RFP 2024-03

APPENDIX C

Island Environmental Health & Safety

Pre-Demolition Hazardous Materials Investigation

177 Third Street, Duncan, BC

Pre-Demolition
Hazardous Materials Investigation

177 Third Street, Duncan, BC

Prepared for

City of Duncan
peter@duncan.ca
250-746-6126

Island EHS Project # 50288

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Island EHS
Island Environmental Health & Safety Ltd.

201 – 990 Hillside Avenue
Victoria, B.C. V8T 2A1
778-406-0933
www.islandehs.ca

Executive Summary

Island EHS was engaged by the City of Duncan to carry out a pre-demolition destructive hazardous materials investigation at 177 Third Street, Duncan, BC. This investigation was conducted prior to demolition of the building. The building was unoccupied at the time of the investigation. This investigation was carried out on July 12, 2023. This investigation was intended to identify the locations and types of hazardous materials that are present in the building.

The house was constructed in 1920 and was a single-storey, single-family residential building with a crawlspace. A detached garage was also located on the property with an unknown vintage. All accessible areas of the buildings were inspected. Invasive sampling was carried out.

The following hazardous materials were reviewed:

Material	Description	Recommendation
Asbestos	Vermiculite; Textured Coating; Drywall Joint Compound (ceilings/overhead) Drywall Joint Compound (walls) Fibreboard & Duct Tape; Window Putty (interior and exterior); Sink Mastic (kitchen 2)	High Risk Work Procedures Modified-High risk work procedures Moderate risk work procedures
Lead	Lead containing paints were identified on interior and exterior surfaces of the building Additional paint samples were collected but were not submitted for analysis as the substrate was found to be asbestos containing	Personal protective equipment during demolition Lead exposure control plan Risk Assessment by Qualified Person Recycle flashings Painted materials to be removed following asbestos controls and disposed of as asbestos waste
Silica	Assumed to be present in concrete, drywall, textured coating, cement, grout, stucco, brick, and mortar	Personal protective equipment during demolition Silica exposure control plan
Mercury	Fluorescent light tubes and thermostats were observed	Remove for proper disposal prior to demolition
Hantavirus - Rodent Droppings	Rodent droppings were observed	Personal protective equipment during demolition Hantavirus exposure control plan
CCA-Pressure Treated Wood	Pressure treated wood not observed	No action necessary
Radioactive Materials	Smoke detectors were observed	Remove for proper disposal prior to demolition
Mould	Minor mould growth and water damaged building materials observed	Personal protective equipment during demolition Mould exposure control plan
PCBs	Fluorescent light fixtures were observed	Remove for proper disposal prior to demolition
Ozone Depleting Substances	Older refrigerators were present	Remove for proper disposal prior to demolition
Urea Formaldehyde Foam Insulation	None observed	No action necessary
Above Ground Storage Tanks (AGST)	None observed	No action necessary

Leachable Lead	TCLP analysis found to have leachable level of lead below the regulation limit	There are no special disposal requirements for these materials with regards to leachable levels of lead.
Other Hazardous Materials	Synthetic Insulation has the potential to exist within wall/ceiling cavities of the building	If encountered, personal protective equipment during demolition

Note: Renovation or demolition activities will require protective measures. Materials may be encountered during work activities that are not identified in this report. If this happens, work must stop in those areas until the materials are properly identified.

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1.0 Introduction

Island EHS was engaged by the City of Duncan to carry out a pre-demolition destructive hazardous materials investigation at 177 Third Street, Duncan, BC. This investigation was conducted prior to demolition of the building. The building was unoccupied at the time of the investigation. This investigation was carried out on July 12, 2023.

The house was constructed in 1920 and was a single-storey, single-family residential building with a crawlspace. A detached garage was also located on the property with an unknown vintage. Wall and ceiling finishes of the house consisted of drywall with a textured coating in select areas. Flooring consisted of sheet vinyl flooring, vinyl floor tile, carpet, and hardwood. The heating was supplied via a forced air furnace. The attic space was insulated with vermiculite insulation. The exterior of the house was finished with stucco. The rooftop consisted of tar shingle. Windows were a mix of steel and wood framed.

The detached garage was a single storey structure on a concrete pad. No interior finishes were observed. The exterior was finished with stucco. The rooftop consisted of wood shingles. **At the time of the investigation, the garage was partially collapsed. As such, observations were limited. If unidentified materials are observed during demolition, work must stop, and the material must be tested for the presence of asbestos.**

At the time of the investigation, it was observed that asbestos containing vermiculite from throughout the attic had fallen through cracks in the ceiling onto underlying surfaces within the house. As such, any entry into the building should be completed, at a minimum, with moderate risk work procedures, including the use of a HEPA-filtered face mask and a Tyvek suit, with all efforts to not to disturb the asbestos contamination.

The building is slated for demolition.

2.0 Hazardous Materials

Hazardous materials are present in many common building materials. These materials must be managed effectively to prevent exposure to workers and other persons, or they must be removed. In situations where work activities such as renovations and demolition will affect hazardous materials they must be removed prior to the start of work or appropriate control measures need to be implemented to ensure that workers are not exposed, and that contamination is not spread throughout the work and adjacent areas.

WorkSafeBC has established regulations regarding the handling and management of several hazardous materials along with guidelines for other hazardous materials. Other materials are regulated by environmental laws.

Materials that must comply with WorkSafeBC regulations include:

1. Asbestos
2. Lead
3. Silica
4. Mercury
5. Hantavirus
6. Arsenic
7. Radioactive materials

Materials that WorkSafeBC has established guidelines for include:

1. Mould

Materials that must comply with environmental regulations:

1. Polychlorinated biphenyls
2. Ozone depleting substances
3. Leachable metals
4. Urea formaldehyde foam insulation
5. Fuel oil storage tanks

WorkSafeBC regulation section 20.112(b) requires that this report be on site during any renovation, construction, or demolition work.

2.1 Materials Subject to WorkSafeBC Regulations

2.1.1 Asbestos

Asbestos is a generic term used to describe a group of naturally occurring fibrous minerals divided based on their mineralogical properties into; **serpentines** (snake-like or "S"-shaped); and **amphiboles** ("needle-like"). Three (3) types of asbestos were used commercially and were commonly encountered here in B.C. - Chrysotile (white), Amosite (brown) and Crocidolite (blue). Other forms of asbestos, which typically had little commercial value or use include Actinolite, Anthophyllite and Tremolite. (These forms of asbestos also belong to the amphibole family and may be found in Vermiculite insulation).

Asbestos is a very common component of building materials. Most asbestos containing materials went out of use in the early 1980s. However, WorkSafeBC has determined that buildings constructed up to and within the 1990s may still contain asbestos and must be inspected prior to the start of renovation or demolition activities.

Asbestos becomes a hazard when it is disturbed, and airborne dust is created. Caution must be taken to ensure that asbestos containing materials are not disturbed. Asbestos exposure is known to have several health effects including asbestosis, lung cancer and mesothelioma.

Asbestos has been used in approximately 3000 manufactured products, due to the fire-resistant properties, high tensile strength, chemical degradation resistance, high electrical resistance and strong insulating properties. Common sources of asbestos containing materials in residential structures include:

- Floor products (sheet flooring and floor tiles)
- Drywall filler compounds
- Plasters (usually in buildings constructed prior to 1930)
- Textured ceiling applications
- Duct tape (on heating system ducting and around forced air registers)
- Vermiculite
- Caulking and putties (on windows and doors and in levelling compounds)
- Cement products (siding and shingles as well as underground drainage pipes)
- Roofing felts and papers
- Pipe insulation (on piping, boilers and hot water tanks)

WorkSafeBC defines an asbestos containing material as one containing 0.5% or more asbestos by weight. Vermiculite is asbestos containing if any asbestos is present. WorkSafeBC has designated asbestos as an ALARA substance. This means that exposures to this material must be kept "as low as reasonably achievable". Section 5.54 of the Occupational Health and Safety Regulation states that employers are required to develop and implement an exposure control plan when workers may be exposed to airborne concentrations of asbestos greater than 50% of the exposure limit.

All asbestos waste must be handled, transported, and disposed of in accordance with current Ministry of Environment and Climate Change Strategy regulations.

2.1.2 Lead

Lead is a naturally occurring, blueish-grey metal that is soft, malleable, corrosion-resistant and easily melted (The melting point is 327^{o}C). It can be found in a wide variety of consumer and industrial products, from electrical equipment, x-ray equipment, vehicle batteries, decorate glass, extruded ammunition, pigments, and coatings to storage containers for nuclear waste.

There are two types of lead: organic and inorganic. Organic lead is less common and has different properties and health effects than inorganic lead. Because of the elimination of organic lead in British Columbia (phased out in the 1970s and banned since 1990, except for certain applications (i.e., non-road vehicles)), exposure to organic lead is less of a concern. Therefore, the following refers to inorganic lead exposure in the workplace.

Lead has been commonly used in paints and coatings. Coatings manufactured prior to 1970 are likely to contain high concentrations of lead. In the late 1970s, Canada restricted the concentration of lead in consumer paints to 5,000 ppm. These restrictions did not apply to exterior paints. The acceptable level of lead in consumer paints was last reduced by the Federal government in 2010 to a concentration of 90 ppm. Lead can still be added to certain classes of paint if the display panel carries a warning. Lead in paint concentration is not regulated when used in commercial or industrial worksites.

Lead becomes a hazard when painted surfaces are disturbed and airborne dust is created. Caution must be taken to ensure that lead containing materials are not disturbed. Lead exposure is known to have several health effects including damage to the central and peripheral nervous systems. It also affects the uptake of oxygen in the blood and can accumulate in bones. Lead is toxic to both male and female reproductive system and can have damaging effects to a developing fetus. Lead exposures can also occur when lead products are touched and lead contamination is ingested (eaten).

Lead is used in plumbing fixtures. Flashings and other products found on roofs may be made of pure lead. Lead has also been used in solders. This may be found on plumbing lines as well as on electrical equipment.

WorkSafeBC has designated lead as an ALARA substance. This means that exposures to this material must be kept “as low as reasonably achievable”. An employer must not permit workers to engage in a work activity or lead process that may expose workers to lead dust, fumes or mist unless a risk assessment has first been completed by a qualified person. If the risk assessment indicates potential for lead exposure, an exposure control plan meeting the requirements of Section 5.54 of the Occupational Health and Safety Regulation must be developed.

Waste materials with lead containing paint on them may have special disposal requirements (See Section 2.3.5). Lead paint that has been removed from building materials requires leachate testing to determine the appropriate method of disposal.

2.1.3 Silica

"Silica" is the commonly used term for the chemical compound silicon dioxide ($Si0_2$). It is the second most common mineral on earth and makes up nearly all of what we call “sand” and “rock.” It is found almost everywhere. It appears in two (2) main forms - amorphous and crystalline. Amorphous silica is not generally considered to be a significant hazard. Crystalline silica is known

to have several health effects including silicosis. The definition of respirable crystalline silica (RCS) includes the quartz, crystalline silica and cristobalite. The form most likely to cause serious problems for worker health is quartz.

Crystalline silica is present in several common building materials. These include:

- Plasters
- Cement
- Sand/gravel
- Brick and Masonry
- Stucco
- Drywall Filler Compounds
- Granite
- Tile and tile grout

RCS becomes a hazard when it is disturbed, and airborne dust is created. Caution must be taken to ensure that silica containing materials are not disturbed.

A worker may develop any of three (3) types of silicosis, depending on the concentrations of silica dust and the duration of exposure:

- Chronic silicosis—develops after 10 or more years of exposure to crystalline silica at relatively low concentrations
- Accelerated silicosis—develops 5 to 10 years after initial exposure to crystalline silica at high concentrations
- Acute silicosis—develops within a few weeks, or 4 to 5 years, after exposure to very high concentrations of crystalline silica

Initially, workers with silicosis may have no symptoms; however, as the disease progresses, a worker may experience shortness of breath; severe cough and/or weakness. These symptoms can worsen over time and lead to death.

The WorkSafeBC Occupational Health & Safety Regulation 8-hour time-weighted exposure limit for respirable crystalline silica is 0.025 mg/m^3. In addition (similar to asbestos and lead), as crystalline silica is considered to be a carcinogen, all reasonable precautions must be taken to reduce exposure to levels that are as low as reasonably achievable (ALARA). Likewise, an employer must not permit workers to engage in a work activity or silica process that may expose workers to respirable crystalline silica dust unless a risk assessment has first been completed by a qualified person. If the risk assessment indicates potential for RCS exposure, an exposure control plan meeting the requirements of Section 5.54 of the Occupational Health and Safety Regulation must be developed.

2.1.4 Mercury

Mercury is a metal that is liquid at room temperatures and vaporizes at low temperatures. Mercury has several industrial uses. It is also found in thermostats, thermometers, and inside fluorescent light tubes.

Mercury has a significant toxic effect on the central nervous system and can cause disease and even death. Mercury becomes a hazard when it is released into the environment. Significant concentrations of mercury can be present at room temperature because it vaporizes at low temperatures. This can occur when mercury thermometers or thermostat bulbs are broken or when fluorescent light tubes are broken.

WorkSafeBC has designated mercury as an ALARA substance. This means that exposures to this material must be kept “as low as reasonably achievable”. Section 5.54 of the Occupational Health

and Safety Regulation states that employers are required to develop and implement an exposure control plan when workers may be exposed to airborne concentrations of mercury greater than 50% of the exposure limit.

All mercury waste requires disposal in accordance with current Ministry of Environment and Climate Change Strategy requirements, and/or disposed of as per local landfill requirements.

2.1.5 Hantavirus

Hantavirus is associated with Hantavirus Pulmonary Syndrome. This disease is contracted by encountering the droppings or urine of infected rodents. It can also be contracted by being bitten or scratched by infected rodents.

WorkSafeBC states that employers are required to develop and implement an exposure control plan when workers may be exposed to potentially contaminated rodent droppings.

It should be noted that diseases are associated from contact with other animal droppings, most notably Histoplasmosis, from contact with infected bird droppings.

Any (potentially) hantavirus-contaminated waste should be treated/sprayed with a disinfectant (i.e., 10 percent chlorine bleach) and doubled bagged in plastic and sealed. (The plastic double-bagged waste should ideally be handled in a manner which is puncture-proof). Once treated and appropriately sealed, there are no special disposal requirements for waste containing infected animal droppings. It can be disposed of with regular construction waste, or household garbage.

2.1.6 CCA-Pressure Treated Wood

Pressure treated wood manufactured prior to 2004 used chromated copper and arsenate (CCA) as an insecticide, fungicide, and rodenticide preservative. CCA was a major source of treated wood for decks, playgrounds, and other outdoor residential structures.

Exposure concerns are centered around arsenic, an element that can increase the risk of certain types of cancers. Exposures can occur when the CCA wood is aggressively disturbed, and dust becomes airborne. Sawdust from cutting pressure treated wood or burning these materials can result in significant airborne arsenic concentrations. Workers should use the appropriate PPE when cutting pressure treated wood.

Disposal of arsenic waste must be in accordance with current Ministry of Environment and Climate Change Strategy requirements.

2.1.7 Radioactive Materials

Radioactive materials are commonly found in smoke detectors. A small amount of radioactive materials (^{241}Americium) is sealed in a metal case inside smoke detectors. This metal case must remain undisturbed to prevent exposure to radioactive materials.

Some ceramic tiles and forms of granite have also been found to contain radioactive materials. Radon is a naturally occurring gas created during the decay of other radioactive materials. It is not considered a significant concern on Lower Vancouver Island.

Dispose smoke detectors in accordance with Canadian Nuclear Safety Commission requirements and/or disposed of as per local landfill requirements.

2.2 Materials Subject to WorkSafeBC Guidelines

2.2.1 Mould

Mould is prevalent throughout our environment. It occurs naturally with mould spores being present everywhere. Mould is nature's way of breaking down and recycling organic materials. Mould spores require suitable moisture, temperatures, and food sources to begin growing. Water leaks (even very minor leaks) and moisture accumulation are usually sufficient for mould to begin growing.

Exposure to mould spores most often results in allergy type responses in susceptible individuals. These are similar in nature to "hay fever" and can include runny eyes and noses and throat irritation. In more extreme cases, exposure to mould spores can result in "pneumonia-like" responses.

WorkSafeBC has not established exposure levels for airborne mould spores. WorkSafeBC does provide guidelines for dealing with mould contamination. These guidelines are included in the Indoor Air Quality regulation guidelines, section 4.79 and the Canadian Construction Association document, "Mould Guidelines for the Canadian Construction Industry," CCA82-2018

There are no special disposal requirements for mould waste.

2.3 Materials Controlled by Environmental Regulations

2.3.1 Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) are regulated by both Provincial and Federal regulations. Fluorescent light ballasts containing PCBs manufactured prior to 1981 must be treated as PCB waste and stored and disposed of in accordance with current regulations. Fluorescent light fixtures removed during demolition, construction or maintenance activities must be inspected for the presence of PCBs.

Each ballast identified as containing PCBs must be sent to a licenced facility in accordance with current regulatory requirements.

2.3.2 Ozone Depleting Substances

Ozone depleting substances (ODS) and chlorofluorocarbons are commonly found in older refrigerators and air conditioning units and in fire suppression systems. Environmental regulations restrict the release of these compounds into the environment.

When systems or equipment contains ODS are set for disposal all the ODS must be collected for recycling or disposal by a licenced contractor.

2.3.3 Urea Formaldehyde Foam Insulation

Urea formaldehyde foam insulation (UFFI) was used as a retrofit insulation in older buildings. The expanding foam would be sprayed into wall and ceiling cavities to provide additional insulation in older buildings. It was most used in residential settings.

Over time, in the presence of moisture, the insulation can break down and release formaldehyde gas. This insulating material was banned in 1978. Many older buildings contain UFFI.

There are no special disposal requirements for UFFI waste.

2.3.4 Fuel Oil Storage Tanks

Fuel oil storage tanks (above and below ground) are found in many houses and commercial buildings. The tanks can corrode and leak as they age. Spills often occur during tank filling and create contamination.

Tanks in use must be monitored to ensure that spillage and contamination does not occur. Tanks no longer in use must be removed for disposal and the surrounding soil checked for contamination.

2.3.5 Leachable Metals

The BC Ministry of Environment and Climate Change Strategy regulates the disposal of some waste materials based on the leachability of metals and other compounds from the waste. Testing may have to be carried out on materials removed from the building before they can be sent for disposal. This will depend on where the waste is being sent.

Consult with your local landfill to determine if toxicity characteristic leaching procedure (TCLP) is required for the determination of leachable lead concentrations prior to acceptance as construction waste.

2.3.6 Other Materials

A number of hazardous materials may be present in a building that will be affected by renovations or demolition. These can include:

- Propane or butane cylinders
- Paint
- Solvents
- Toxic or corrosive products
- Other flammable materials

3.0 Methodology

3.1 Asbestos Containing Materials

Island EHS collected forty-three (43) bulk samples of building materials for analysis of asbestos content (see Appendix 2 for a complete list of materials and the analytical results). Quantities and materials sampled were selected based on our experience and on the WorkSafeBC guideline "Safe Work Practices for Handling Asbestos" (current edition). Samples were analyzed at our in-house laboratory in accordance with the National Institute for Occupational Safety and Health (NIOSH) Analytical Method 9002, "Asbestos (bulk) by Polarized Light Microscopy."

Island EHS's laboratory is deemed proficient by the American Industrial Hygiene Association (AIHA) and participates in quarterly rounds of proficiency testing to maintain registration.

3.2 Lead Containing Paints

Island EHS collected four (4) representative samples of paint chips for analysis. The samples were collected in labelled re-sealable containers and submitted to our in-house laboratory for analysis of lead content using ASTM E1645-01 (for sample preparation of dried paint) and EPA 7000B (using Flame Atomic Absorption Spectrophotometry).

Island EHS also collected three (3) additional representative samples of paint chips for analysis. The samples were collected in labelled re-sealable containers, however they were not submitted for analysis to determine the lead content, as the underlying substrate was found to be asbestos containing.

Island EHS also collected duplicate lead paint samples for Toxicity Characteristic Leaching Procedure (TCLP) testing. This procedure is designed to determine the 'mobility' or 'leachability' of lead in liquid or solid wastes. One (1) composite sample of painted building materials was submitted in a labelled re-sealable plastic container to Bureau Veritas for lead analysis using EPA Method 6010d m and EPA Method 1311.

See Appendix 2 for the analytical results.

3.3 Other Hazardous Materials

The presence of mercury, CCA-pressure treated wood, ozone-depleting substances (ODS), polychlorinated biphenyls (PCBs), radioactive sources, silica, rodent/avian feces, mould, urea-formaldehyde foam insulation (UFFI), oil storage tanks, and other hazardous chemicals was determined by visual inspection only; no sampling of these materials was carried out.

4.0 Results and Recommendations

The building was inspected for the presence of a variety of hazardous materials. WorkSafeBC requirements specify that precautions are necessary when handling these materials. The necessary precautions will depend on the disposition of each hazardous material.

Trained qualified contractors need to be hired to carry out remedial work on hazardous materials. All general demolition work should be carried out by workers wearing respirators and disposable coveralls.

Copies of this report must be provided to contractors engaged to work in the building.

Notices of Project must be submitted in accordance with WorkSafeBC requirements.

Materials may be encountered during work activities that are not identified in this report. If this happens, work must stop in those areas until the materials are properly identified.

4.1 Asbestos

Island EHS collected forty-three (43) representative bulk samples of such materials as drywall joint compound, textured coating, sheet vinyl flooring, sink mastic, concrete, grout, caulking, adhesive, patching compound, vinyl floor tile, window putty, cement board, stucco, vermiculite, brick mortar, and roofing materials from the buildings. Table 1 summarizes the asbestos containing materials that were identified.

Table 1: Summary of Asbestos Containing Materials

Location	Description	Asbestos Type & Percentage	Approximate Quantity	Removal Requirements
Select Walls/ Ceilings	Textured Coating/Paint	1% Chrysotile	All textured coating throughout the house	High risk work procedures
Ceilings – Throughout	Drywall Joint Compound (ceilings/ overhead)	1% Chrysotile	All drywall ceilings throughout the house	High risk work procedures
Attic	Vermiculite	1% Tremolite	All vermiculite throughout the attic of the house (and may be present within wall cavities)	High risk work procedures
Walls – Throughout	Drywall Joint Compound (walls)	1% Chrysotile	All drywall walls throughout the house	Modified-High risk work procedures
Windows – Throughout	Window Putty	1% Chrysotile	All windows throughout the buildings	Moderate risk work procedures

Location	Description	Asbestos Type & Percentage	Approximate Quantity	Removal Requirements
Kitchen 2 – Sink	Sink Mastic	4% Chrysotile	One (1) sink with associated mastic observed	Moderate risk work procedures
House – Heating System – Throughout	Fibreboard & Duct Tape	Typically, 60% Chrysotile	All heating system components throughout the building	Moderate risk work procedures

*Quantities of identified asbestos containing materials are an estimate of observable asbestos-containing materials. Concealed or inaccessible materials may not have been included in this estimate. It is the responsibility of the abatement contractor to ensure accurate measurements.

Photographs of all samples analyzed are attached in **Appendix 1**. Results of sample analysis are attached in **Appendix 2**. Floor plans showing sample locations are attached in **Appendix 3**.

At the time of the investigation, the garage was partially collapsed. As such, observations were limited. If unidentified materials are observed during demolition, work must stop, and the material must be tested for the presence of asbestos.

At the time of the investigation, it was observed that asbestos containing vermiculite from throughout the attic had fallen through cracks in the ceiling onto underlying surfaces within the house. As such, any entry into the building should be completed, at a minimum, with moderate risk work procedures, including the use of a HEPA-filtered face mask and a Tyvek suit, with all efforts to not to disturb the asbestos contamination.

A visual inspection of accessible areas within the attic space was conducted and vermiculite insulation was observed. This material may also exist in areas not inspected beneath insulation or within false ceilings, it may also exist within wall cavities and around chimneys. If discovered the material should be assumed to contain asbestos.

Given that five (5) out of eight (8) drywall joint compound samples collected were identified as asbestos containing, all drywall joint compound throughout the building should be considered asbestos containing.

Given that three (3) out of six (6) window putty samples collected were identified as asbestos containing, all window putty throughout the buildings should be considered asbestos containing.

Some waste receivers will not accept waste depending on when the hazmat report was completed. If the length of time between report completion and abatement exceeds the time limit established by the waste receiver, then additional testing may be required.

Prior to the performance of any work that may disturb asbestos containing materials it is a regulatory requirement that a qualified person perform a Risk Assessment. This requirement is in compliance with the WorkSafeBC Occupational Health & Safety Regulation *Part 6 "Substance Specific Requirements"*; specifically Section 6.6 subsections (1), (2), (3), & (4).

Prior to commencement of any work involving the disturbance of asbestos containing materials, a Notice of Project (NOP) for Work involving Asbestos must be submitted to WorkSafeBC a minimum of 48 hours prior to the work commencing. In conjunction with the NOP, the Contractor must also submit a copy of this report / any bulk sample analysis results, a site specific Risk Assessment; and site-specific work procedures.

All asbestos abatement activities must follow the guidelines outlined in the WorkSafeBC publication “Safe Work Practices for Handling Asbestos” (current edition).

The removal of **asbestos containing textured coating/paint, drywall joint compound (ceilings/overhead),** and **vermiculite** should be conducted using **High Risk** asbestos abatement procedures. These procedures must be utilized by a qualified contractor and include as a minimum requirement:

- HEPA-equipped Powered air purifying respiratory (PAPR) protection and disposable Tyvek coveralls;
- Application of water to the asbestos debris materials being disturbed;
- Isolation of the work area;
- HEPA equipped negative air unit for dust suppression purposes;
- Shower;
- Air monitoring as per WorkSafeBC requirements.

The removal of **asbestos containing drywall joint compound (walls)** should be conducted using **Modified**, **High Risk** asbestos abatement procedures. These procedures must be utilized by a qualified contractor and include as a minimum requirement:

- HEPA-equipped Powered air purifying respiratory (PAPR) protection and disposable Tyvek coveralls;
- Application of water to the asbestos debris materials being disturbed;
- Isolation of the work area;
- HEPA equipped negative air unit for dust suppression purposes;
- Air monitoring as per WorkSafeBC requirements.

The removal of **asbestos containing fibreboard, duct tape, window putty** and **sink mastic** should be conducted using **Moderate Risk** asbestos abatement procedures. These procedures must be utilized by a qualified contractor and include as a minimum requirement:

- HEPA filtered half face respiratory protection and disposable Tyvek coveralls;
- Application of water to the asbestos debris materials being disturbed;
- Isolation of the work area;
- Air monitoring as per WorkSafeBC requirements.

Asbestos cement piping was sometimes used for perimeter drains, storm drains and sewer lines. Bell & spigot gasket piping may contain asbestos gaskets. Knob and tube wiring insulation may also contain asbestos. These products may be encountered on the site.

4.2 Lead Containing Paints

The allowable level of lead in new paints is set by Health Canada under the Canada Consumer Protection Act, Surface Coating Materials Regulation (SOR 2005-09). Under this regulation the maximum allowable concentration of lead in new paint sold to consumers is 0.009% (90 µg/g). WorkSafeBC considers paint which contains lead at any concentration to present a potential health hazard if it is removed incorrectly.

Lead testing was carried out on four (4) paint samples collected from interior and exterior surfaces of the building. All four (4) of the paint sample results were determined to be lead containing paint, with concentrations greater than the laboratory detection limit. All samples determined to be lead containing are bolded in Table 2, below.

Additionally, three (3) paint samples were collected for determination of lead content (textured white paint, white paint, and pink paint, found on select interior finishes of the building); however, they were not submitted for analysis as the underlying substrate was found to be asbestos containing. (These painted materials must be removed following appropriate asbestos controls and disposed of as asbestos containing waste).

Table 2: Summary of Lead in Paint

Location	Description	Lead Content (µg/g)
Select Walls/Ceilings	White Textured Paint	n/a – substrate was asbestos-containing
Select Walls/Ceilings	White Paint	n/a – substrate was asbestos-containing
Select Walls/Ceilings	Pink Paint	n/a – substrate was asbestos-containing
Select Walls/Ceilings	**Cream Paint**	**1540**
Kitchen 2 Walls/Cabinets/Trim	**Tan Paint**	**1770***
Exterior Stucco	**White Paint**	**1190**
Exterior Trim	**White Paint**	**13600**

µg/g = micro grams per gram.
< = result is less than the limit of detection.
*substrate/matrix interference possible

Any untested painted surfaces are presumed lead containing unless sampled and found to be non-lead containing. Lead may be present as solder on any remaining plumbing systems and may be present on other fixtures such as flashings or roof vents.

WorkSafeBC Occupational Health and Safety Regulation (OHSR) requires that an employer not permit workers to engage in a work activity that may expose workers to lead dust, fumes or mist unless a risk assessment has first been completed by a qualified person. If the risk assessment indicates potential for lead exposure, an exposure control plan meeting the requirements of Section 5.54 of the Occupational Health and Safety Regulation must be in place and implemented prior to commencing work. The Regulation also requires that lead in air samples be collected at the beginning of work tasks to ensure proper control methods are employed to control lead dust exposures. Alternatively, a qualified person may rely on existing exposure monitoring data for the purpose of assessing control measures under Section 6.59.1(4) of the OHSR.

Prior to commencement of any work involving the disturbance of lead containing materials, a Notice of Project (NOP) for Work involving Lead must be submitted to WorkSafeBC a minimum of 48 hours prior to the work commencing. In conjunction with the NOP, the Contractor must also submit a copy of this report / any lead paint bulk sample analysis results, a site specific Risk Assessment; and site-specific work procedures.

All lead abatement activities must follow the guidelines outlined in the WorkSafeBC publication “Safe Work Practices for Handling Lead” (current edition).

To control worker exposure to lead paint particulate, any demolition, cutting, burning, grinding, sanding or other disturbance of identified lead painted surfaces should be conducted following appropriate safe work procedures outlined in the WorkSafeBC publication “Safe Work Practices for Handling Lead” (current edition). Procedures will vary depending on the nature of the work but should consider, as a minimum, the following:

- Use of half face respirators equipped with P100 class filters, disposable Tyvek™ or equivalent coveralls and work gloves;
- Segregation of the work area by the use of barrier tape and warning placards;
- Use of drop sheets and tarps to prevent spread of lead containing dust;
- Use of HEPA filter equipped vacuum cleaner(s);
- Thorough washing before eating, drinking or smoking;
- Application of water to the materials being disturbed;
- Filing of a “Notice of Project” with WorkSafeBC prior to significant disturbance of lead containing paint; and
- Air monitoring during disturbance of lead containing paint.

Under the BC Hazardous Waste Regulation materials with identified lead containing paint destined for disposal at a licensed landfill facility must be tested for leachability to determine if they should be handled as a hazardous waste.

4.3 Leachable Metals

The BC Ministry of Environment and Climate Change Strategy regulates the disposal of some waste materials based on the leachability of metals and other compounds from the waste.

Under the BC Hazardous Waste Regulation materials with lead paint concentrations over 0.01 wt. % (100ppm) destined for disposal at a licensed landfill facility must be tested for leachability to determine if they should be handled as a hazardous waste. If lead paint is present on metal components, those components may be recycled as metal waste, and therefore, leachate analysis would not be required.

One (1) composite sample of various painted building materials was collected and submitted for analysis to determine if these materials meet current Ministry criteria for disposal with regards to leachable levels of lead.

The composite sample of building materials was found have a leachable level of lead below the BC Hazardous Waste Regulation of 5.0 mg/L (Table 3).

Table 3: TCLP Results

Description	TCLP Lead (mg/L)
Composite sample of painted building materials	<0.30
	BC Hazardous Waste Regulation Limit for Leachable Lead 5.0 mg/L

TCLP analysis for the sample of building materials destined for the landfill was found to have a leachable amount of lead below the regulation limit. There are no special disposal requirements for these materials with regards to leachable levels of lead.

4.4 Silica

Silica testing was not carried out, but this material is presumed to be present in concrete, drywall, textured coating, ceramic tile, grout, stucco, brick, and mortar.

Precautions must be put in place during demolition and renovation activities to ensure that workers are not exposed to silica containing dust and debris. **WorkSafeBC regulation requires that contractors working with silica-based containing materials have a Silica Exposure Control Plan in place including site specific Safe Work Procedures prior to work commencing.**

To control worker exposure to silica dust, any abrasive blasting, jackhammering, chipping, drilling, cutting, sawing or other disturbance of identified concrete, plaster or drywall walls or cementitious products should be conducted following appropriate safe work procedures. Procedures will vary depending on the nature of the work but should consider, as a minimum, the following:

- Use of half-face respirators equipped with P100 class filters, disposable Tyvek™ or equivalent coveralls and work gloves;
- Continuous application of water spraying to materials being disturbed;
- Use of drop sheets and tarps to prevent spread of silica-containing dust;
- Use of HEPA filter equipped vacuum(s);
- HEPA equipped negative air unit for dust suppression purposes (recommended); and
- Air monitoring as per WorkSafeBC requirements.

4.5 Mercury

Fluorescent lights were observed. Used light tubes and compact fluorescent bulbs must be sent for proper disposal.

Mercury containing thermostats were also observed. Care must be taken to ensure that the glass bulb containing mercury is not damaged. Fluorescent light tubes and bulbs containing mercury vapour should be disposed of in accordance with BC Ministry of Environment Regulations and/or local landfill requirements. Systems are in place that can facilitate recycling of the glass and mercury in fluorescent lights while mitigating worker exposure during the disposal process.

4.6 Hantavirus (and other Animal Droppings)

Rodent faeces were observed throughout the building. It is recommended that all personnel conducting work in this area wear, at a minimum, half face respirator fitted with HEPA filtered P100 cartridges, disposable suits and impermeable gloves and eye protection and that use of HEPA filtered negative air cabinets and HEPA filtered vacuums be employed.

WorkSafeBC regulation requires that contractors handling/cleaning animal and rodent feces have a Hantavirus Exposure Control Plan in place including site specific Safe Work Procedures prior to work commencing.

4.7 CCA-Pressure Treated Wood

Pressure treated wood was not observed. If encountered, the material should be discarded as landfill waste, or recycled responsibility. Workers should wear protection (e.g., goggles, gloves, and dust mask) when sawing, cleaning, or handling CCA-pressure treated wood, and **not** burned. Following handling, workers should properly decontaminate by washing hands/face and laundering any contaminated clothing.

4.8 Radioactive Materials

Smoke detectors were observed. These detectors may be of the ionization type or photoelectric type. Ionization smoke alarms contain a small amount of a material called Americium 241, which emits alpha particles that collide with the oxygen and nitrogen in the air to create ions. Photo-electric smoke detectors use a tiny beam of light to detect smoke particles with no radioactive materials. If smoke detectors are used as directed and not opened, or damaged, they pose no radiation health risk to humans. The contractor must ensure that the smoke detectors' sources are not damaged during upcoming renovation/demolition. Smoke detectors may be disposed of as regular household waste in accordance with Canadian Nuclear Safety Commission requirements and/or disposed of as per local landfill requirements.

4.9 Mould

Minor mould growth and water damaged building materials were observed throughout the building. Precautions must be taken to minimize worker exposures to mould spores.

Fungal contamination may also be present within wall or ceiling cavities. During demolition activities, precautions must be taken to ensure that workers are not exposed to potential mould spores which would include, as a minimum, half face respirator fitted with HEPA filtered P100 cartridges, disposable suits and impermeable gloves and eye protection and that use of HEPA filtered negative air cabinets and HEPA filtered vacuums be employed. All fungal remediation activities must follow WorkSafeBC Occupational Health and Safety Guideline 4.79. Further investigations may be required to determine the nature and extent of any water and fungal damage along with remediation requirements.

4.10 Polychlorinated Biphenyls

Fluorescent light fixtures were observed. All ballast labels must be inspected to determine whether PCBs are present prior to disposal using Environment Canada's document, "Identification of Light Ballasts Containing PCBs" (EPS 2/CC/2, revised August 1991). Non-PCB containing ballasts must have a label affixed which states they do not contain PCBs (e.g., "non-PCB"). If no determination can be made the ballasts must be assumed to contain PCBs. All confirmed and presumed PCB ballasts must be disposed in accordance with the Hazardous Waste Regulation (BC Reg. 243/2016).

4.11 Ozone Depleting Substances

Older refrigerators were observed. These may contain chlorofluorocarbons. This material must be removed by a qualified refrigeration specialist for recycling or disposal in accordance with the *Ozone Depleting Substances and Other Halocarbons Regulation* when the units are taken out of service.

4.12 Urea Formaldehyde Foam Insulation

Urea Formaldehyde Foam Insulation was not observed. This material is not suspected of being present.

4.13 Fuel Oil Storage Tanks

Fuel oil storage tanks (above ground) were not observed during the investigation.

The identification of the presence of (any) underground tanks was not included within the scope of this investigation.

4.14 Other Materials

Synthetic glass fibre insulation has the potential to exist within wall/ceiling cavities of the building. If encountered, removal of these materials should be conducted wearing proper respiratory protection and protective clothing including impermeable gloves, eye protection and half-face respiratory protection equipped with P-100 particulate filters.

4.15 Abatement Clearance Documentation

To comply with BC Workers Compensation Board Occupational Health & Safety Regulation Part 20.112(8) a qualified person (Island EHS) must conduct a final inspection after all the hazardous materials identified in this report have been safely contained or removed. Once all the hazardous materials have been removed and the final inspection has been completed, a written clearance letter can be provided.

Should asbestos abatement be undertaken by unqualified persons (i.e., homeowners), the work area will require aggressive air clearance sampling. This air sampling will extend to any adjacent areas that have not been isolated from the hazard and potential contamination. Clearance letters, required to document removal of asbestos for issuance of building permits and contractors hired to work in the space, will not be granted subject to failure of this testing. The owner/client is responsible for the additional fees incurred for these services.

5.0 Closure

This document was prepared for the exclusive use of our client. All conclusions and recommendations are based upon conditions at the site at the time of this investigation. All conclusions and recommendations are based upon professional opinions. These opinions are in accordance with accepted industrial hygiene assessment standards and practices and comply with current WorkSafeBC requirements.

All conclusions and recommendations made in this report are based on conditions at the time of inspection. Changes may occur over time that will require a re-evaluation of the site.

All work was carried out based on the Scope of Work that was agreed upon with the client prior to the start of work, constraints imposed by the client and availability of access to the site. A Stage 1 Preliminary Site Investigation was not part of the scope of work.

No warranty or guarantee, whether expressed or implied, are made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon site conditions at the time of the investigation.

This report may not be used, relied upon, copied, published, or quoted by any party without the written consent of Island EHS. Other parties reading this report must independently verify the completeness and accuracy of this report and its contents.

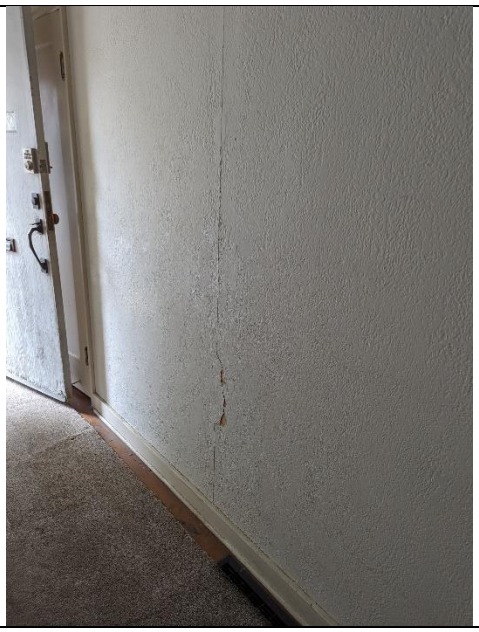
This report is not intended as a Scope of Work for tender or bidding purposes. Any use of this report in that fashion is at the sole discretion and liability of the Owner.

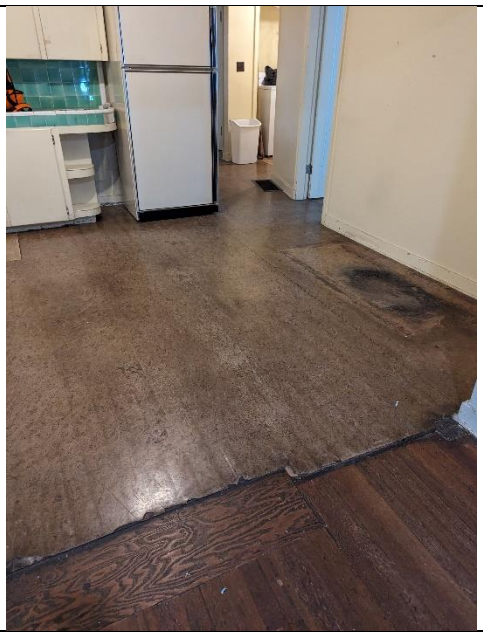
Steven Learning, B.Env.St
Occupational Hygiene Technician
Field Investigation & Report

Ashlee McGiffin
Senior Occupational Hygienist
Review

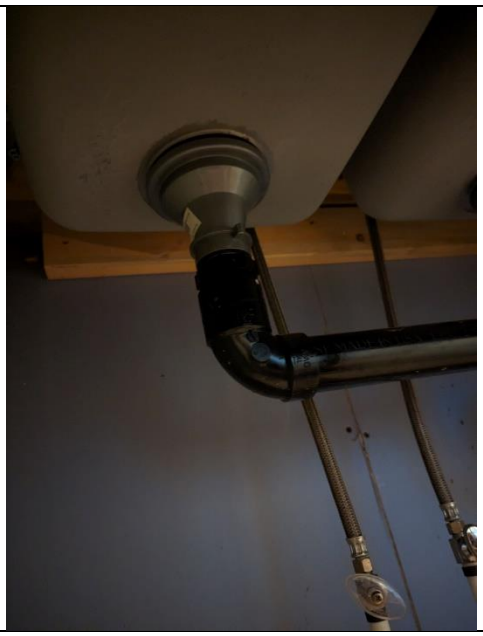
Appendix 1

Photographs

	
Sample: 50288 – 1 Location: Living Room – Ceiling Description: Drywall Joint Compound/Textured Coating Asbestos: **Chrysotile 1%**	Sample: 50288 – 2 Location: Living Room – Wall Description: Drywall Joint Compound/Textured Coating Asbestos: **Chrysotile 1%**
	
Sample: 50288 – 3 Location: Bedroom 1 – Wall Description: Drywall Joint Compound/Textured Coating Asbestos: **Chrysotile 1%**	Sample: 50288 – 4 Location: Dining Room – Ceiling Description: Drywall Joint Compound/Textured Coating Asbestos: **Chrysotile 1%**



Sample: 50288 – 5
Location: Kitchen
Description: Sheet Vinyl Flooring (Dark Brown)
Asbestos: None detected



Sample: 50288 – 6
Location: Kitchen – Sink
Description: Mastic (Grey)
Asbestos: None detected

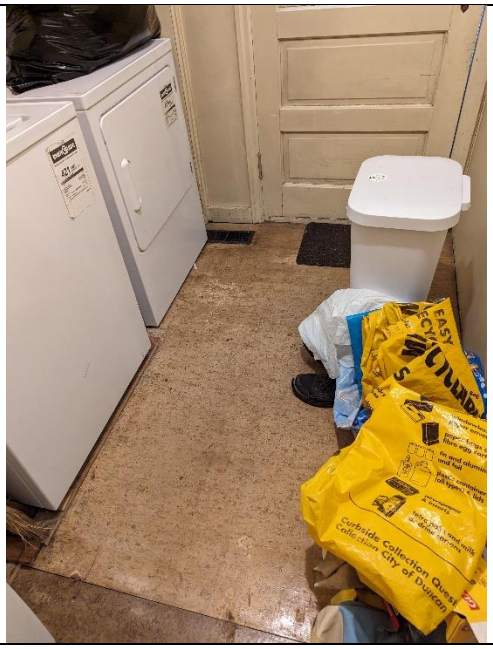
Sample: 50288 – 7
Location: Kitchen – Backsplash
Description: Concrete / Grout / Caulking / Adhesive
Asbestos: None detected

Sample: 50288 – 8
Location: Kitchen – Backsplash
Description: Grout
Asbestos: None detected

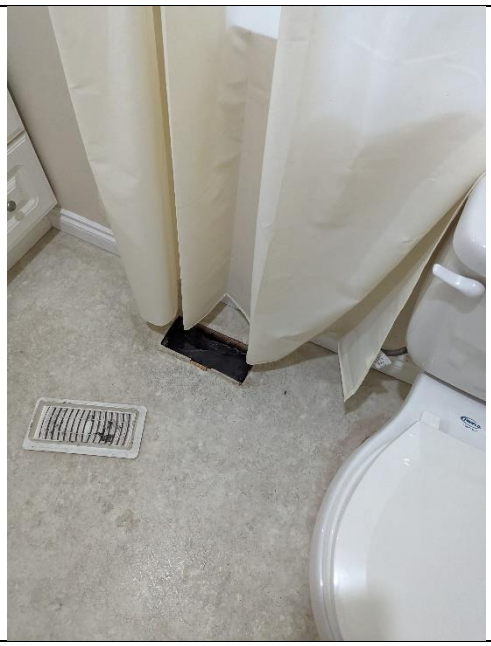
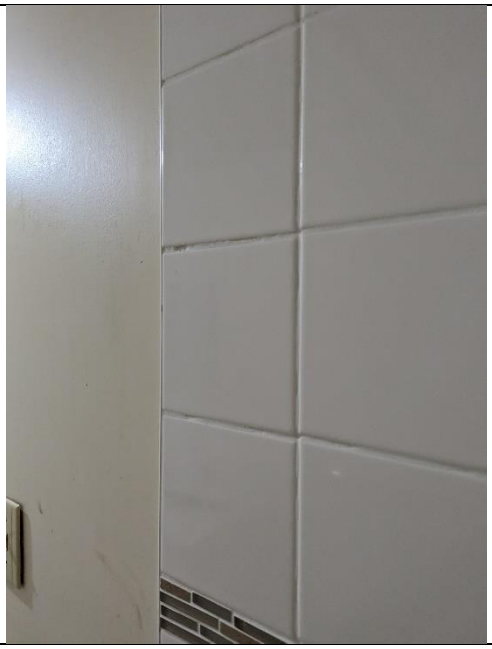
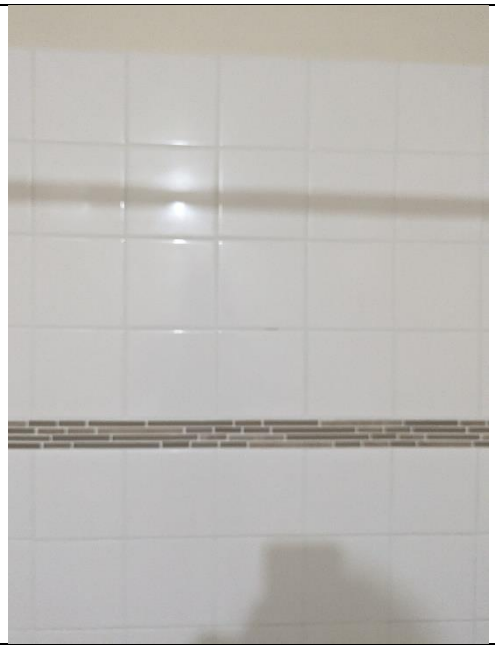
Sample: 50288 – 9
Location: Kitchen – Backsplash
Description: Grout
Asbestos: None detected

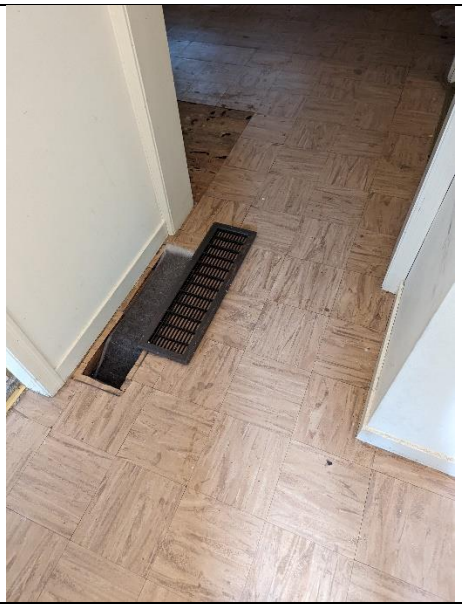
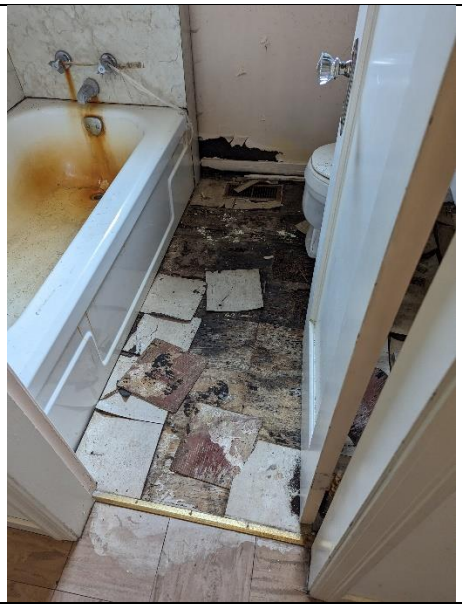
Sample: 50288 – 10
Location: Bedroom 2 – Closet Wall
Description: Drywall Joint Compound
Asbestos: None detected

Sample: 50288 – 11
Location: Kitchen – Ceiling
Description: Patching Compound
Asbestos: None detected



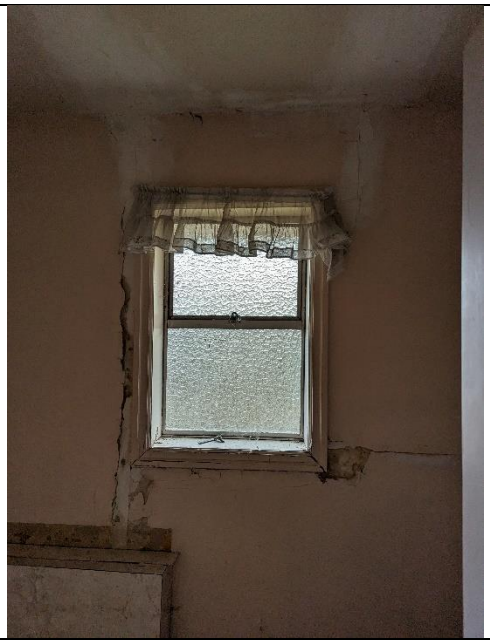
Sample: 50288 – 12
Location: Laundry
Description: Sheet Vinyl Flooring (Light Brown)
Asbestos: None detected

	
Sample: 50288 – 13 Location: Hallway Description: Drywall Joint Compound Asbestos: **Chrysotile 1%**	Sample: 50288 – 14 Location: Bathroom 1 Description: Sheet Vinyl Flooring (Grey) Asbestos: None detected
	
Sample: 50288 – 15 Location: Bathroom 1 – Tub Surround Description: Grout Asbestos: None detected	Sample: 50288 – 16 Location: Bathroom 1 – Tub Surround Description: Grout Asbestos: None detected

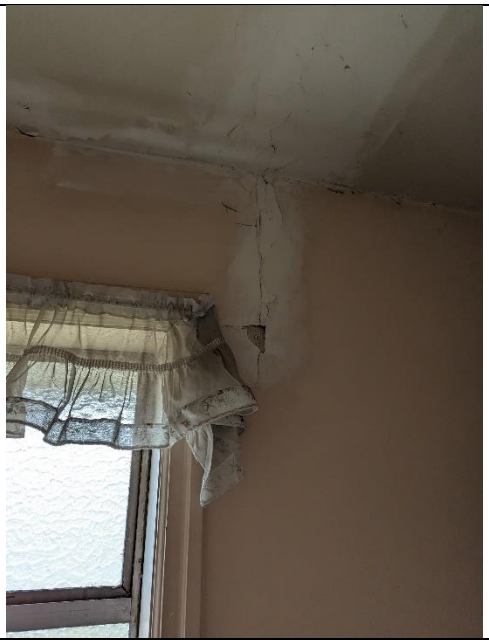
	
Sample: 50288 – 17 Location: Bathroom 1 – Tub Surround Description: Grout Asbestos: None detected	Sample: 50288 – 18 Location: Bathroom 1 – Tub Surround Description: Caulking Asbestos: None detected
	
Sample: 50288 – 19 Location: Hallway Description: 9” x 9” Vinyl Floor Tile (Brown) Asbestos: None detected	Sample: 50288 – 20 Location: Bathroom 2 Description: 9” x 9” Vinyl Floor Tile (Grey) Asbestos: None detected

Sample: 50288 – 21
Location: Kitchen 2 – Wall
Description: Drywall Joint Compound
Asbestos: None detected

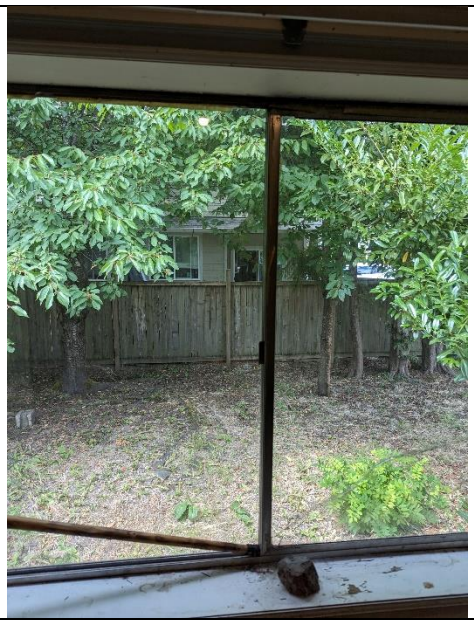
Sample: 50288 – 22
Location: Kitchen 2 – Sink
Description: Mastic (Black)
Asbestos: **Chrysotile 4%**



Sample: 50288 – 23
Location: Bathroom 2 – Window
Description: Window Putty
Asbestos: **Chrysotile 1%**

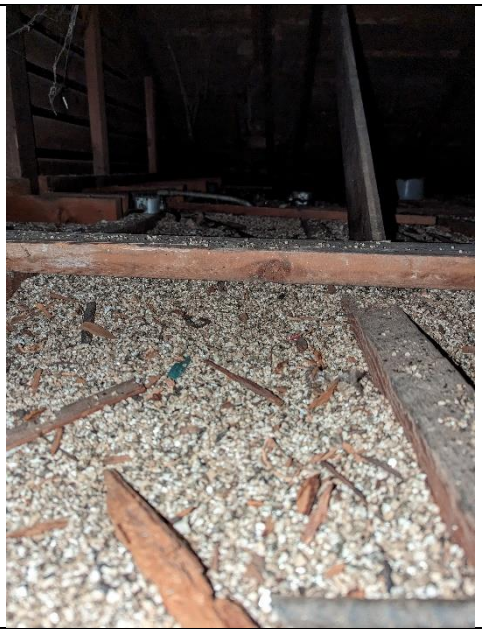


Sample: 50288 – 24
Location: Bathroom 2 – Wall
Description: Patching Compound
Asbestos: None detected



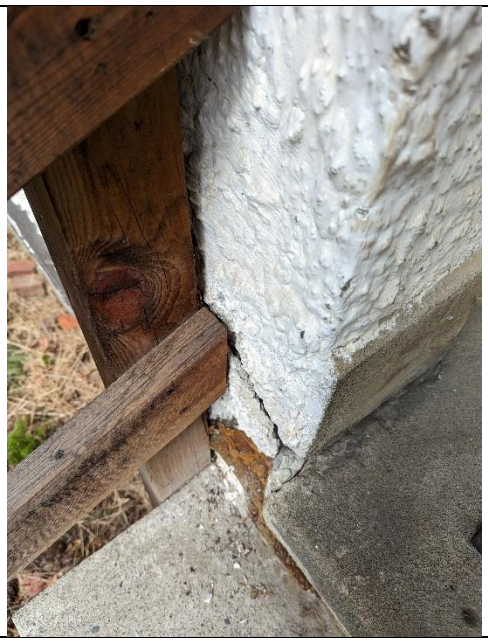
Sample: 50288 – 25
Location: Bedroom 4 – Window
Description: Window Putty
Asbestos: **Chrysotile 1%**

Sample: 50288 – 26
Location: Bedroom 3 – Wall
Description: Drywall Joint Compound
Asbestos: None detected



Sample: 50288 – 27
Location: Attic
Description: Vermiculite
Asbestos: **Tremolite 1%**

Sample: 50288 – 28
Location: Exterior – Near Entry – Base
Description: Cement Board
Asbestos: None detected

	
Sample: 50288 – 29 Location: Exterior – South Description: Stucco Asbestos: None detected	Sample: 50288 – 30 Location: Exterior – Southeast Description: Stucco Asbestos: None detected
	
Sample: 50288 – 31 Location: Exterior – North Description: Stucco Asbestos: None detected	Sample: 50288 – 32 Location: Exterior – Window – South Description: Window Putty Asbestos: None detected

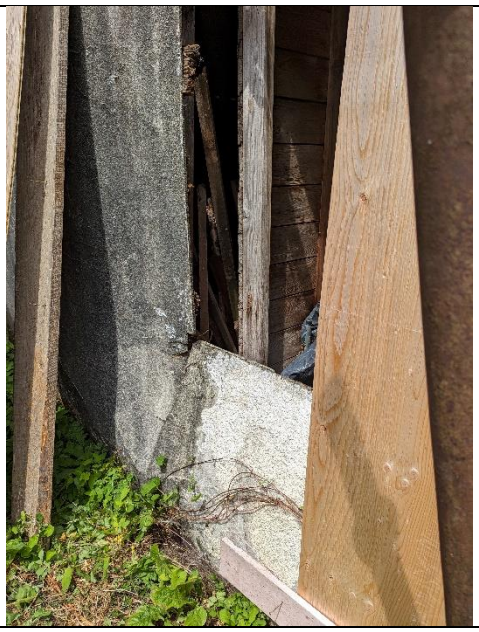
Sample: 50288 – 33
Location: Exterior – Window – Southeast
Description: Window Putty
Asbestos: None detected

Sample: 50288 – 34
Location: Exterior – Window – East
Description: Window Putty
Asbestos: **Chrysotile 6%**

Sample: 50288 – 35
Location: Exterior – Foundation
Description: Brick Mortar
Asbestos: None detected

Sample: 50288 – 36
Location: Exterior – Foundation
Description: Brick Mortar
Asbestos: None detected

Sample: 50288 – 37
Location: Exterior – Foundation
Description: Brick Mortar
Asbestos: None detected



Sample: 50288 – 38
Location: Garage – Exterior
Description: Stucco
Asbestos: None detected

Sample: 50288 – 39
Location: Garage – Window
Description: Window Putty
Asbestos: None detected

Sample: 50288 – 40
Location: Rooftop
Description: Tar Shingle/Roof Felt
Asbestos: None detected

	
Sample: 50288 – 41 Location: Crawlspace – Chimney Description: Brick Mortar Asbestos: None detected	Sample: 50288 – 42 Location: Crawlspace – Chimney Description: Brick Mortar Asbestos: None detected
	
Sample: 50288 – 43 Location: Crawlspace – Chimney Description: Brick Mortar Asbestos: None detected	Sample: n/a Location: Dining Room – Heating Vent Description: Typical View of Asbestos Containing Fibreboard Asbestos: Typically, 60% Chrysotile

Sample: n/a
Location: Crawlspace – Heat Ducts
Description: Typical View of Asbestos Containing Duct Tape
Asbestos: Typically, 60% Chrysotile

Appendix 2

Laboratory Results

Island EHS
Island Environmental Health & Safety Ltd.

Asbestos Bulk Sample Report

201 - 990 Hillside Avenue
Victoria, B.C. V8T 2A1
Tel: 778-406-0933
E-Mail: admin@islandehs.ca

Job: 50288
Project: 117 Third St
Client: City of Duncan
Client PO#:

Submitted By: SL
Date Received: 2023-07-12
Analyst: JH

SP	#	Location	Material	Analysis Date	Layer	Description	% of Sample	Asbestos Minerals	% Asbestos per Layer	Other Fibres	% Fibres per Layer
N	1	Living Room - Ceiling	Drywall Joint Compound / Textured Coating	2023-07-19	1	White paint/texture	30.0	Chrysotile	1.0	Non-fibrous	99.0
					2	White/grey chalky	40.0	Chrysotile	1.0	Non-fibrous	99.0
					3	Drywall	30.0	None Detected	0.0	Cellulose	100.0
N	2	Living Room - Wall	Drywall Joint Compound / Textured Coating	2023-07-19	1	White paint/texture	30.0	Chrysotile	1.0	Non-fibrous	99.0
					2	White/grey chalky	40.0	Chrysotile	1.0	Non-fibrous	99.0
					3	Drywall	30.0	None Detected	0.0	Cellulose	100.0
N	3	Bedroom 1 - Wall	Drywall Joint Compound / Textured Coating	2023-07-19	1	White paint/texture	30.0	Chrysotile	1.0	Non-fibrous	99.0
					2	White/grey chalky	50.0	Chrysotile	1.0	Non-fibrous	99.0
					3	Drywall	20.0	None Detected	0.0	Cellulose	100.0

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Island Environmental Health & Safety Ltd.

Asbestos Bulk Sample Report

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Tel: 778-406-0933
E-Mail: admin@islandehs.ca

Job: 50288
Project: 117 Third St
Client: City of Duncan
Client PO#:

Submitted By: SL
Date Received: 2023-07-12
Analyst: JH

SP	#	Location	Material	Analysis Date	Layer	Description	% of Sample	Asbestos Minerals	% Asbestos per Layer	Other Fibres	% Fibres per Layer
N	**4**	**Dining Room - Ceiling**	**Drywall Joint Compound / Textured Coating**	**2023-07-19**	**1**	**White paint/texture**	**30.0**	**Chrysotile**	**1.0**	**Non-fibrous**	**99.0**
					2	**White/grey chalky**	**40.0**	**Chrysotile**	**1.0**	**Non-fibrous**	**99.0**
					3	**Drywall**	**30.0**	**None Detected**	**0.0**	**Non-fibrous**	**20.0**
										Cellulose	**80.0**
N	5	Kitchen	Sheet Vinyl Flooring (Dark Brown)	2023-07-19	1	Brown flooring	80.0	None Detected	0.0	Non-fibrous	80.0
										Cellulose	20.0
					2	Brown fibrous mesh	5.0	None Detected	0.0	Cellulose	100.0
					3	Grey fibrous material	15.0	None Detected	0.0	Cellulose/Synthetic	100.0
N	6	Kitchen - Sink	Mastic (Grey)	2023-07-19	1	Grey mastic	100.0	None Detected	0.0	Non-fibrous	100.0
N	7	Kitchen - Backsplash	Concrete / Grout / Caulking / Adhesive	2023-07-19	1	Green tile	20.0	None Detected	0.0	Non-fibrous	100.0
					2	Yellow/green adhesive	6.0	None Detected	0.0	Non-fibrous	100.0
					3	Grey cement	4.0	None Detected	0.0	Non-fibrous	100.0
					4	Grey concrete	70.0	None Detected	0.0	Non-fibrous	100.0

Analyzed in accordance with NIOSH Method 9002. AIHA BAPAT Lab ID - 214686

201 - 990 Hillside Avenue
Victoria, B.C. V8T 2A1
Tel: 778-406-0933
E-Mail: admin@islandehs.ca

Asbestos Bulk Sample Report

Job: 50288
Project: 117 Third St
Client: City of Duncan
Client PO#:

Submitted By: SL
Date Received: 2023-07-12
Analyst: JH

SP	#	Location	Material	Analysis Date	Layer	Description	% of Sample	Asbestos Minerals	% Asbestos per Layer	Other Fibres	% Fibres per Layer
N	8	Kitchen - Backsplash	Grout	2023-07-19	1	White cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	9	Kitchen - Backsplash	Grout	2023-07-19	1	White cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	10	Bedroom 2 - Closet Wall	Drywall Joint Compound	2023-07-19	1	Pink paint	30.0	None Detected	0.0	Non-fibrous	100.0
					2	White chalky	10.0	None Detected	0.0	Non-fibrous	100.0
					3	Drywall	60.0	None Detected	0.0	Non-fibrous	60.0
										Cellulose	40.0
N	11	Kitchen - Ceiling	Patching Compound	2023-07-19	1	Off-white paint	5.0	None Detected	0.0	Non-fibrous	100.0
					2	White chalky	95.0	None Detected	0.0	Non-fibrous	100.0
N	12	Laundry	Sheet Vinyl Flooring (Light Brown)	2023-07-19	1	Brown flooring	100.0	None Detected	0.0	Non-fibrous	85.0
										Cellulose	15.0
N	**13**	**Hallway**	**Drywall Joint Compound**	**2023-07-19**	**1**	**Yellow paint layers**	**30.0**	**None Detected**	**0.0**	**Non-fibrous**	**100.0**
					2	**Grey chalky**	**20.0**	**Chrysotile**	**1.0**	**Non-fibrous**	**99.0**
					3	**Drywall**	**50.0**	**None Detected**	**0.0**	**Non-fibrous**	**70.0**

Analyzed in accordance with NIOSH Method 9002. AIHA BAPAT Lab ID - 214686

Island EHS
Island Environmental Health & Safety Ltd.

Asbestos Bulk Sample Report

201 - 990 Hillside Avenue
Victoria, B.C. V8T 2A1
Tel: 778-406-0933
E-Mail: admin@islandehs.ca

Job: 50288
Project: 117 Third St
Client: City of Duncan
Client PO#:

Submitted By: SL
Date Received: 2023-07-12
Analyst: JH

SP	#	Location	Material	Analysis Date	Layer	Description	% of Sample	Asbestos Minerals	% Asbestos per Layer	Other Fibres	% Fibres per Layer
										Cellulose	**30.0**
N	14	Bathroom 1	Sheet Vinyl Flooring (Grey)	2023-07-19	1	Grey flooring with foam backing	100.0	None Detected	0.0	Non-fibrous	100.0
N	15	Bathroom 1 - Tub Surround	Grout	2023-07-19	1	White cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	16	Bathroom 1 - Tub Surround	Grout	2023-07-19	1	White cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	17	Bathroom 1 - Tub Surround	Grout	2023-07-19	1	White cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	18	Bathroom 1 - Tub Surround	Caulking	2023-07-19	1	White caulking	100.0	None Detected	0.0	Non-fibrous	100.0
N	19	Hallway	9"x9" Vinyl Floor Tile (Brown)	2023-07-19	1	Brown flooring	50.0	None Detected	0.0	Non-fibrous	80.0
										Cellulose	20.0
					2	Black and red fibrous backing	50.0	None Detected	0.0	Non-fibrous	40.0
										Cellulose/Synthetic	60.0
N	20	Bathroom 2	9"x9" Vinyl Floor Tile (Grey)	2023-07-19	1	Grey flooring	48.0	None Detected	0.0	Non-fibrous	80.0
										Cellulose	20.0
					2	Black and red fibrous backing	50.0	None Detected	0.0	Non-fibrous	40.0

Analyzed in accordance with NIOSH Method 9002. AIHA BAPAT Lab ID - 214686

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Island Environmental Health & Safety Ltd.

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SP	#	Location	Material	Analysis Date	Layer	Description	% of Sample	Asbestos Minerals	% Asbestos per Layer	Other Fibres	% Fibres per Layer
										Cellulose/Synthetic	60.0
					3	Chalky grey adhesive	2.0	None Detected	0.0	Non-fibrous	100.0
N	21	Kitchen 2 - Wall	Drywall Joint Compound	2023-07-19	1	Beige paint	30.0	None Detected	0.0	Non-fibrous	100.0
					2	White chalky	10.0	None Detected	0.0	Non-fibrous	100.0
					3	Drywall	60.0	None Detected	0.0	Non-fibrous	30.0
										Cellulose	70.0
N	**22**	**Kitchen 2 - Sink**	**Mastic (Black)**	**2023-07-19**	**1**	**Black mastic**	**100.0**	**Chrysotile**	**4.0**	**Non-fibrous**	**96.0**
N	**23**	**Bathroom 2 - Window**	**Window Putty**	**2023-07-19**	**1**	**Grey-brown putty**	**100.0**	**Chrysotile**	**1.0**	**Non-fibrous**	**99.0**
N	24	Bathroom 2 - Wall	Patching Compound	2023-07-19	1	White paint	10.0	None Detected	0.0	Non-fibrous	100.0
					2	White chalky	90.0	None Detected	0.0	Non-fibrous	100.0
N	**25**	**Bedroom 4 - Window**	**Window Putty**	**2023-07-19**	**1**	**Grey-brown putty**	**100.0**	**Chrysotile**	**1.0**	**Non-fibrous**	**99.0**
N	26	Bedroom 3 - Wall	Drywall Joint Compound	2023-07-19	1	Yellow paint	35.0	None Detected	0.0	Non-fibrous	100.0
					2	White chalky	5.0	None Detected	0.0	Non-fibrous	100.0

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					3	Drywall	60.0	None Detected	0.0	Non-fibrous	30.0
										Cellylose	70.0
N	**27**	**Attic**	**Vermiculite**	**2023-07-19**	**1**	**Brown/gold vermiculite**	**100.0**	**Tremolite**	**1.0**	**Non-fibrous/Vermiculite**	**99.0**
N	28	Exterior - Near Entry - Base	Cement Board	2023-07-19	1	Grey cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	29	Exterior - South	Stucco	2023-07-19	1	White paint	5.0	None Detected	0.0	Non-fibrous	100.0
					2	Grey cement	95.0	None Detected	0.0	Non-fibrous	100.0
N	30	Exterior - Southeast	Stucco	2023-07-19	1	White paint	30.0	None Detected	0.0	Non-fibrous	100.0
					2	Grey cement	70.0	None Detected	0.0	Non-fibrous	100.0
N	31	Exterior - North	Stucco	2023-07-19	1	White paint	5.0	None Detected	0.0	Non-fibrous	100.0
					2	Grey cement	95.0	None Detected	0.0	Non-fibrous	100.0
N	32	Exterior - Window - South	Window Putty	2023-07-19	1	White paint	10.0	None Detected	0.0	Non-fibrous	100.0
					2	Beige putty	90.0	None Detected	0.0	Non-fibrous	100.0
N	33	Exterior - Window - Southeast	Window Putty	2023-07-19	1	White paint	10.0	None Detected	0.0	Non-fibrous	100.0

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SP	#	Location	Material	Analysis Date	Layer	Description	% of Sample	Asbestos Minerals	% Asbestos per Layer	Other Fibres	% Fibres per Layer
					2	Beige putty	90.0	None Detected	0.0	Non-fibrous	100.0
N	**34**	**Exterior - Window - East**	**Window Putty**	**2023-07-19**	**1**	**Grey paint**	**5.0**	**None Detected**	**0.0**	**Non-fibrous**	**100.0**
					2	**Beige putty**	**35.0**	**None Detected**	**0.0**	**Non-fibrous**	**100.0**
					3	**Grey putty**	**60.0**	**Chrysotile**	**6.0**	**Non-fibrous**	**94.0**
N	35	Exterior - Foundation	Brick Mortar	2023-07-19	1	Grey cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	36	Exterior - Foundation	Brick Mortar	2023-07-19	1	Grey cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	37	Exterior - Foundation	Brick Mortar	2023-07-19	1	Grey cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	38	Garage - Exterior	Stucco	2023-07-19	1	White cement	5.0	None Detected	0.0	Non-fibrous	100.0
					2	Grey cement	95.0	None Detected	0.0	Non-fibrous	100.0
N	39	Garage - Window	Window Putty	2023-07-19	1	White/grey paint	10.0	None Detected	0.0	Non-fibrous	100.0
					2	Beige putty	90.0	None Detected	0.0	Non-fibrous	100.0
N	40	Rooftop	Tar Shingle / Roof Felt	2023-07-19	1	Black roofing with grey aggregates	30.0	None Detected	0.0	Non-fibrous	80.0

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Date Received: 2023-07-12
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SP	#	Location	Material	Analysis Date	Layer	Description	% of Sample	Asbestos Minerals	% Asbestos per Layer	Other Fibres	% Fibres per Layer
										Glass	20.0
					2	Black fibrous material	70.0	None Detected	0.0	Non-fibrous	30.0
										Cellulose	70.0
N	41	Crawlspace - Chimney	Brick Mortar	2023-07-19	1	Grey cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	42	Crawlspace - Chimney	Brick Mortar	2023-07-19	1	Grey cement	100.0	None Detected	0.0	Non-fibrous	100.0
N	43	Crawlspace - Chimney	Brick Mortar	2023-07-19	1	Grey cement	100.0	None Detected	0.0	Non-fibrous	100.0

Island Environmental Health and Safety
201 - 990 Hillside Avenue
Victoria B.C, V8T 2A1
(778)406-0933
admin@islandehs.ca

Certificate of Analysis

Client Name	City of Duncan	Report #	50288
Site Address	117 Third Street	Report Date	7/20/2023
Collection Date	7/12/2023	PO	
Collected by	SL	Notes	

Analysis Summary: Lead in Paint

Sample #	Pb4	Result (ug/g)	1540
Location	Select Walls/Trim		
Description	Cream Paint	Comments	
Sample #	Pb5	Result (ug/g)	1770
Location	Kitchen 2 Walls/Cabinets/Trim		
Description	Tan Paint	Comments	Possible substrate interference
Sample #	Pb6	Result (ug/g)	1190
Location	Exterior Stucco		
Description	White Paint	Comments	
Sample #	Pb7	Result (ug/g)	13600
Location	Exterior Trim		
Description	White Paint	Comments	

Notes

Samples Pb1, Pb2, Pb3 not analyzed due to presence of ACM.

Results in **green** are below the limit of quantitation for that sample (not detectable)
Results in **red** are above the limit of quantitation for that sample (detectable)
Analysed using ASTM E1645-01 (modified for tile where applicable) and EPA 7000B
AIHA ELPAT Lab ID: 214686

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Certificate of Analysis

Client Name	City of Duncan	Report #	50288
Site Address	117 Third Street	Report Date	7/20/2023
Collection Date	7/12/2023	PO	
Technician	SL	Notes	

Quality Assurance Report

	Result	Unit	Limits	Pass/Fail?
Duplicate	0	Rel. % Diff.	0% - 15%	**PASS**
CRM	101	% recovery	80% - 120%	**PASS**
QCS	96	% recovery	90% - 110%	**PASS**
MS	98	% recovery	80% - 120%	**PASS**
LRB	<0.06	mg/L	<0.242 mg/L	**PASS**

Duplicate: Paired analysis of a two portions of the same sample. Used to evaluate the variance in the measurement and homogenity of the sample.

Certified Reference Material (CRM): A paint sample of known lead concentration prepared by an external agency. Used as an independent check of method accuracy.

Quality Control Sample (QCS): A blank matrix sample to which a known amount of lead from a second source has been added. Used to verify instrument calibration.

Matrix Spike (MS): A portion of a sample to which a known amount of lead is added before digestion. Used to evaluate matrix effects of the sample.

Laboratory Reagent Blank (LRB): A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Laura Martin
Laboratory Analyst

End of Report

Your Project #: 50288
Site Location: 177 THIRD STREET, DUNCAN
Your C.O.C. #: 08523076

Attention: Steve Learning

ISLAND EHS
201-990 HILLSIDE AVE
VICTORIA, BC
CANADA V8T 2A1

Report Date: 2023/07/19
Report #: R3366993
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C352384
Received: 2023/07/12, 14:30

Sample Matrix: Bulk
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
ICP-AES Metals in TCLP Leachate	1	2023/07/14	2023/07/14	BBY7SOP-00018	EPA 6010d m
TCLP pH Measurements	1	N/A	2023/07/14	BBY7SOP-00005	EPA 1311

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 50288
Site Location: 177 THIRD STREET, DUNCAN
Your C.O.C. #: 08523076

Attention: Steve Learning

ISLAND EHS
201-990 HILLSIDE AVE
VICTORIA, BC
CANADA V8T 2A1

Report Date: 2023/07/19
Report #: R3366993
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C352384
Received: 2023/07/12, 14:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276

==========

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ELEMENTS BY ATOMIC SPECTROSCOPY (BULK)

Bureau Veritas ID		BUK959	
Sampling Date		2023/07/12	
COC Number		08523076	
	UNITS	**TCLP-01**	**QC Batch**
TCLP Extraction Procedure			
Initial pH of Sample	pH	6.65	B033109
pH after HCl	pH	3.45	B033109
Final pH of Leachate	pH	6.07	B033109
pH of Leaching Fluid	pH	4.90	B033109

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

TCLP LEAD BY ICP (BULK)

Bureau Veritas ID		BUK959		
Sampling Date		2023/07/12		
COC Number		08523076		
	UNITS	**TCLP-01**	**RDL**	**QC Batch**
Metals				
Leachate Lead (Pb)	mg/L	<0.30	0.30	B034399
RDL = Reportable Detection Limit				

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

GENERAL COMMENTS

Results relate only to the items tested.

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C352384
Report Date: 2023/07/19

QUALITY ASSURANCE REPORT

ISLAND EHS
Client Project #: 50288
Site Location: 177 THIRD STREET, DUNCAN

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	**Parameter**	**Date**	**% Recovery**	**QC Limits**	**% Recovery**	**QC Limits**	**Value**	**UNITS**	**Value (%)**	**QC Limits**
B033109	Final pH of Leachate	2023/07/14					4.92	pH	0.76	N/A
B033109	Initial pH of Sample	2023/07/14					4.90	pH	0.35	N/A
B033109	pH after HCl	2023/07/14							2.0	N/A
B033109	pH of Leaching Fluid	2023/07/14					4.90	pH	0	N/A
B034399	Leachate Lead (Pb)	2023/07/14	102	75 - 125	89	75 - 125	<0.30	mg/L	NC	40

N/A = Not Applicable

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.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C352384
Report Date: 2023/07/19

ISLAND EHS
Client Project #: 50288
Site Location: 177 THIRD STREET, DUNCAN

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Mauro Oselin, Scientific Specialist

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

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08523076

www.BVNA.com

4606 Canada Way, Burnaby, BC V5G 1K5
Tel: (604) 734-7276 Toll Free: (800) 665-8566

CHAIN OF CUSTODY RECORD

ENV COC - 00015v3

C352384_COC

Invoice Information		Report Information (if differs from invoice)		Project Information	
Invoice to (requires report) ☐					
Company :	#11410 Island EHS	Company:	Island EHS	Quotation #:	
Contact Name:	Accounts Payable	Contact Name:	Steve Learning	P.O. #/ AFE#:	
Street Address:	201-990 Hillside Ave	Street Address:		Project #:	50288
City: Victoria Prov: BC Postal Code: V8T 2A1		City: Prov: Postal Code:		Site #:	
Phone:	778/406/0933	Phone:	204-801-4054	Site Location:	177 Third Street, Duncan
Email:	accountspayable@islandehs.ca	Email:	slearning@islandehs.ca	Site Location Province:	
Copies:		Copies:		Sampled By:	

Rush Confirmation #:

Regulatory Criteria

☐ BC CSR ☐ CCME ☐ Drinking Water
☐ YUKON CSR ☐ BC Water Quality ☐ Other: _____

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Regular Turnaround Time (TAT)
☑ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply
☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 Lead in Paint Chips	5 TCLP Lead	6 TCLP Metals	7 Metals, full ICP Scan in Air	8 Metals, Single Element in Air (By ICP)	9	10	11	12	13	14	15	16	17	18	19	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Comments
1	TCLP-01	23	07	12								✓																Composite
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present		✓				
Seal intact		✓				
Cooling media present		✓				

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

LAB USE ONLY	Yes	No	°C	1	2	3	Temperature reading by:
Seal present							
Seal intact							
Cooling media present							

	Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special instructions
1	Steve Learning	23	07	12	14	25	1 Karen May Sarina	23	07	12	14	30	
2							2						

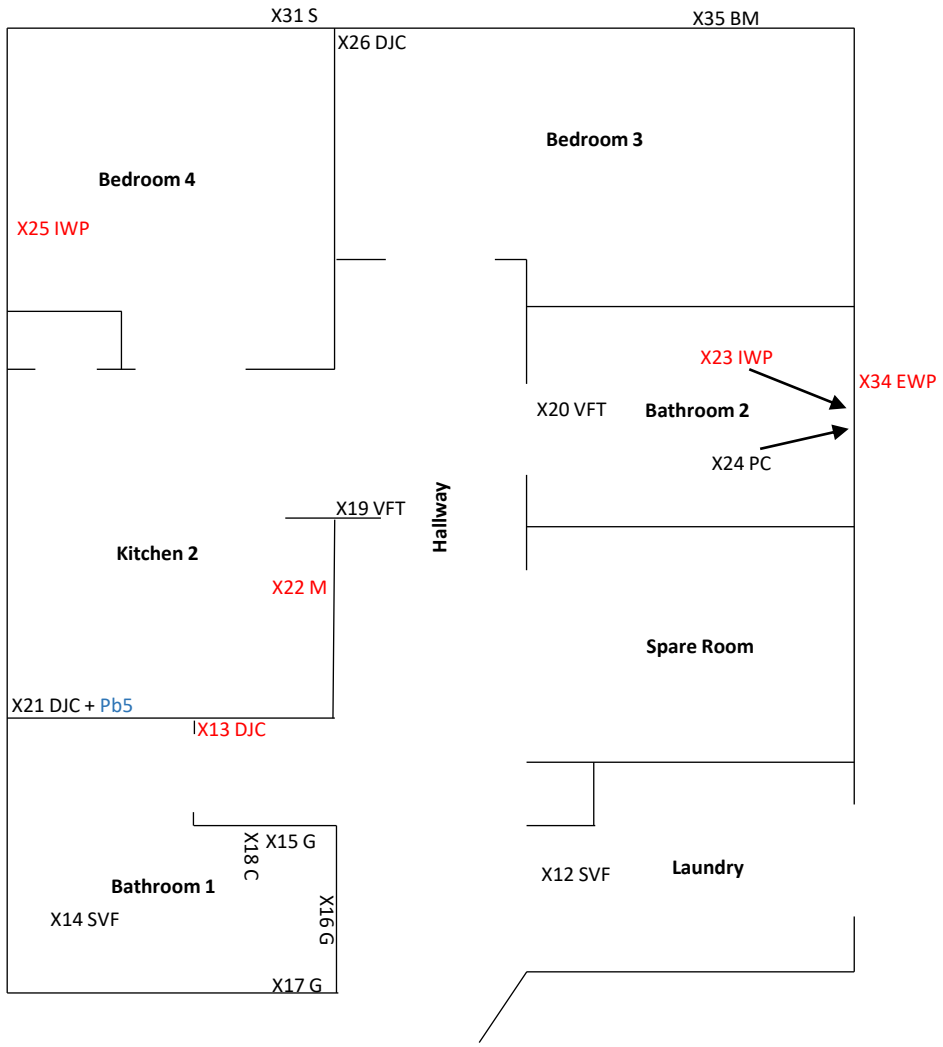
Appendix 3

Sample Locations

Sample Locations - North

X27 V = Attic Space
X40 TS/RF = Rooftop
X41 BM, X42 BM, X43 BM = Crawlspace

N



Not to Scale

LEGEND:

x# Asbestos containing sample location
x# Non-asbestos containing sample location
Pb# Lead containing paint sample location
Pb# Non-lead containing paint sample location

DJC	Drywall joint compound
TC	Textured coating
VFT	Vinyl floor tile
SVF	Sheet vinyl flooring
G	Grout
M	Mastic
CO	Concrete
C	Caulking
A	Adhesive
PC	Patching compound
IWP	Interior window putty
EWP	Exterior window putty
V	Vermiculite
CB	Cement Board
S	Stucco
BM	Brick mortar
RF	Roof felt
TS	Tar shingle

Project #: 50288

Date of Issue: July 2023

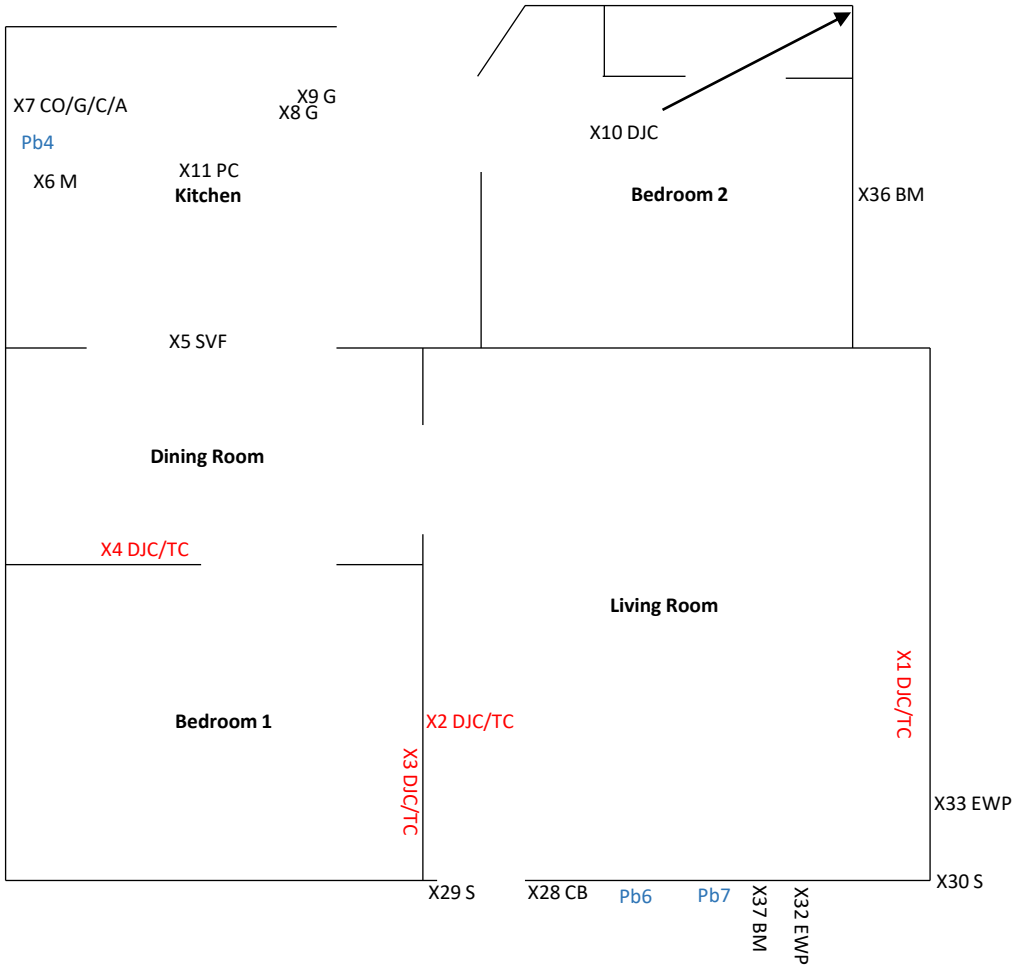
Hazardous Materials Investigation
Sample Locations
Site: 117 Third Street, Duncan, B.C.

Prepared for

City of Duncan
peter@duncan.ca
250-746-6126

Island EHS

Sample Locations - South



Paint samples Pb1, Pb2 and Pb3 not shown on plan as underlying substrate found to be asbestos containing

Not to Scale

LEGEND:

x#	Asbestos containing sample location
x#	Non-asbestos containing sample location
Pb#	Lead containing paint sample location
Pb#	Non-lead containing paint sample location

DJC	Drywall joint compound
TC	Textured coating
VFT	Vinyl floor tile
SVF	Sheet vinyl flooring
G	Grout
M	Mastic
CO	Concrete
C	Caulking
A	Adhesive
PC	Patching compound
IWP	Interior window putty
EWP	Exterior window putty
V	Vermiculite
CB	Cement Board
S	Stucco
BM	Brick mortar
RF	Roof felt
TS	Tar shingle

Project #: 50288

Date of Issue: July 2023

Hazardous Materials Investigation
Sample Locations
Site: 117 Third Street, Duncan, B.C.

Prepared for

City of Duncan
peter@duncan.ca
250-746-6126

Island EHS

Sample Locations - Garage

N

Not to Scale

LEGEND:

x# Asbestos containing sample location
x# Non-asbestos containing sample location
Pb# Lead containing paint sample location
Pb# Non-lead containing paint sample location

DJC	Drywall joint compound
TC	Textured coating
VFT	Vinyl floor tile
SVF	Sheet vinyl flooring
G	Grout
M	Mastic
CO	Concrete
C	Caulking
A	Adhesive
PC	Patching compound
IWP	Interior window putty
EWP	Exterior window putty
V	Vermiculite
CB	Cement Board
S	Stucco
BM	Brick mortar
RF	Roof felt
TS	Tar shingle

Project #: 50288

Date of Issue: July 2023

Hazardous Materials Investigation
Sample Locations
Site: 117 Third Street, Duncan, B.C.

Prepared for

City of Duncan
peter@duncan.ca
250-746-6126

Island EHS