavut Environmental Protection Act. In practice heating oil is considered a resource and is generally recovered and recycled where possible. For the purposes of this program we have assumed that the above ground tank located outside of the facility will be decommissioned and reused or sold by the demolition contractor.

2.11 RADIOACTIVE MATERIALS

Aside from nuclear and biomedical industries, radioactive materials may be present in very small amounts within glow-in-the-dark compasses and watch faces, gas lamp mantles and in smoke

detectors. Smoke detectors typically contain 1 microcurie of Americium-241. Standard smoke detectors do not require a radioactive licence and are accepted as segregated items at the Iqaluit landfill.

3.0 PROPERTY DESCRIPTION

The subject property is located on the east side of Airport Road in the City of Iqaluit. The property is approximately is 0.6 hectares (1.5 acres) with a single storey wood frame trailer structure, with metal cladding. The building is on City services for water, sewer and electrical power. The electric power comes to the building from a pole to the north east of the subject site. One transformer was observed on the pole. The sewer and water connection are believed to enter the building from the north side however this will have to be confirmed in the field at the time of demolition. The building is heated by one oil-fired forced air furnace in the mechanical room. There is one *1,135 L* oil tank located on the exterior of the building against the north wall. The tank is like new condition and there is no evidence of leakage.

The roof construction is metal cladding, and likely, tyvek building paper over plywood on a 50 x 100 mm wood frame wall with 100 mm fiberglass insulation, polyethylene vapour barrier, 12 mm plywood, with cellulose ceiling tiles on the inside.

Wall construction is typical for this type of structure. The main floor exterior walls are 50 x 100 mm wood construction and are comprised of metal siding, 50 mm of Styrofoam, 12 mm plywood, 100 mm fiberglass insulation (between the wood studs and 12 mm drywall, while the interior walls are 12 mm drywall on both sides of a 50 x 100 mm wood frame wall.

The interior is generally covered with carpeting with the exceptions being the kitchen, bathrooms and foyers which have vinyl sheet flooring. Vinyl sheet flooring was observed throughout below the carpet. In the kitchen and bathrooms there were two layers of vinyl sheet flooring observed.

The ceiling is painted wood or cellulose ceiling tiles/panels.

4.0 RESULTS AND DISCUSSION

4.1 ASBESTOS

During the course of our hazardous materials survey, representative bulk samples of material were collected by SENES staff. The samples were forwarded for analysis to EMSL Canada Inc. in Mississauga, Ontario, a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory. Results of bulk sample analysis for asbestos content are provided in Table 4.1. Laboratory reports are provided in Appendix C.

TABLE 4.1

SUMMARY OF RESULTS OF ANALYSIS OF BULK SAMPLES FOR ASBESTOS CONTENT

SAMPLE N^{o}	SAMPLE LOCATION	SAMPLE DESCRIPTION	ASBESTOS CONTENT
JC-1A	Interior	Drywall Joint Compound (Wall)	None detected
JC-1B	Interior	Drywall Joint Compound (Wall)	None detected
JC-1C	Interior	Drywall Joint Compound (Wall)	None detected
JC-1D	Interior	Drywall Joint Compound (Wall)	None detected
JC-1E	Interior	Drywall Joint Compound (Wall)	None detected
TH-1A	Exterior	Foam Insulation (Under Metal Cladding)	None detected
TH-1B	Exterior	Foam Insulation (Under Metal Cladding)	None detected
TH-1C	Exterior	Foam Insulation (Under Metal Cladding)	None detected
MS-1A	Interior	Baseboard/Carpet Mastic	None detected (PLM) None detected (TEM)
MS-1B	Interior	Baseboard/Carpet Mastic	None detected
MS-1C	Interior	Baseboard/Carpet Mastic	None detected
CLK-1A	Exterior	Joint Caulking	None detected (PLM) None detected (TEM)
CLK-1B	Exterior	Joint Caulking	None detected
CLK-1C	Exterior	Joint Caulking	None detected
CLK-2A	Interior	Window Caulking	None detected (PLM) None detected (TEM)
CLK-2B	Interior	Window Caulking	None detected

SAMPLE Nº	SAMPLE LOCATION	SAMPLE DESCRIPTION	ASBESTOS CONTENT
CLK-2C	Interior	Window Caulking	None detected
VSF-1A	Interior	Vinyl Sheet Flooring w/ Paper Backing (Under Carpet)	40% chrysotile
VSF-2A	Interior	Vinyl Sheet Flooring w/ Paper Backing (Outside Mechanical Room)	40% chrysotile
VSF-3A	Interior	Vinyl Sheet Flooring w/ Paper Backing (Kitchen/Washrooms)- Paper Backing	None detected (PLM) None detected (TEM)
VSF-3A	Interior	Vinyl Sheet Flooring w/ Paper Backing (Kitchen/Washrooms) - Vinyl	None detected (PLM) None detected (TEM)

NOTES:

< = less than.
"Asbestos-containing material" is defined as material that contains 0.5% or more asbestos by dry weight.
Chrysotile = Chrysotile asbestos.

Bulk samples were analyzed by Polarized Light Microscopy (PLM) analysis, except where "TEM" is noted, in which case Transmission Electron Microscopy analysis was also performed.

Determination of the locations of asbestos-containing material was made based on the results of bulk sample analysis, visual observations and physical characteristics of the applications as well as our knowledge of the uses of asbestos in building materials. The locations of the asbestos-containing materials are shown in place on Figure 2.

Based on visual observations and results of laboratory analyses of samples collected by SENES, the following asbestos-containing materials (i.e. - >1% asbestos) were found to be present in the subject building:

- Paper backing under vinyl sheet flooring throughout the trailer (including under carpeted areas, and under the Kitchen/Washroom non-asbestos-containing vinyl sheet flooring);

Although DP 057 classifies removal of vinyl sheet flooring as a Type 1 operation, it would be practical to treat the entire building as a Type 2 work area so as to control the spread of dust (asbestos and silica) from abatement and interior demolition activities. Note that vinyl sheet flooring itself is considered to be a non-friable product. The paper backing on the vinyl sheet flooring however, is a friable material. The entire floor surface assembly is to be wetted and is to be removed intact to prevent disturbance of the paper backing.

Asbestos may also be present in materials which were not sampled during the course of the asbestos survey carried out by SENES, including, but not limited to, roofing materials, gaskets in piping, internal components of boilers, components of electrical equipment (e.g. electric wiring insulation, non-metallic sheathed cable, electrical panel partitions, arc chutes, high-grade electrical paper, etc.), and/or in locations that are presently inaccessible (e.g., in pipe chases, above suspended gypsum board ceilings, etc.). Confirmatory testing of any such materials could be undertaken as the need arises (i.e., at the time of demolition) or the materials can be assumed to contain asbestos based on findings in adjacent areas.

If any materials which may contain asbestos and which were not tested during the course of the designated substances survey are discovered during any construction activities, the work shall not proceed until such time as the required notifications have been made and an appropriate course of action is determined. For example, roofing materials, if required, should be tested for asbestos prior to demolition.

4.2 LEAD

A total of five (5) paint chip samples were collected by SENES during the course of the demolition work survey. Samples were submitted to Maxxam Analytics Inc. in Mississauga a CALA accredited laboratory for analysis of lead content. The results of analysis are presented in Table 4.2.

Lead was not detected (i.e. less that the limit of detection of 50 mg/kg) in any of the paint samples analyzed.

If paint (or other lead-containing coatings or materials) will be disturbed during the course of construction work, the measures and procedures outlined in the Nunavut Environmental Guideline for Waste Lead and Lead Paint (March 2011) should be followed.

Lead may also be present in the glazing on ceramic tiles and the solder on the sweated-on joints between copper pipe and fittings.

LEGEND:

RM-6 FUNCTIONAL AREA

THROUGHOUT FUNCTIONAL AREA

VSF ASBESTOS VINYL SHEET FLOORING

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PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

LOCATIONS OF ASBESTOS-CONTAINING MATERIALS

ENVIRONMENT CANADA, BLDG. 1082
IQALUIT, NUNVUT

FLOOR PLAN

Drawn By: I.S.Z.	Approved By: J.M.	Project No: 350600-505
Date: SEPT. 2013	Scale: AS SHOWN	FIGURE 2

Sep 19, 2013 – 2:41pm – USER plandry
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TABLE 4.2

SUMMARY OF RESULTS OF ANALYSES OF PAINT SAMPLES FOR LEAD CONTENT

SAMPLE Nº	SAMPLE LOCATION	SAMPLE DESCRIPTION	LEAD CONTENT
PT-1	Interior	White Wall Paint - Wood	<50 mg/kg
PT-2	Exterior	Grey Trim Paint – Wood	<50 mg/kg
PT-3	Interior	White Wall Paint – Bookcase	<50 mg/kg
PT-4	Interior	White Wall Paint	<50 mg/kg
PT-5	Exterior	White Wall Paint – Metal	<50 mg/kg

NOTE:

< = less than.
1 mg/kg = 1 part per million (ppm)

4.3 MERCURY

During the course of our site inspections, sixty-four interior fluorescent light tubes and two exterior H.I.D. lights were observed. Mercury should be assumed to be present as a gas in all fluorescent light tubes. Four mercury thermostats were observed in the building. The locations of the fixtures that contain mercury are shown in place on Figure 3.

Any silent light switches or tilt switches should be checked for mercury at the time of demolition.

Waste light tubes generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of The *Environmental Guideline for Mercury-Containing Products and Waste Mercury* – Department of the Environment, Government of Nunavut November 2010.

4.4 SILICA

Materials observed in the study areas which should be considered to contain silica included gypsum board, drywall joint compound and concrete.

LEGEND:

HID EXTERIOR HID LIGHT

Hg MERCURY CONTAINING THERMOSTAT

SENES Consultants

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

LOCATIONS OF MERCURY-CONTAINING EQUIPMENT

ENVIRONMENT CANADA, BLDG. 1082
IQALUIT, NUNVUT

FLOOR PLAN

Drawn By: I.S.Z.	Approved By: J.M.	Project No: 350600-505
Date: SEPT. 2013	Scale: AS SHOWN	FIGURE 3

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Measures and procedures recommended for demolition activities, including dismantling and break up of concrete, masonry, etc. are as follows:

- workers exposed to silica should wear a half-mask particulate respirator with N, R-, or P-series filters and 95, 99 or 100% efficiency;
- clean up after each operation should be done to prevent dust containing silica from spreading;
- compressed air should not be used for removing dust from clothing;
- workers exposed to silica should be provided with or have access to washing facilities equipped with clean water, soap, and individual towels;
- silica dust on personal protective clothing and equipment should be removed by damp wiping or HEPA vacuuming;
- contaminated personal protective clothing and equipment should be handled with care to prevent disturbing the silica dust and the generation of airborne silica dust;
- washing facilities and laundering procedures must be suitable for handling silica-contaminated laundry; and
- warning signs should be posted in sufficient numbers to warn of the silica hazard. There should be a sign, at least, at each entrance to the work area. The signs should display the following information in large, clearly visible letters:
    - there is a silica dust hazard;
    - access to the work area is restricted to authorized persons;
    - respirators must be worn in the work area.

4.5 PCBs

Fluorescent lights were observed throughout the facility during the course of our site inspections. Light ballasts, such as those associated with the type of fluorescent lights identified on site, may contain PCBs.

Thirty-two fluorescent light ballasts were observed in the subject building. The ballasts will have to be examined by a licensed electrician prior to disposal to confirm the presence of PCBs.

The electric power comes to the building from a pole to the north east of the subject site. One transformer was observed on the pole which is not part of the subject property. Switchgears were observed in the mechanical room. No other PCB-containing equipment or materials were identified during the waste survey.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCBs Regulations* (discussed above in Section 2.5 of this report).

4.6 Ozone-Depleting Substances

One refrigerator/ freezer unit was observed during the inspection. As this equipment appears to be in good condition and portable it is likely to be moved to a new location. However if any ODS-containing equipment is to be removed and designated for disposal as scrap it must be drained of its contents by a licensed technician and equipped with a label indicating that the equipment no longer contains any refrigerant (see Section 2.6 of this report).

4.7 Man-Made Mineral Fibre

Glass fibre insulation was observed in the wall spaces of the exterior walls.

The procedures outlined in Section 2.7 of this report should be followed during handling of this insulation.

4.8 MOULD

Mould was observed in several locations throughout the building including on interior surfaces and in wall cavities. Furniture in the structure as well as the stove and fridge had heavy mould impact. As such, the kitchen equipment and furniture items were included within material quantities for disposal.

Mould should be assumed to be present on surfaces inside wall cavities (e.g. on gypsum board, etc.), and possibly in other "hidden" areas. During demolition, any mould-impacted materials should be misted or wetted with water to reduce airborne dust. The materials should then be placed into a disposal bin and sealed. Workers involved in the demolition of mould-impacted materials should wear appropriate protective clothing and equipment and follow decontamination practices as outlined in the Canadian Construction Association Standard Construction Document CCA-82 2004 – Mould guidelines for the Canadian Construction Industry.

4.9 UFFI

No UFFI was observed on site.

4.10 HEATING OIL

For the purposes of this program we have assumed that the heating oil will be either recovered and transferred, by EC, to one of their other facilities within Iqaluit or the demolition contractor will recover the fuel for their own use. The tank would be managed in a similar manner.

4.11 RADIOACTIVE MATERIALS

Fourteen smoke detectors were observed in the building. The locations of the fixtures that are shown in place on Figure 3. Smoke detectors typically contain 1 microcurie of Americium-241. Standard smoke detectors do not require a radioactive licence and are accepted as segregated items at the Iqaluit landfill.

5.0 ASSESSMENT OF NON-HAZARDOUS MATERIAL

Non-hazardous material observed in the building consisted of wood in the form of 50 x 100 mm wood studs and joists, roof decking and wall sheathing in the form of plywood, interior doors and frames, stairs and rails. The exterior doors, wall siding and roof siding are metal. Other items are drywall, carpets, baseboard radiators and copper pipes, porcelain bathroom fixtures, kitchen cupboards, stove, dishwasher, refrigerator and windows.

A summary of the various material areas and volumes is tabulated in Table 5.1. Given that the bulk of the construction materials were sized in imperial units, both imperial and metric units for volume are provided.

TABLE 5-1
MATERIAL QUANTITIES

Volume Calculations for Demolition																	
Item		**calculation**	**Wood**		**Drywall**		**ACM**		**Metal**		**Ceramic**		**Insulation**		**Other**		**Items**
Building Dimensions			**ft^3**	**m^3**	**ft^3**	**m^3**	**ft^3**	**m^3**	**ft^3**	**m^3**	**ft^3**	**m^3**	**ft^3**	**m^3**	**ft^3**	**m^3**	**each**
Two trailers connected																	
Trailer near road length in metres	19																
Trailer near road width in metres	7																
Trailer away from road length in metres	16																
Trailer away from road width in metres	9																
Exterior height of building in metres	4.4																
Interior height of building in metres	2.44																
Surface Area of roof in m^2	285																
Building area in m^2	**277**																
Building perimeter in metres	**72**																
ASPHALT																	
None observed. Parking lot is gravel																	
CONCRETE																	
None observed, foundation is wood 6"x6"x4' nests of 9																	
METAL																	
Clad Siding																	
Assume entire perimeter is 0.003 m thick		72 m x 4.4 m x 0.003 m								0.95							
Clad Roofing - Assume entire roofing is 0.003 m thick		285 m^2 x 0.003 m								0.85							
Main entrance accessibility ramp and stairs										0.20							
Main entrance accessibility ramp siding										0.05							
Main entrance stairs x 5		0.61 m x 1.22 m x 0.07 m x 5								0.26							
Heating oil tank – assume 30% reduction in volume		1.05 m x 1.8 m x 0.57 m x 0.7								0.75							
Heating oil tank stand										0.02							
Stove		2 m x 0.75 m x 0.1 m								0.15							
Antenna		0.01 m x 0.01 m x 30 m								0.01							
Copper piping (1") x 3 servicing 2 bathrooms, kitchen		18 m, 14 m, 18 m								0.06							
Duct work for two furnaces, supply and return		360 m x 0.5 m x 0.003								0.54							
Wiring (internet, phone, elec, burglar alarm, etc.)										0.01							
Metal casings for wiring		360 m x 0.03 x 0.03								0.32							
H-beams under floor (6' spacing, 4x2"x length)		0.10 m x 0.05 m x 16 m x 12								0.96							
TOTAL METAL										**4.28**							
WOOD																	
Plywood flooring with VSF, carpet attached – ¾"		277 m^2 x 0.02 m						5.54									
Plywood exterior walls - assume ¾"		72 m x 4.4 m x 0.02 m		6.34													
Wall studs (2x4") exterior (perimeter/0.4+ 8 =No. studs)		No. studs x vol 1 stud [(72/0.4+8) x 0.05 m x 0.1 m x 4.4 m height]		4.14													
Wall studs (2x4") interior main floor (length of interior walls /0.4 x 2)		No. studs x vol 1 stud (124/0.4 x 0.05 m x 0.1 m x 2.44 m height x 2)		7.56													
Plywood roof decking – assume ¾" (0.02 m)		277 m^2 x 0.02 m		5.54													
Floor joists - 2x10" (length of bldg/0.5+4=No. joist)		No. joists x vol 1 joist (40 x 0.05 x 0.25 x 16 m)		8.00													
Roof joists - 2x10" (same as floor joists)				8.00													
Main entrance stairs, deck, ramp (2x6"x1.5 m) x No.		0.05 m x 0.15 m x 1.5 m x 208		2.34													

TABLE 5-1
MATERIAL QUANTITIES (cont.)

Volume Calculations for Demolition																	
Item		**calculation**	**Wood**		**Drywall**		**ACM**		**Metal**		**Ceramic**		**Insulation**		**Other**		**Items**
Rear entrance stairs and deck (x2) (2x6"x1.5 m) x No.		0.05 m x 0.15 m x 1.5 m x 72		0.81													
Foundation cribbing – 6x6"x1.22 x 9 x No. (6' spacing)		0.15 m x 0.15 m x 1.22 x 9 x 100		24.72													
Wood panelling (interior wall L x 2.4 m x 0.005 m)		45 m x 2.4 m x 0.003 m		0.32													
Shelving unit in kitchen		0.03 m x 0.3 m x 7 m x 3		0.19													
Shelving units (0.03 m x 0.3 m x length) x 2 units		0.03 m x 0.3 m x 15 m x 2		0.27													
Counter tops		0.03 m x 0.5 x 7 m		0.11													
Scrap wood under building – assume 10% of total				7.00													
TOTAL WOOD				**75.34**													
DRYWALL																	
Main floor (perimeter x 2.44 m height x ½ " thick)		72 m x 2.44 m x 0.0127 m				2.23											
Main floor interior (wall L x 2 sides x 8' height x ½ ")		124 m x 2 x 2.44 m x 0.0127 m				7.69											
Ceiling drywall (25% of ceiling SA x ½ ")		69.25 m^2 x 0.0127 m				0.88											
TOTAL DRYWALL						**10.80**											
CERAMIC																	
Sinks x 2		0.5 m x 0.4 m x 0.05 m x 2										0.02					
Toilets and urinals x 3		0.4 m x 0.4 m x 0.05 m x 3										0.02					
Ceramic tiles SA x 0.01 m		2 m^2 x 0.01										0.02					
TOTAL CERAMIC												**0.06**					
INSULATION																	
Rigid styrofoam (perimeter x 4.4 m height x 2.0" thick)		72 m x 4.4 m x 0.058 m												18.37			
Fiberglass (perimeter x 2.44 m height x 4" thick)		72 m x 2.44 m x 0.102												17.92			
Pipe insulation - fiberglass		None observed															
Ceiling insulation (SA x 4" thick)		277 m^2 x 0.102 m												28.25			
TOTAL INSULATION														**64.54**			
MISC.																	
4ft x 2 bulb florescent lights	64	counted															64
Heat detectors	1	counted															1
Ballasts (all may contain PCBs)	32	counted															32
Glass windows	14	counted															14
Chairs x 4		0.5 m x 0.5 m x 0.15 m x 4														0.15	
Large office desks x 2		12 m x 0.8 m x 0.06 m x 2														1.15	
Fire extinguishers	6	counted															6
Smoke detectors	13	counted															13
Heat detectors	1	counted															1
Mercury-containing thermostats	10	counted															10
TOTAL		**161.86 m^3**		**75.34 m^3**		**10.80 m^3**		**5.54 m^3**		**4.28 m^3**		**0.06 m^3**		**64.54 m^3**		**1.30 m^3**	

6.0 USE AND LIMITATIONS OF THIS DEMOLITION WASTE SURVEY REPORT

This report, prepared for PWGSC, does not provide certification or warranty, expressed or implied, that the investigation conducted by SENES identified all hazardous materials in the subject facility. The work undertaken by SENES was directed to provide information on the presence of hazardous materials in building construction materials based on visual inspection of readily accessible areas of the building and on the results of laboratory analysis of a limited number of bulk samples of material for asbestos content, laboratory analysis of a limited number of paint samples for lead content. The survey did not include for identification of asbestos in process materials, equipment (including electrical equipment and wiring), nor material outside of the building (e.g. asphaltic pavement).

The material in this report reflects SENES' best judgment in light of the information available at the time of the investigation, which was performed on 26 and 27 August 2013.

This report was prepared by SENES for PWGSC. Any use which any other party makes of the report, or reliance on, or decisions to be based on it, is the responsibility of such parties.

APPENDIX A

DESIGN CONSTRUCTION FLOOR PLAN

LEGEND:

- GLASS WINDOW
- HID — EXTERIOR HID LIGHT
- FIRE EXTINGUISHER
- Hg — MERCURY CONTAINING THERMOSTAL
- S — SMOKE DETECTOR

SENES Consultants

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

DESIGN CONSTRUCTION FLOOR PLAN

ENVIRONMENT CANADA, BLDG. 1082
IQALUIT, NUNVUT

FLOOR PLAN

Drawn By: I.S.Z.	Approved By: J.M.	Project No: 350600-505
Date: SEPT. 2013	Scale: AS SHOWN	Drawing No: APPENDIX A

Sep 19, 2013 – 2:42pm – USER plandry
Z:\350000 Series\350600-505 Iqaluit\dwg\350600-505 APPENDIX A.dwg

APPENDIX B

PHOTOGRAPHS

Photo 1: Front of Building.

Photo 2: Rear of Building.

Photo 3: Furnace Oil AST.

Photo 4: Pole-Mounted Transformer.

Photo 5: Furnace System.

Photo 6: Suspect Mould of Wood.

Photo 7: Suspect Mould on Furniture.

Photo 8: Mercury-Containing Thermostats.

Photo 9: Fluorescent lights (typical throughout).

Photo 10: Vinyl sheet flooring (typical throughout).

Photo 11: Vinyl sheet flooring (typical throughout).

Photo 12: Front of Building.

Photo 13: View of Hall 1 from front Vestibule.

Photo 14: Kitchen stove.

Photo 15: Visible mould growth on kitchen stove surface.

Photo 16: Kitchen fridge/freezer unit.

Photo 17: Suspect mould on kitchen baseboard.

Photo 18: Suspect mould on chairs.

Photo 19: Suspect mould on furniture.

Photo 20: Suspect mould on carpet.

APPENDIX C

LABORATORY REPORTS

EMSL Canada Inc.

10 Falconer Drive, Unit #3 Mississauga, ON L5N 3L8
Phone/Fax: 289-997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 551306041
Customer ID: 55DCSL97
Customer PO: 350600-505
Project ID:

Attn: Kelly Smith
Decommissioning Consulting Services Ltd.
121 Granton Drive
Unit 11
Richmond Hill, ON L4B 3N4

Proj: IQALUIT, NU/350600-505

Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 9/03/2013
Analyzed: 9/10/2013

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: JC-1A ***Lab Sample ID:*** **551306041-0001**
Sample Description: INTERIOR/DRYWALL JOINT COMPOUND (WALL)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	White	0.0%	100%	None Detected	

Client Sample ID: JC-1B ***Lab Sample ID:*** **551306041-0002**
Sample Description: INTERIOR/DRYWALL JOINT COMPOUND (WALL)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	White	0.0%	100%	None Detected	

Client Sample ID: JC-1C ***Lab Sample ID:*** **551306041-0003**
Sample Description: INTERIOR/DRYWALL JOINT COMPOUND (WALL)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	White	0.0%	100%	None Detected	

Client Sample ID: JC-1D ***Lab Sample ID:*** **551306041-0004**
Sample Description: INTERIOR/DRYWALL JOINT COMPOUND (WALL)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/10/2013	White	0.0%	100%	None Detected	

Client Sample ID: JC-1E ***Lab Sample ID:*** **551306041-0005**
Sample Description: INTERIOR/DRYWALL JOINT COMPOUND (WALL)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/10/2013	White	0.0%	100%	None Detected	

Client Sample ID: TH-1A ***Lab Sample ID:*** **551306041-0006**
Sample Description: EXTERIOR/FOAM INSULATION (UNDER METAL CLADDING)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/09/2013	Blue	0%	100%	None Detected	

Client Sample ID: TH-1B ***Lab Sample ID:*** **551306041-0007**
Sample Description: EXTERIOR/FOAM INSULATION (UNDER METAL CLADDING)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/09/2013	Blue	0%	100%	None Detected	

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http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 551306041
Customer ID: 55DCSL97
Customer PO: 350600-505
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: TH-1C ***Lab Sample ID:*** **551306041-0008**
Sample Description: EXTERIOR/FOAM INSULATION (UNDER METAL CLADDING)

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/10/2013	Blue	0%	100%	None Detected	

Client Sample ID: MS-1A ***Lab Sample ID:*** **551306041-0009**
Sample Description: INTERIOR/BASEBOARD/CARPET MASTIC

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	Tan	0.0%	100%	None Detected	
TEM Grav. Reduction	9/10/2013	Tan	0.0%	100%	None Detected	

Client Sample ID: MS-1B ***Lab Sample ID:*** **551306041-0010**
Sample Description: INTERIOR/BASEBOARD/CARPET MASTIC

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	Tan	0.0%	100%	None Detected	

Client Sample ID: MS-1C ***Lab Sample ID:*** **551306041-0011**
Sample Description: INTERIOR/BASEBOARD/CARPET MASTIC

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/10/2013		0%	100%	None Detected	

Client Sample ID: CLK-1A ***Lab Sample ID:*** **551306041-0012**
Sample Description: EXTERIOR/JOINT CAULKING

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	White	0.0%	100%	None Detected	
TEM Grav. Reduction	9/10/2013	White	0.0%	100%	None Detected	

Client Sample ID: CLK-1B ***Lab Sample ID:*** **551306041-0013**
Sample Description: EXTERIOR/JOINT CAULKING

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	White	0.0%	100%	None Detected	

Client Sample ID: CLK-1C ***Lab Sample ID:*** **551306041-0014**
Sample Description: EXTERIOR/JOINT CAULKING

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/10/2013	White	0.0%	100%	None Detected	

Client Sample ID: CLK-2A ***Lab Sample ID:*** **551306041-0015**
Sample Description: INTERIOR/WINDOW CAULKING

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	White	0.0%	100%	None Detected	
TEM Grav. Reduction	9/10/2013	White	0.0%	100%	None Detected	

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http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 551306041
Customer ID: 55DCSL97
Customer PO: 350600-505
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: CLK-2B ***Lab Sample ID:*** **551306041-0016**
Sample Description: INTERIOR/WINDOW CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	White	0.0%	100%	None Detected	

Client Sample ID: CLK-2C ***Lab Sample ID:*** **551306041-0017**
Sample Description: INTERIOR/WINDOW CAULKING

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/10/2013		0%	100%	None Detected	

Client Sample ID: VSF-1A ***Lab Sample ID:*** **551306041-0018**
Sample Description: INTERIOR/VINYL SHEET FLOORING W/PAPER BACKING (UNDER CARPET)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/09/2013	Gray/White	0%	60%	**40% Chrysotile**	

Client Sample ID: VSF-2A ***Lab Sample ID:*** **551306041-0019**
Sample Description: INTERIOR/VINYL SHEET FLOORING W/PAPER BACKING (OUTSIDE MECHANICAL ROOM)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	9/09/2013	Gray/Red/Various	0%	60%	**40% Chrysotile**	

Client Sample ID: VSF-3A-Paper Backing ***Lab Sample ID:*** **551306041-0020**
Sample Description: INTERIOR/VINYL SHEET FLOORING W/PAPER BACKING (KITCHEN/WASHROOMS)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	Gray	0.0%	100%	None Detected	
TEM Grav. Reduction	9/10/2013	Gray	0.0%	100%	None Detected	

Client Sample ID: VSF-3A-Vinyl ***Lab Sample ID:*** **551306041-0020A**
Sample Description: INTERIOR/VINYL SHEET FLOORING W/PAPER BACKING (KITCHEN/WASHROOMS)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	9/09/2013	Gray /White	0.0%	100%	None Detected	
TEM Grav. Reduction	9/10/2013	Gray /White	0.0%	100%	None Detected	

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EMSL Canada Order 551306041
Customer ID: 55DCSL97
Customer PO: 350600-505
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s)

Arabee Sathiaseelan	PLM	(2)
Lama Mohammad	PLM	(2)
	PLM Grav. Reduction	(11)
Matthew Davis	PLM	(3)
	PLM Grav. Reduction	(3)
	TEM Grav. Reduction	(5)

Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

Initial report from: 09/10/201311:10:25

Maxxam

Success Through Science®

Your Project #: 350600-505
Site Location: IQALUIT, NU
Your C.O.C. #: na

Attention: Kelly Smith

Decommissioning Consulting Services Limited
121 Granton Dr
Unit 11
Richmond Hill, ON
L4B 3N4

Report Date: 2013/09/06

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3E6375
Received: 2013/09/03, 09:15

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Metals in Paint	5	2013/09/05	2013/09/05	CAM SOP-00408	SW-846 6010C

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your Project #: 350600-505
Site Location: IQALUIT, NU
Your C.O.C. #: na

Attention: Kelly Smith

Decommissioning Consulting Services Limited
121 Granton Dr
Unit 11
Richmond Hill, ON
L4B 3N4

Report Date: 2013/09/06

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Keshani Vijh, Project Manager
Email: KVijh@maxxam.ca
Phone# (905) 817-5700

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B3E6375
Report Date: 2013/09/06

Decommissioning Consulting Services Limited
Client Project #: 350600-505
Site Location: IQALUIT, NU

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		SW9974	SW9975	SW9976	SW9977	SW9978		
Sampling Date								
COC Number		na	na	na	na	na		
	Units	**INTERIOR PT-1 WHITE WALL PAINT-WOOD**	**EXTERIOR PT-2 GREY TRIM PAINT-WOOD**	**INTERIOR PT-3WHITE WALL PAINT-BOOKCASE**	**INTERIOR PT-4 WHITE WALL PAINT**	**EXTERIOR PT-5 WHITE WALL PAINT-METAL**	**RDL**	**QC Batch**
Metals								
Lead (Pb)	mg/kg	810	<50	<50	<50	<50	50	3338263

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B3E6375
Report Date: 2013/09/06

Decommissioning Consulting Services Limited
Client Project #: 350600-505
Site Location: IQALUIT, NU

Test Summary

Maxxam ID SW9974 **Collected**
Sample ID INTERIOR PT-1 WHITE WALL PAINT-WOOD **Shipped**
Matrix Soil **Received** 2013/09/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals in Paint	ICP	3338263	2013/09/05	2013/09/05	Archana Patel

Maxxam ID SW9975 **Collected**
Sample ID EXTERIOR PT-2 GREY TRIM PAINT-WOOD **Shipped**
Matrix Soil **Received** 2013/09/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals in Paint	ICP	3338263	2013/09/05	2013/09/05	Archana Patel

Maxxam ID SW9976 **Collected**
Sample ID INTERIOR PT-3WHITE WALL PAINT-BOOKCASE **Shipped**
Matrix Soil **Received** 2013/09/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals in Paint	ICP	3338263	2013/09/05	2013/09/05	Archana Patel

Maxxam ID SW9977 **Collected**
Sample ID INTERIOR PT-4 WHITE WALL PAINT **Shipped**
Matrix Soil **Received** 2013/09/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals in Paint	ICP	3338263	2013/09/05	2013/09/05	Archana Patel

Maxxam ID SW9978 **Collected**
Sample ID EXTERIOR PT-5 WHITE WALL PAINT-METAL **Shipped**
Matrix Soil **Received** 2013/09/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Metals in Paint	ICP	3338263	2013/09/05	2013/09/05	Archana Patel

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B3E6375
Report Date: 2013/09/06

Decommissioning Consulting Services Limited
Client Project #: 350600-505
Site Location: IQALUIT, NU

Package 1	22.0°C

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

GENERAL COMMENTS

Results relate only to the items tested.

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Decommissioning Consulting Services Limited
Attention: Kelly Smith
Client Project #: 350600-505
P.O. #:
Site Location: IQALUIT, NU

Quality Assurance Report

Maxxam Job Number: MB3E6375

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3338263 APT	Matrix Spike	Lead (Pb)	2013/09/05		93	%	80 - 120
	QC Standard	Lead (Pb)	2013/09/05		102	%	75 - 125
	Method Blank	Lead (Pb)	2013/09/05	<50		mg/kg	
	RPD	Lead (Pb)	2013/09/05	NC		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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Validation Signature Page

Maxxam Job #: B3E6375

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

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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