

## **Appendix 6**



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## **PRE-DEMOLITION HAZARDOUS MATERIALS SURVEY**

### **Lower Post, B.C. - Vacant Home**

**Sterling IAQ Consultants Ltd. # 51247**

Presented to:

**Core6 Environmental Ltd.**  
1410-777 Hornby St.  
Vancouver, BC V6Z 1S4

**Attention: John Taylor**

**February 18<sup>th</sup> , 2014**



## 1.0 INTRODUCTION

Sterling IAQ Consultants Ltd. ([Sterling IAQ](#)) was retained by Core6 Environmental Ltd. to complete a semi-intrusive hazardous materials survey of a vacant home (see photo on cover page) located in Lower Post, BC (subject building). The purpose of this assessment was to identify potential hazardous materials within the subject building prior to renovations.

This document provides an outline of applicable regulations, background information regarding the purpose of the assessment, our scope of work, methodology, the findings of our assessment, and based on our findings, provides appropriate recommendations.

## 2.0 SCOPE OF WORK

The scope of work for the assessment is outlined as follows:

- Collection of suspected Asbestos Containing Materials (ACM) samples for laboratory analysis;
- Visual inspection for the presence of mercury;
- Visual inspection for the presence of poly-chlorinated biphenyls (PCBs);
- Collection of samples of paint to determine the lead content;
- Inspection for ozone depleting substances (ODS) in cooling equipment;
- Evaluation of assessment findings and, preparation of a final report, detailing the findings of this assessment.

The site assessment work was conducted on January 30<sup>th</sup>, 2014.

## 3.0 METHODOLOGY

The assessment included a semi-intrusive (semi-destructive) investigation to identify the potential presence of various hazardous materials.

### 3.1 Asbestos-Containing Materials (ACMs)

An assessment of identified suspected ACMs was conducted as part of the assessment. Suspected asbestos containing building materials were assessed through semi-destructive sample collection and were analyzed for asbestos type and percentage content using Polarized Light Microscopy in accordance with EPA Analytical Method 600/R-93/116. ACM samples were submitted to Maxxam Analytics in Burnaby for analysis (independent third party laboratory).

The assessment determined the type and extent of visually accessible suspected ACMs in the subject buildings. Some building systems that were reviewed as part of the assessment are provided as follows:

- Structural – systems including fireproofing on beams, open and solid webbed joist systems, roof systems;
- Mechanical – systems insulation including hot water, domestic hot and cold water, boiler units, and asbestos sheeting products; and
- Architectural – systems including texture coats, sheet flooring, vinyl floor tile, drywall joint compound and asbestos sheeting products.

### **3.2 Mercury and Polychlorinated Biphenyls (PCBs)**

During the assessment, the subject building was visually reviewed for the potential presence of elemental mercury and PCBs.

### **3.3 Lead-Based Paints**

Paints samples were collected from the subject area to determine lead content. Samples were forwarded to Maxxam Analytics in Burnaby for analysis.

### **3.4 Ozone Depleting Substances**

To assess the potential presence of ozone depleting substances, inspections were conducted of accessible equipment.

## **4.0 GUIDELINES AND REGULATIONS**

### **4.1 Provincial Occupational Health and Safety Regulations**

The *Workers Compensation Act* (WCA) describes the jurisdiction of the Workers' Compensation Board of British Columbia (WorkSafeBC) and its authority to make regulations, inspect workplaces, issue orders and impose penalties. The WCA also explains the rights and responsibilities of employers and workers with respect to health and safety.

The WCA is organized in four Parts:

Part 1, titled "Compensation to Workers and Dependents," is organized into six Divisions and deals with matters such as compensation assessments, governance of WorkSafeBC, and general administrative procedures.

Part 2 deals with the liability of employers in industries not within the scope of Part 1. It is not included on this web site.

Part 3, titled "Occupational Health and Safety," addresses matters such as the rights and responsibilities of workplace parties, joint committees and worker representatives, protection against discrimination, and WorkSafeBC administrative procedures and regulation-making authority.

Part 4, titled "Appeals," deals with appeals and the role of the Workers' Compensation Appeal Tribunal.

A number of provisions in Part 1 and all of Part 3 of the WCA apply to occupational health and safety. Some sections in Part 4 apply to appeals and health and safety decisions.

The Occupational Health and Safety (OHS) Regulation contains legal requirements that must be met by all workplaces under the inspectional jurisdiction of WorkSafeBC. This includes most workplaces in B.C., except mines and federally chartered workplaces such as banks, interprovincial and international transportation, telephone systems, and radio, television, and cable services.

The purpose of the OHS Regulation is to promote occupational health and safety and to protect workers and other persons present at workplaces from work-related risks to their health, safety, and well-being. Compliance with the requirements provides the basis on which workers and employers, in cooperation, can solve workplace health and safety problems. The requirements are not an end in themselves, but are a foundation upon which to build an effective health and safety program.

## 4.2 Asbestos

Asbestos requirements under the OHS Regulation are primarily presented in Part 6 and Part 20 but other areas have reference to asbestos as well.

Firstly, asbestos is defined in Section 6.1 as ...

**"asbestos-containing material"** means the following:

(a) a manufactured article or other material, other than vermiculite insulation, that would be determined to contain at least 0.5% asbestos if tested in accordance with one of the following methods:

(i) Asbestos, Chrysotile by XRD, Method 9000 (Issue 2, dated August 15, 1994) in the NIOSH Manual of Analytical Methods, published by the United States National Institute for Occupational Safety and Health, Centre for Disease Control;

(ii) Asbestos (bulk) by PLM, Method 9002 (Issue 2, dated August 15, 1994) in the NIOSH Manual of Analytical Methods, published by the United States National Institute for Occupational Safety and Health, Centre for Disease Control;

(iii) Test Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116, dated July 1993) published by the United States Environmental Protection Agency;

(b) vermiculite insulation that would be determined to contain any asbestos if tested in accordance with the Research Method for Sampling and Analysis of Fibrous Amphibole in Vermiculite Attic Insulation (EPA/600/R-04/004, dated January 2004) published by the United States Environmental Protection Agency;

The following sections of OHS Regulation are presented as applicable to this project.

### **6.3 Exposure control plan**

- (1) If a worker is or may be exposed to potentially harmful levels of asbestos, the employer must develop and implement an exposure control plan meeting the requirements of [section 5.54](#).
- (2) To ensure adequate coordination of the overall plan, the employer must ensure that it is administered by a properly trained person.

### **6.4 Inventory**

- (1) The employer must ensure that a qualified person
  - (a) collects representative samples of the materials in the workplace that the qualified person suspects contain asbestos, and
  - (b) determines whether each of the samples is asbestos-containing material in accordance with,
    - (i) in the case of a sample that is not vermiculite insulation, one of the methods set out in paragraph (a) (i) to (iii) of the definition of "asbestos-containing material" in section 6.1, and
    - (ii) in the case of a sample that is vermiculite insulation, the method set out in paragraph (b) of the definition of "asbestos-containing material" in section 6.1.
- (2) If a qualified person suspects that an inaccessible material contains asbestos, the material must be treated as asbestos-containing material unless a qualified person determines, in accordance with subsection (1) (b), that it is not asbestos-containing material.
- (3) The employer must
  - (a) ensure that a qualified person prepares an inventory of all asbestos-containing materials in the workplace,
  - (b) keep the inventory at the workplace, and
  - (c) keep the inventory current.

### **6.5 Identification**

The employer must ensure that all asbestos-containing materials present in the workplace are identified by signs, labels or when these are not practicable, other effective means.

## 6.6 Assessment and classification

(1) The employer must ensure that a risk assessment is conducted by a qualified person on asbestos-containing material identified in the inventory referred to in section 6.4 (3), with due regard for the condition of the material, its friability, accessibility and likelihood of damage, and the potential for fibre release and exposure of workers.

(2) The employer must ensure that a risk assessment has been conducted by a qualified person before any demolition, alteration, or repair of machinery, equipment, or structures where asbestos-containing material may be disturbed.

(3) Before a work activity that involves working with or in proximity to asbestos-containing material begins, the employer must ensure that a qualified person assesses the work activity and classifies it as a low risk work activity, a moderate risk work activity or a high risk work activity.

When it comes to renovation or demolition of a building or space within a building, the following section of the OHS Regulation applies:

### 20.112 Hazardous materials

Before work begins on the demolition or salvage of machinery, equipment, buildings or structures, the employer or owner must

- (a) ensure that a qualified person inspects the site to identify any asbestos-containing materials, lead or other heavy metal or toxic, flammable or explosive materials that may be handled, disturbed or removed,
- (b) have the inspection results available at the worksite, including any drawings, plans or specifications, as appropriate, to show the locations of any hazardous substances,
- (c) ensure that any hazardous materials found are safely contained or removed, and
- (d) if hazardous materials are discovered during demolition work that were not identified in the inspection required by paragraph (a), ensure that all work ceases until such materials are contained or removed.

WorkSafeBC has also published "*Safe Handling of Asbestos, A Manual of Standard Practices*". This manual outlines basic information on asbestos and asbestos products, health hazard requirements for worker protection, safe work procedures and principles that should be followed in selecting the most suitable technique for the safe abatement of asbestos-containing materials. This document provides a guide to current practices that are to be followed in the Province of British Columbia.

The methods of abatement (usually moderate risk or high risk) are determined mainly on the building material itself and not the amount of asbestos present in the material. If an asbestos containing material is considered friable (easily crumbled by hand pressure) then its handling is expected to generate dust and the abatement of such materials needs to be completed following high-risk procedures. Non-friable materials can usually be removed following moderate-risk procedures provided the methods used to remove the material do not cause the non-friable material to become friable.

### 4.3 Asbestos Materials Risk Assessment

In determining the level of risk of asbestos fibre exposure in a given material, the following factors are considered:

- Presence in Air Plenum – Does the material exist within an air plenum?
- Accessibility – Is the material present in a publicly access area?
- Condition – Is the material damaged?
- Friability – Does the material easily crumbled with hand pressure?
- Air movement - How much air movement is present in the location of the asbestos containing material?
- Vibration – Can the material become agitated without direct contact?
- Asbestos Content – What is the percentage of asbestos in the material?

Evaluating these criteria in each identified asbestos material assesses the risk level of the material as Minor, Medium, or Elevated as the material sits. These levels of risk shall not be compared to or confused with the different categories of asbestos abatement procedures stipulated by WorksafeBC.

### 4.4 Exposure Control Plans

To address the WorksafeBC requirements related to asbestos and lead paint during renovation or demolition projects, an exposure control plan is required. Written exposure control plans explain the work procedures and other controls that will be used to reduce workers' risk of exposure. Exposure control plans must detail steps to eliminate risk or to control and reduce risk.

An exposure control plan must include the following elements:

- Statement of purpose
- Responsibilities of employers, supervisors and workers
- Risk identification and assessment
- Risk controls
- Written safe work procedures
- Worker education and training
- Written records
- Hygiene facilities and decontamination procedures
- Health monitoring

#### **4.5 Environmental Regulations**

In British Columbia, environmental matters pertaining to waste generally fall under the jurisdiction of the British Columbia Ministry of Environment (MoE), pursuant to the British Columbia Environmental Management Act (EMA). The waste regulation under the EMA relating to the disposal of hazardous building materials is the Hazardous Waste Regulation (HWR), BC Regulation 63/88, as amended by BC Reg. 261/2006.

The HWR refers to the handling, storage, transportation, treatment, recycling and disposal of special wastes in the province. The regulation outlines the materials and criteria to be used to characterize waste as hazardous.

BC MoE has recently indicated the intent to add mercury-containing products such as light bulbs and thermostats as recyclable products regulated under the BC Recycling Regulation (RR), BC Regulation 65/2006. At the time of decommissioning, the BC Recycling Regulation and amendments will need to be considered when disposing of any identified mercury-containing products.

#### **4.6 Poly-Chlorinated Biphenyl (PCB) Regulations**

The manufacture and import of PCBs was banned in North America in 1977. The handling, storage and disposal of PCBs that were in use at the time of the ban, is strictly regulated by the federal government under the Canadian Environmental Protection Act (CEPA).

In 2008, Environment Canada introduced new PCB Regulations, which seek to phase out the use and storage of PCBs, and to eliminate remaining PCB-containing electrical equipment by the end of 2025.

#### **4.7 Lead-Based Paints (LBPs)**

The handling and management of lead containing materials are regulated under the WorksafeBC Occupational Health and Safety Regulation. The Regulation does not give guidance specifically for lead based paint (LBP) but does give guidance on working with materials containing lead and the requirements to ensure workers are not over-exposed to lead. To supplement the Regulation, WorksafeBC has published a guidance document for lead paint entitled "*Lead-Containing Paints and Coatings – Preventing Exposure in the Construction Industry*".

As per the WorksafeBC guidance document, a lead-containing surface material is defined as:

"Defined by the federal Ministry of Health, under the *Hazardous Products Act*, as a paint or other similar material that dries to a solid film that contains over 90 mg/kg (0.009%) dry weight of lead."

From the Regulation, Sections 6.59 to 6.69 provide direction for employers where their workers may be exposed to lead:

- Develop and implement an exposure control plan if workers are, or may be, exposed to lead.
- Conduct air monitoring if workers are at risk of overexposure to airborne lead in a construction project.
- Post warning signs at the boundary of work areas where hazardous lead exposures could occur.
- If lead might contaminate exposed skin or work clothing, meet the requirements for personal hygiene (section 5.82 of the Regulation).
- Keep work area surfaces free of lead dust as much as possible.
- When removing lead dust, use a method that avoids spreading it into other work areas.
- Instruct and train workers who are at risk of exposure to lead.
- Develop and implement a health protection program if workers are exposed to potentially hazardous levels of lead.
- Maintain records of risk assessments, worker exposures, and worker training.

Furthermore, with respect to renovation or demolition work, Section 20.112 of the Regulation provides guidance to be implemented before beginning work on the demolition or salvage of machinery, equipment, buildings or structures. The employer or owner must:

- Inspect the site to identify and lead that may be handled, disturbed or removed.
- Have the inspection results available at the worksite.
- Ensure the lead is safely contained or removed.

Since much of the concern associated with lead paint is related to children and pregnant women, the WorksafeBC guidance document entitled "*Lead-Containing Paints and Coatings – Preventing Exposure in the Construction Industry*" provides further information as presented below:

When lead is present in a surface coating, consider the following:

- Information from the U.S. Occupational Safety and Health Administration (OSHA) suggests that the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the exposure limit. This would trigger the requirement for an ECP and safe work procedures.
- Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children. Any risk assessment should include for the presence of high risk individuals within the workplace.

Additionally, under the *Hazardous Products Act*, identified LBPs must also undergo Toxicity Characteristic Leachate Properties (TCLP) testing to determine disposal procedures. The acceptable TCLP limit for disposal of LBP is less than 5 mg/L (5 ppm). If an identified LBP exhibits a TCLP result of less than 5 ppm, the paint is not considered a hazardous material and may be disposed of as construction waste.

#### **4.8 Ozone Depleting Substances Regulations**

Provincial regulatory framework providing the requirements for the safe management, storage and disposal of Ozone-Depleting Substances (ODSs) is provided in British Columbia Regulation (BC Reg.) 387/99, as amended by BC Reg. 109/2002 – Ozone-Depleting Substances Regulation respecting the appropriate management of ODSs within the province of British Columbia. Schedule A in the regulation lists all ozone-depleting refrigerant types.

In 1994, the federal government filed the Ozone-Depleting Substances Regulations to amend controls on the production and consumption of chlorofluorocarbons (CFCs), halons, tetrachloride and methyl chloroform. The Federal Halocarbon Regulations, effective July 1, 1999, was filed to ensure uniformity with respect to the release, recovery and recycling of ODSs and their halocarbon alternatives in refrigeration and air conditioning equipment throughout the provinces of Canada. The Code of Practice for the Reduction of CFC Emissions from Refrigeration and Air Conditioning Systems (EPS/1/RA/1 March 1991, original date) provides Best Practice recommendations for the handling, storage, and disposal of such materials.

Under the Transportation of Dangerous Goods Act, Ozone Depleting Substances are under Class 2; Non-flammable Gas.

### **5.0 DISCUSSION OF RESULTS**

#### **ASBESTOS SAMPLING**

A total of 23 samples of suspected ACMs were collected during the site assessment of the subject building. Analytical results, sample point locations and descriptions for all materials investigated for asbestos content are summarized in Table 5.1.

As per WorksafeBC sampling requirements, a minimum number of each homogenous material was required to be sampled in order to confirm that asbestos does not exist in the material. Therefore, of the 23 suspected asbestos samples taken, all 23 samples were analyzed. Table 5.1 details the results and sample locations of each material. A copy of the analytical report for materials analyzed for asbestos content is provided in Appendix A.

**Table 5.1**  
**Lower Post – Asbestos Sample Results**

Sample #	Location	Material	Result
B1	Washroom	DWJC	NAD
<b>B2</b>	<b>Main floor stairs wall</b>	<b>DWJC</b>	<b>0.5–10% Chrysotile</b>
B3	Kitchen	DWJC	NAD
<b>B4</b>	<b>Hallway closet</b>	<b>DWJC</b>	<b>0.5–10% Chrysotile</b>
B5	Downstairs bulkhead	DWJC	NAD
<b>B6</b>	<b>Upstairs landing</b>	<b>DWJC</b>	<b>0.5–10% Chrysotile</b>
<b>B7</b>	<b>Upstairs bulkhead</b>	<b>DWJC</b>	<b>0.5–10% Chrysotile</b>
<b>B8</b>	<b>Main floor rear bedroom closet</b>	<b>DWJC</b>	<b>0.5–10% Chrysotile</b>
<b>B9</b>	<b>Main floor front bedroom vent</b>	<b>DWJC</b>	<b>0.5–10% Chrysotile</b>
B10	Basement landing wall	DWJC	NAD
B11	Kitchen	Plaster	NAD
B12	Kitchen	Plaster	NAD
B13	Kitchen	Plaster	NAD
B14	Kitchen	9" Ceiling tile	NAD
B15	Kitchen	9" Ceiling tile	NAD
B16	Attic	Loose insulation	NAD
B17	Kitchen	Red 12" floor tile/mastic	NAD
B18	Kitchen	Grey 12" floor tile/mastic	NAD
B19	Basement burner door	Rope gasket	NAD
B20	Basement burner door	White insulation	NAD
B21	Basement ventilation ducts	White/yellow tape	NAD
B22	Roof	Membrane/shingle	NAD
B23	Roof	Membrane/shingle	NAD

NAD – no asbestos detected  
 DWJC – Drywall Joint Compound

### DISCUSSION OF ASBESTOS RESULTS

Due to the remote location of the subject building, Sterling IAQ could not determine magnetic north in reference to the site. Therefore, for the purpose of the following discussion, the "front" of the building would be considered the front entrance into the living room, and the "rear" of the building would be considered the opposite end.

#### Drywall joint compound and plaster

Results of the representative number of drywall joint compound samples collected throughout the subject building found 6 of the 10 samples to contain asbestos. Based on observations, though some areas such as the washroom and the stairs leading down to the basement appeared to have been renovated, it was too difficult to determine the exact extent of historical renovations and delineate which drywall joint compound contains asbestos and which did not. It should therefore be assumed that all mudded drywall throughout the subject building be considered asbestos containing. This includes the ceiling of the main floor living room, washroom, and bedrooms. Drywall was also present behind wood wall panels in the bedrooms.

### Flooring Materials

The only suspected asbestos-containing flooring identified in the subject building were two types of floor tile in the kitchen, which both tested negative for asbestos. The washroom consisted of ceramic tile, and the rest of the building consisted of bare wood floors.

### Ceiling Tile

Ceiling tiles found in the kitchen tested negative for asbestos.

### Roofing Materials

Roof shingles and mastics appeared to be consistent throughout the exterior of the home. A samples tested negative for asbestos.

### Other Suspected Asbestos-Containing Materials

Mechanical insulation and taping sampled throughout the basement all tested negative for asbestos. A thorough inspection of the wall cavities, ceiling cavities, and attic identified only fiberglass insulation throughout the subject building. However, it should be noted that approximately 3 tablespoons of vermiculite insulation was observed on the floor of the upstairs rear bedroom (Photo 1). As there was not enough of the material present to collect a viable sample for analysis, this material must be assumed to contain asbestos and be treated as such.

Visual inspection of the area surrounding the vermiculite insulation found no signs that it originated from the walls or ceiling, as they were all intact. Rather, it was suspected that the material may have fallen out of a damaged appliance or other item that was previously in the home. It was reported that a sample of exterior flooring collected on the front patio some time in the past was found to be asbestos containing. However, inspection of the patio floor by Sterling IAS did not identify any suspected asbestos-containing materials.

**Photo 1**



**5.2 LEAD-BASED PAINTS**

Four (4) different paint samples were collected from the subject building and the analytical results are summarized in Table 5.2. Since the subject areas were vacant and expected to undergo a renovation, any results greater than 90 mg/kg (or 90 ppm) are considered lead based. These are highlighted in **RED** bold (if applicable) in Table 5.2. The laboratory report is attached in Appendix B.

**Table 5.2  
 Lower Post - Lead Paint Sampling Results**

Sample ID	Location	Colour	Results (ppm)
L1	Upstairs Front Bedroom	Maroon	3.8
<b>L2</b>	<b>Kitchen</b>	<b>Beige</b>	<b>3380</b>
<b>L3</b>	<b>Interior Walls</b>	<b>Peach</b>	<b>1780</b>
<b>L4</b>	<b>Interior Trim</b>	<b>Brown</b>	<b>870</b>

ppm – parts per million (can also be reported as mg/kg)

Results of the paint samples showed that all the paint on plaster, drywall and wood trim contained lead concentrations greater than 90 ppm and therefore must be considered lead-based. Only the maroon coloured paint found on the wood wall panels in the upstairs front bedroom did not contain hazardous levels of lead. It should be noted that due to the exterior wood fascia and fence being deteriorated, Sterling IAQ was not able to collect a viable sample that contained only paint. These surfaces should be assumed to consist of lead-based paint, as it was suspected to be original.

### 5.3 MERCURY AND PCB'S

No mercury-containing thermostats were observed within the subject building. A total of 2 fluorescent light fixtures were present within the subject building; 1 in the kitchen and 1 in the basement. Both were determined to consist of non-PCB ballast. However, each fluorescent light tube contains a small amount of mercury.

### 5.4 OZONE-DEPLETING SUBSTANCES

A horizontal freezer in the basement was the only suspected ODS containing equipment observed within the subject building.

### 5.5 OTHER HAZARDOUS MATERIALS

An estimated 500 gallon fuel tank was observed in the basement of the subject building. This tank was determined to be approximately ¼ full of gasoline (or other similar fuel).

Numerous paint cans and chemical cleaners were discarded inside the main living room.

Due to the home having been vacant, it had – at some point - become invested with rats and/or mice, as evidence from the rodent droppings scattered throughout the interior spaces, attic, and wall cavities.

## 6.0 RECOMMENDATIONS

### 6.1 Asbestos-Containing Materials

1. A risk assessment is required to categorize the potential asbestos abatement work as low, moderate or high risk.
  - a. For asbestos containing drywall joint compound, abatement is typically conducted under moderate-risk safe work procedures. However asbestos containing drywall joint compound that must be abated from the ceiling should be abated under high-risk safe work procedures. **The total amount of drywall to be abated was estimated at 3,800 square feet.**
2. Prior to conduction any asbestos abatement work, a Notice of Project for Asbestos (NOPA) must be submitted to WorksafeBC, in accordance with Section 20.2 of the WorksafeBC Regulation.
3. In accordance with section 20.112 of the WorksafeBC OH&S Regulation, a copy of this report and supporting documents must be available at the construction site prior to work commencing and remain on site for the duration of the project.
4. If, during demolition/renovation activities, workers encounter a new suspect building material that could contain asbestos, work must stop until that material can be sampled and analyzed for asbestos content.

## **6.2 PCB and Mercury**

1. All fluorescent light tubes that will be taken out of service should be stored with care and then transported to a specialized recycling facility.

## **6.3 Lead**

1. A lead exposure control plan should be implemented for any demolition work that will impact any part of the subject building that consists of lead-based paint.
2. If any of the painted surfaces need to be salvaged/saved and the paint removed, a risk assessment needs to be completed on the paint removal methods. Consequently, a separate exposure control plan and safe work procedures will need to be developed for this work, if applicable.
3. The identified lead paints that may potentially enter a landfill must first undergo TCLP analysis to determine if the material must be disposed of as hazardous waste (Sterling IAQ has already obtained these samples and they are being held in our offices until approval is provided for their analysis).

## **6.4 Ozone Depleting Substances (ODS), Paints and Chemicals**

1. The freezer in the basement should be disposed to a designated disposal facility.
2. All stored paints and hazardous cleaning chemical should be disposed of in a designated disposal facility.
3. The contents of the tank should be investigated further and handled accordingly prior to the demolition of the building.

## **6.5 Rodent Droppings**

1. Due to presence of rodent droppings in the subject building, safe work procedures for the demolition work should control measures for reducing exposure to the droppings.

## 7.0 GENERAL STATEMENT OF LIMITATIONS

In the performance of this hazardous material study, Sterling IAQ Consultants Ltd. has exercised a degree of thoroughness and competence that is consistent with the profession. Sterling IAQ Consultants Ltd. believes the information presented in this report to be factual at the time of this survey, for the building sections that were safely accessible to the surveyor.

Due to the nature of building construction, especially in buildings that have gone through extensive renovations, limitations exist as to the identification of pockets of asbestos-containing materials, and access to different layers of paint. Professional judgment has been exercised in gathering and analyzing the information obtained. We cannot warrant or guarantee that the conclusions we reach are absolutely complete or accurate, however, we commit ourselves to care and competence in reaching those conclusions.

The information provided by this report is intended for the sole use of our client (Core6 Environmental), according to the terms of reference. Others who may have an interest in the site must do their own survey to determine if the site conditions affect them. Sterling IAQ Consultants Ltd. reserves the right to review the comments on any interpretation of the data or conclusions derived by others. No other warranty or representation, either expressed or implied, is included in this report.

## 8.0 CLOSURE

Thank you for using the services of Sterling IAQ Consultants Ltd. If you have any questions or if we can be of any assistance please feel free to contact the undersigned at (604) 681-2701.

Sincerely,

**Sterling IAQ Consultants Ltd.**

Per:

**Kenny  
Luong**  
Digitally signed by Kenny  
Luong  
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email=kenny@sterlingiaq  
consultants.com, c=CA  
Date: 2014.02.18 11:10:12  
-08'00'

Kenny Luong, ABET  
Project Manager  
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Michael Glassco, ROHT  
President

**APPENDIX A**  
**ASBESTOS LABORATORY ANALYTICAL REPORT**



Your P.O. #: 700266127  
Your Project #: 51247  
Your C.O.C. #: G067683, G067682

**Attention: Kenny Luong**  
Sterling IAQ Consultants Ltd.  
310-1122 Mainland St  
Vancouver, BC  
Canada V6B 5L1

**Report Date: 2014/02/13**  
**Report #: R1516442**  
**Version: 1**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B409421**  
**Received: 2014/02/05, 10:40**

Sample Matrix: Bulk  
# Samples Received: 23

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Asbestos Identification (1)	23	N/A	2014/02/12	BBY5SOP-00020	NIOSH Method 9002

\* Results relate only to the items tested.

(1) RDL = 0.5%

Encryption Key

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

Crystal Ireland, B.Sc., Account Specialist  
Email: CIreland@maxxam.ca  
Phone# (604) 638-5016

=====  
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: 1



Success Through Science

Maxxam Job #: B409421  
Report Date: 2014/02/13

Sterling IAQ Consultants Ltd.  
Client Project #: 51247

Your P.O. #: 700266127

**ASBESTOS IDENTIFICATION (BULK)**

Maxxam ID		IQ0787	IQ0788	IQ0789	IQ0790	IQ0791	IQ0792	IQ0793	IQ0794	IQ0795		
Sampling Date		2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30		
	UNITS	B1	B2	B3	B4	B5	B6	B7	B8	B9	RDL	QC Batch
<b>Asbestos Type</b>												
Actinolite	% vol/vol	ND	N/A	7379790								
Amosite	% vol/vol	ND	N/A	7379790								
Anthophyllite	% vol/vol	ND	N/A	7379790								
Chrysotile	% vol/vol	ND	0.5-10	ND	0.5-10	ND	0.5-10	0.5-10	0.5-10	0.5-10	N/A	7379790
Crocidolite	% vol/vol	ND	N/A	7379790								
Tremolite	% vol/vol	ND	N/A	7379790								
<b>Others</b>												
Cellulose	% vol/vol	ND	0.5-10	10-30	ND	ND	ND	10-30	10-30	0.5-10	N/A	7379790
Filler	% vol/vol	>99	80-99	70-80	90-99	>99	90-99	65-85	65-85	80-99	N/A	7379790
Glass Fibres	% vol/vol	ND	N/A	7379790								
Hair	% vol/vol	ND	N/A	7379790								
Other Fibers	% vol/vol	ND	N/A	7379790								

Maxxam ID		IQ0796	IQ0797	IQ0798	IQ0800	IQ0801	IQ0802	IQ0803	IQ0804		
Sampling Date		2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30		
	UNITS	B10	B11	B12	B13	B14	B15	B16	B17	RDL	QC Batch
<b>Asbestos Type</b>											
Actinolite	% vol/vol	ND	N/A	7379790							
Amosite	% vol/vol	ND	N/A	7379790							
Anthophyllite	% vol/vol	ND	N/A	7379790							
Chrysotile	% vol/vol	ND	N/A	7379790							
Crocidolite	% vol/vol	ND	N/A	7379790							
Tremolite	% vol/vol	ND	N/A	7379790							
<b>Others</b>											
Cellulose	% vol/vol	10-30	ND	ND	ND	30-50	30-50	ND	ND	N/A	7379790
Filler	% vol/vol	65-85	>99	>99	>99	10-30	10-30	ND	>99	N/A	7379790
Glass Fibres	% vol/vol	0.5-10	ND	ND	ND	30-50	30-50	>99	ND	N/A	7379790
Hair	% vol/vol	ND	N/A	7379790							
Other Fibers	% vol/vol	ND	N/A	7379790							

N/A = Not Applicable  
ND = Not detected  
RDL = Reportable Detection Limit



Supporting Information

Maxxam Job #: B409421  
 Report Date: 2014/02/13

Sterling IAQ Consultants Ltd.  
 Client Project #: 51247

Your P.O. #: 700266127

**ASBESTOS IDENTIFICATION (BULK)**

Maxxam ID		IQ0805	IQ0806	IQ0807	IQ0808	IQ0809	IQ0810		
Sampling Date		2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30	2014/01/30		
	UNITS	B18	B19	B20	B21	B22	B23	RDL	QC Batch
<b>Asbestos Type</b>									
Actinolite	% vol/vol	ND	ND	ND	ND	ND	ND	N/A	7379790
Amosite	% vol/vol	ND	ND	ND	ND	ND	ND	N/A	7379790
Anthophyllite	% vol/vol	ND	ND	ND	ND	ND	ND	N/A	7379790
Chrysotile	% vol/vol	ND	ND	ND	ND	ND	ND	N/A	7379790
Crocidolite	% vol/vol	ND	ND	ND	ND	ND	ND	N/A	7379790
Tremolite	% vol/vol	ND	ND	ND	ND	ND	ND	N/A	7379790
<b>Others</b>									
Cellulose	% vol/vol	ND	ND	ND	20-40	20-40	20-40	N/A	7379790
Filler	% vol/vol	>99	ND	>99	60-80	60-80	60-80	N/A	7379790
Glass Fibres	% vol/vol	ND	>99	ND	ND	ND	ND	N/A	7379790
Hair	% vol/vol	ND	ND	ND	ND	ND	ND	N/A	7379790
Other Fibers	% vol/vol	ND	ND	ND	ND	ND	ND	N/A	7379790

N/A = Not Applicable  
 ND = Not detected  
 RDL = Reportable Detection Limit



Success Through Science

Maxxam Job #: B409421  
Report Date: 2014/02/13

Sterling IAQ Consultants Ltd.  
Client Project #: 51247

Your P.O. #: 700266127

#### General Comments

For Asbestos:

ND = Not detected. Below reportable detection limit of 0.5%  
All layers found are homogeneous  
Site Location: Not Provided

- Sample IQ0787-01: 2 Layers: white paint, white mix
- Sample IQ0788-01: 5 Layers: off-white paint, yellow paint, blue paint, off-white mix, off-white mud (Asbestos found in the mud)
- Sample IQ0789-01: 3 Layers: white mix, off-white mud, brown fibrous mix
- Sample IQ0790-01: 2 Layers: off-white paint, off-white mix, off-white mud (Asbestos found in the mud)
- Sample IQ0791-01: 2 Layers: beige paint, white mix
- Sample IQ0792-01: 3 Layers: bluish-white paint, off-white mix, off-white mud (Asbestos found in the mud)
- Sample IQ0793-01: 4 Layers: off-white paint, off-white mix, off-white mud, off-white fibrous mix (Asbestos found in the mud)
- Sample IQ0794-01: 4 Layers: white mix, off-white mud, brown and white fibrous mix (Asbestos found in the mud)
- Sample IQ0795-01: 2 Layers: yellowish mix, off-white mud (asbestos found in mud)
- Sample IQ0796-01: 4 Layers: white mix, brown and white fibrous mix, light grey chalky mix
- Sample IQ0797-01: 2 Layers: yellowish mix, white chalky mix
- Sample IQ0798-01: 2 Layers: beige paint, white chalky mix
- Sample IQ0800-01: 2 Layers: beige paint, white chalky mix
- Sample IQ0801-01: 2 Layers: white paint, light grey fibrous mix
- Sample IQ0802-01: 2 Layers: white paint, light grey fibrous mix
- Sample IQ0803-01: 1 Layer: yellow fibrous mix



Maxxam Job #: B409421  
Report Date: 2014/02/13

STERLING IAQ CONSULTANTS LTD.

Sterling IAQ Consultants Ltd.  
Client Project #: 51247

Your P.O. #: 700266127

Sample IQ0804-01: 2 Layers: pink tile, black mix  
Sample IQ0805-01: 1 Layer: grey tile  
Sample IQ0806-01: 1 Layer: grey fibrous mix  
Sample IQ0807-01: 2 Layers: black and white mix  
Sample IQ0808-01: 1 layer: yellow fibrous mix  
Sample IQ0809-01: 1 layer: black fibrous mix  
Sample IQ0810-01: 2 layers: black fibrous mix, white mix



Success Through Science

Maxxam Job #: B409421  
Report Date: 2014/02/13

Sterling IAQ Consultants Ltd.  
Client Project #: 51247

Your P.O. #: 700266127

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	RPD	
			Value (%)	QC Limits
7379790	Actinolite	2014/02/12	NC	N/A
7379790	Amosite	2014/02/12	NC	N/A
7379790	Anthrophyllite	2014/02/12	NC	N/A
7379790	Chrysotile	2014/02/12	NC	N/A
7379790	Crocidolite	2014/02/12	NC	N/A
7379790	Tremolite	2014/02/12	NC	N/A
7379790	Cellulose	2014/02/12	NC	N/A
7379790	Filler	2014/02/12	NC	N/A
7379790	Glass Fibres	2014/02/12	NC	N/A
7379790	Hair	2014/02/12	NC	N/A
7379790	Other Fibers	2014/02/12	NC	N/A

N/A = Not Applicable

RPD = Relative Percent Difference

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.



**Validation Signature Page**

Maxxam Job #: B409421

---

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

A handwritten signature in black ink, appearing to read "Andy Lu".

Andy Lu, Data Validation Coordinator

---

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.





4800 Canada Way, Burnaby, BC Canada V5C 1R6 Pk 804 794 7529 Toll Free: 1 800 885 2288 Fax: 604 794 2245

CHAIN OF CUSTODY RECORD

Page 2 of 2

G 067682

Maxxam Job: B409421

Invoice To: Return Report? Yes  No

Company Name: \_\_\_\_\_  
 Contact Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Phone / Fax: PH \_\_\_\_\_ FX \_\_\_\_\_  
 E-mail: \_\_\_\_\_

Report To: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Contact Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Phone / Fax: PH \_\_\_\_\_ FX \_\_\_\_\_  
 E-mail: \_\_\_\_\_

PO #: 700266121  
 Division #: \_\_\_\_\_  
 Project #: 51241  
 Print Name: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Sampled By: \_\_\_\_\_

REGULATORY REQUIREMENTS SERVICE REQUESTED:

GSR  Regular Turn Around Time (TAT)  
 (5 days for most tests)  
 OCME  RUSH (Please specify the lab)  
 BC Water Quality  1 Day  2 Day  3 Day  
 Other Date Required: \_\_\_\_\_  
**DRINKING WATER**

Special Instructions: \_\_\_\_\_  
 Return Cooler:  Ship Sample Bottles (please specify)

ANALYSIS REQUESTED														
Sample ID	Lab ID	Sample Type	Date/Time Sampled	STP/SPW	MTBE	TOC/TPH	SPH	TSI	PH	SRP/HSR	COND/MSD	CHLOR/RESIDUE 1-4 (Per B20)	COND/PH/RESIDUE 5-9	COND/STP/RESIDUE 1 (Per B20)
1	B13	1Q0800	6/24/14											
2	B14	1Q0801												
3	B15	1Q0802												
4	B16	1Q0803												
5	B17	1Q0804												
6	B18	1Q0805												
7	B19	1Q0806												
8	B20	1Q0807												
9	B21	1Q0808												
10	B22	1Q0809												
11	B23	1Q0810												
12														



Requisitioned by: _____	Date (YYMMDD): _____	Time: _____	Received by: <u>R/h BILLORUM</u>	Date (YYMMDD): <u>2014/02/05</u>	Time: <u>10:40</u>	Temp. Condition: <u>NA</u>	Temperature on Receipt (C): _____	Custody Seal Intact on Receipt: <u>NA</u>
-------------------------	----------------------	-------------	----------------------------------	----------------------------------	--------------------	----------------------------	-----------------------------------	---

IT IS THE RESPONSIBILITY OF THE SUBMITTER TO PROVIDE THE ACCURACY OF THE DATA OF ANALYSIS REQUESTED. AN ACCURATE RECORD OF ANALYSIS MUST BE MAINTAINED THROUGHOUT THE DELIVERY OF THE SAMPLE TO THE LABORATORY.

**APPENDIX B**  
**LEAD PAINT ANALYTICAL RESULTS**



Your P.O. #: 700266127  
Your Project #: 51247  
Your C.O.C. #: G067681

**Attention: Kenny Luong**  
Sterling IAQ Consultants Ltd.  
310-1122 Mainland St  
Vancouver, BC  
Canada V6B 5L1

**Report Date: 2014/02/12**  
**Report #: R1515218**  
**Version: 1**

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B409417**  
**Received: 2014/02/05, 10:40**

Sample Matrix: PAINT  
# Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICP-AES (acid extr. solid)	4	2014/02/11	2014/02/11	BBY7SOP-00018	EPA 6010c

\* Results relate only to the items tested.

Encryption Key

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

Crystal Ireland, B.Sc., Account Specialist  
Email: CIreland@maxxam.ca  
Phone# (604) 638-5016

=====  
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: 1



Business Through Science

Maxxam Job #: B409417  
Report Date: 2014/02/12

Sterling IAQ Consultants Ltd.  
Client Project #: 51247  
Your P.O. #: 700266127

**LEAD IN PAINT CHIPS (PAINT)**

Maxxam ID		IQ0772	IQ0773	IQ0774	IQ0775		
Sampling Date		2014/01/30	2014/01/30	2014/01/30	2014/01/30		
	UNITS	L1	L2	L3	L4	RDL	QC Batch
<b>Total Metals by ICP</b>							
Total Lead (Pb)	mg/kg	3.8	3380	1760	870	3.0	7377868

---

RDL = Reportable Detection Limit



Maxxam Job #: B409417  
Report Date: 2014/02/12

Maxxam Through Science

Sterling IAQ Consultants Ltd.  
Client Project #: 51247  
Your P.O. #: 700266127

General Comments
------------------



Maxxam Job #: B409417  
Report Date: 2014/02/12

Sterling IAQ Consultants Ltd.  
Client Project #: 51247  
Your P.O. #: 700266127

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Method Blank		RPD		QC Standard	
			Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7377868	Total Lead (Pb)	2014/02/11	3.0	mg/kg	16.9	35	89	80 - 120

N/A = Not Applicable

RPD = Relative Percent Difference

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

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.



**Validation Signature Page**

Maxxam Job #: B409417

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

Andy Lu, Data Validation Coordinator

---

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.



4800 Canada Way, Burnaby, BC Canada V6B 1K3 Tel: 604 734 2272 Fax: 1 800 667 1898 For: 604 731 2360

Maxxam Job#: B409417

CHAIN OF CUSTODY RECORD

Page 1 of 1

G 067681

Invoice To:  Regular Report  No   
 Company Name: 1756 PUBLIC WORKS & GOVERNMENT SERVICES  
 Contact Name: KEVIN KLEVER  
 Address: 641-500 BARRAD ST.  
LANGFORD BC V6Z 2V8  
 Phone / Fax: 250 718 9849  
 E-mail: KEVIN.KLEVER@PWSC-TPSC.BC.CA

Report To:  
STEELWING LAB CONSULTANTS LTD.  
KENNY L.  
PC  
KENNY@STEELWINGLABCONSULTANTS.COM

CO: 706266127  
 Division #  
 Project # 51247  
 Proj. Name:  
 Location:  
 Samples By:

REGULATORY REQUIREMENTS SERVICE REQUESTED:

CSR  Regular Turn Around Time (TAT)  
 CCME (5 days for most tests)  
 BC Water Quality  FLUSH (Please contact the lab)  
 Other  1 Day  2 Day  3 Day  
 DRINKING WATER Desk Required:

Special Instructions:  
 Return Cooler  Ship Sample Bottles (please specify)

ANALYSIS REQUESTED										
Sample ID	Lab ID	Sample Type	Date/Time	MTB	ATB	TSB	TSB	TSB	TSB	TSB
1	L1	180712	Bulk	Jan 30 '14						
2	L2	180713								
3	L3	180714								
4	L4	180715								
5										
6										
7										
8										
9										
10										
11										
12										



8409417

Requested by: Kenny Wang Date (YY/MM/DD): 14/02/07 Time: 3PM  
 Received by: Ken Blain Date (YY/MM/DD): 30/11/07 Time: 10:40  
 Temperature at Receipt (C): 16 Quantity Seal Intact on Receipt: Yes

IT IS THE RESPONSIBILITY OF THE REQUESTER TO KEEP THE ACCOUNT OF THE CHAIN OF CUSTODY RECORD AND COMPLETELY SIGN OFF ON ALL SAMPLES TO BE ANALYZED BY MAXXAM.



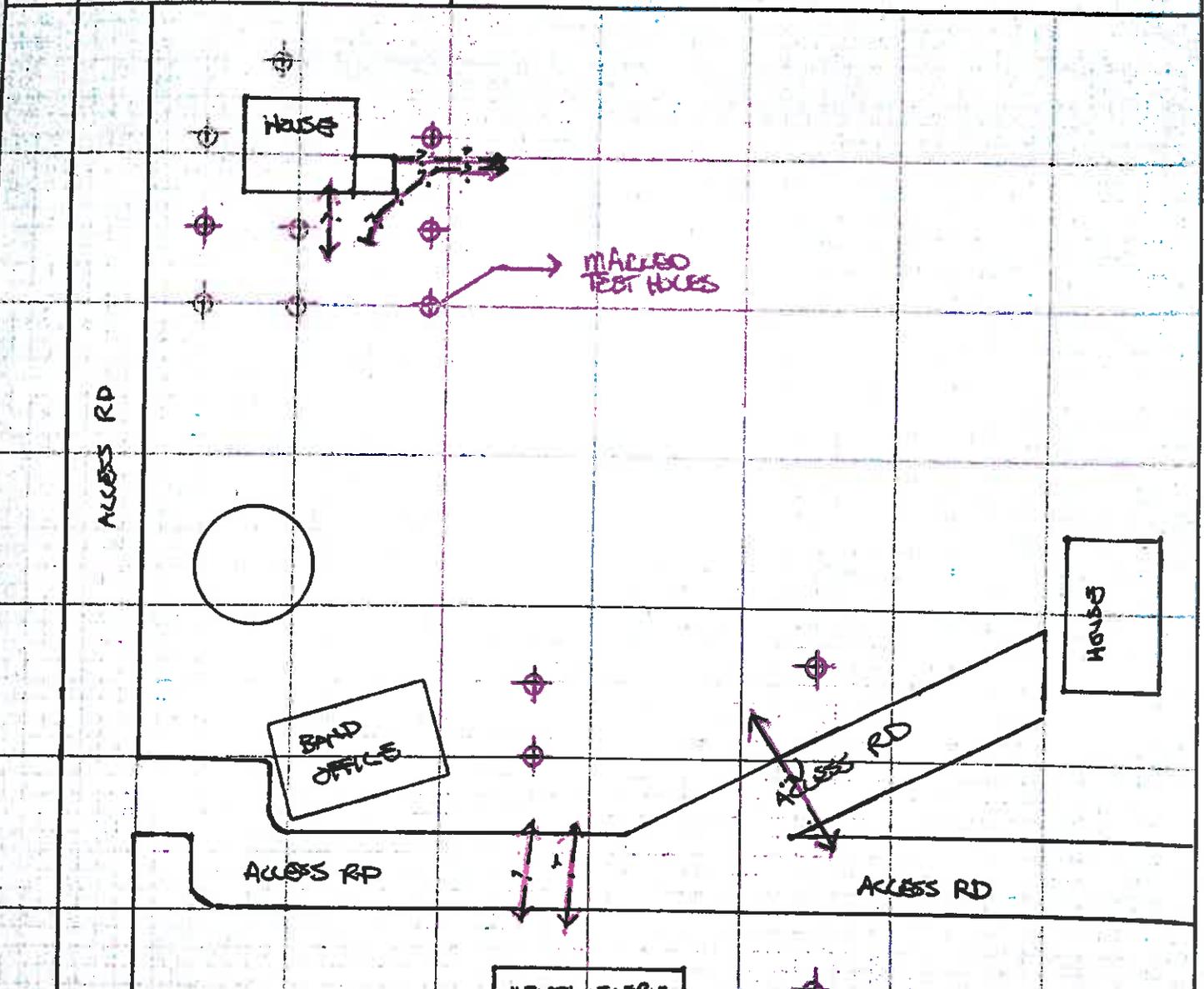
## **Appendix 7**



Site Address: <b>LOWER POST, ALASKA HWY</b>	Date of Survey: <b>NOV 29 / 2013</b>	<b>14393</b>
Quadra Site Rep: <b>RANDY LUSY</b>	Client Company: <b>FRANZ ENVIRO.</b>	

Facilities / Utilities Assessed:	<input type="checkbox"/> Gas Line <input type="checkbox"/> Water Line <input type="checkbox"/> Storm Sewer <input type="checkbox"/> Sanitary Sewer <input type="checkbox"/> Electrical Line <input type="checkbox"/> Comm	<input type="checkbox"/> W <input type="checkbox"/> St <input type="checkbox"/> S
----------------------------------	--	---

Comments: **EM LGPR SWEEP FOR MARKED TEST HOLES.**



This sketch is not a surveyed drawing. It is a general representation of buried utility lines and other relevant site features.

Quadra Utility Locating Ltd. will not accept any liability for damages incurred as a result of this locate. Locations of marked utilities are approximate. The exact location of any utility can only be determined by physically exposing the utility.		Client PO Number:
Refer to BC WCB Regulation 20.79 (Excavations, Underground Utilities) when performing subsurface work near buried utilities.		Client Job Number:
Type of Survey: <input checked="" type="radio"/> GPR <input type="radio"/> EM <input type="radio"/> Camera <input type="radio"/> Scope	BCOneCall Number: <u>N/A</u>	Client Name: <b>Chris McDonald</b>
Time: <b>9:30 AM to 2:30 PM + TR.</b>	Locate Package Provided By: <input checked="" type="radio"/> Client <input type="radio"/> Quadra	Client Signature: <i>[Signature]</i>
	<input checked="" type="checkbox"/> Private Property <input checked="" type="checkbox"/> Public Property <input checked="" type="checkbox"/> Both	

