Appendix A - Reports

PRE-DEMOLITION HAZARDOUS BUILDING MATERIALS ASSESSMENT

CSC's Mountain Institution
Buildings FB1 – FB9 and Manure Pits,
Sutherland and Humphries Road,
Agassiz, BC

FINAL REPORT

Prepared for:

Public Works and Government Services Canada
Environmental Services, Pacific Region
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Project No.:

1237-10533

Date:

February 2013

Stantec


Stantec

EXECUTIVE SUMMARY

Stantec Consulting Ltd. (Stantec) was retained by Public Works and Government Services Canada (PWGSC) to conduct hazardous building materials assessments within nine (9) buildings and two (2) associated manure pits (subject buildings) located at Mountain Institution in Agassiz, British Columbia.

The objective of the project was to assess for the presence (or absence) of hazardous building materials within the subject buildings in order to develop Class B cost estimates for their demolition. The assessment was conducted to meet the requirements of the following:

- Canada Labour Code, Part II Occupational Health and Safety Regulations (Canada Labour Code)
- British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97).

The hazardous building materials considered included asbestos-containing materials (ACMs), lead-containing materials including lead-containing paints (LCPs), polychlorinated biphenyls (PCBs), mercury-containing items, ozone-depleting substances (ODSs), equipment with radioactive components (RACs) and suspected mould-impacted building materials.

Based on Stantec's visual assessment and on the laboratory analyses performed on samples collected, various hazardous building materials were identified within the subject buildings.

A summary of our findings and recommendations is presented below. It should be noted that this summary is subject to the same restrictions and limitations as presented in **Section 4** (Assessment Limitations) and **Section 7** (Closure). The information provided is to be read in conjunction with the remainder of this report.

An "Opinion of Probable Costs" letter will be forwarded under separate cover, and will outline the expected costs associated with abatement of identified hazardous building materials along with building demolition, including removal of concrete, driveways and services.

Summary of Identified Hazardous Building Materials	
Building Name	**Identified Hazardous Building Materials**
FB1—Single Storey Dwelling	**Asbestos** ▪ Drywall joint compound in Room 106 is asbestos-containing, and may be present beneath wallpaper throughout ▪ Vinyl sheet flooring – stones pattern, kitchen (Room 107) is asbestos-containing ▪ Vinyl sheet flooring – red, in kitchen cabinets (Room 107) is asbestos-containing. **Lead** ▪ White paint on the exterior walls of the building is lead-containing ▪ White/green (layered) paint on the interior walls is lead-containing ▪ Lead is expected to be present in solder used in copper domestic pipes and some electrical equipment. **PCBs** ▪ One (1) fluorescent lamp ballast may contain PCBs. **Mercury** ▪ Mercury vapour may be present in fluorescent light tubes and high intensity discharge lamps. **ODSs** ▪ One (1) refrigeration unit was observed in the kitchen, which may contain ODSs in the form of refrigerant. **Mould** ▪ Suspect mould and moisture damage was observed on the north and west walls of the northeast bedroom (Room 106).
FB2—Storage Shed/Vehicle Shed	**Asbestos** ▪ Drywall joint compound on walls and ceiling within Room 102 is asbestos-containing. **Lead** ▪ Lead is expected to be present in solder used in some electrical equipment. **PCBs** ▪ None identified. **Mercury** ▪ None identified. **ODSs** ▪ None identified. **Mould** ▪ None identified.

Summary of Identified Hazardous Building Materials	
Building Name	**Identified Hazardous Building Materials**
FB3—Animal Shed/Stable	**Asbestos** ▪ None identified. **Lead** ▪ Lead is expected to be present in solder used in some electrical equipment. **PCBs** ▪ None identified. **Mercury** ▪ None identified. **ODSs** ▪ None identified. **Mould** ▪ None identified.
FB4—Residence (2 Storey Dwelling)	**Asbestos** ▪ None identified. **Lead** ▪ Lead is expected to be present in solder used in copper domestic pipes and some electrical equipment. **PCBs** ▪ None identified. **Mercury** ▪ Mercury vapour may be present in fluorescent light tubes. **ODSs** ▪ None identified. **Mould** ▪ Suspect mould and moisture damage was observed on the ceilings within Room 102, Room 111 and the garage (Room 114) ▪ In addition to the above areas that appeared to be impacted by specific moisture intrusion issues, suspect mould was observed on the majority of surfaces throughout, which appeared to be associated with overall interior humidity/condensation issues.
FB5—Saw Dust Shed	**Asbestos** ▪ None identified. **Lead** ▪ None identified. **PCBs** ▪ None identified. **Mercury** ▪ None identified. **ODSs** ▪ None identified. **Mould** ▪ None identified.

Summary of Identified Hazardous Building Materials	
Building Name	**Identified Hazardous Building Materials**
FB6—Bunker Silo and Lean to Addition	**Asbestos** ▪ None identified. **Lead** ▪ Blue paint on the exterior walls is to be considered lead-containing unless further testing proves otherwise ▪ Lead is expected to be present in some electrical equipment. **PCBs** ▪ One (1) fluorescent lamp ballasts may contain PCBs. **Mercury** ▪ Mercury-containing wall mounted thermostats were observed in all apartments accessed ▪ Mercury vapour may be present in fluorescent light tubes and high intensity discharge lamps. **ODSs** ▪ None identified. **Mould** ▪ None identified.
FB7—Stall Barn	**Asbestos** ▪ None identified. **Lead** ▪ Lead is expected to be present in some electrical equipment. **PCBs** ▪ None identified. **Mercury** ▪ None identified. **ODSs** ▪ None identified. **Mould** ▪ None identified.

Summary of Identified Hazardous Building Materials	
Building Name	**Identified Hazardous Building Materials**
FB8—Loafing Barn/Milking Parlour	**Asbestos** ▪ None identified. **Lead** ▪ Green paint on the interior doors are lead-containing ▪ Lead is expected to be present in solder used in copper domestic pipes, caulking on bell fittings for cast iron drainage pipes, and some electrical equipment **PCBs** ▪ Ballasts within approximately six (6) fluorescent light fixtures and two (2) HID lamps may contain PCBs. **Mercury** ▪ Mercury vapour may be present in fluorescent light tubes and high intensity discharge lamps. **ODSs** ▪ One (1) ODS-containing air-handling unit was observed within Room 101. **Mould** ▪ Suspect mould was observed on the ceiling within Room 101.
FB9 – Workshop/Machine Shed/Calf Barn	**Asbestos** ▪ None identified. **Lead** ▪ Lead is expected to be present in some electrical equipment. **PCBs** ▪ None identified. **Mercury** ▪ None identified. **ODSs** ▪ None identified. **Mould** ▪ None identified.
Manure Pits	No hazardous building materials identified. Soils and/or residues may have potential for coliform contamination**.**

Building-by-building summaries of the identified hazardous building materials, as well as building-specific recommendations to address identified hazardous building materials are provided in **Appendix A through Appendix J**. General findings and recommendations pertaining to hazardous building materials within the subject buildings are provided in **Section 5** and **Section 6** of this report

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1 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by Public Works and Government Services Canada (PWGSC) to conduct hazardous building materials assessments within nine (9) buildings and two (2) associated manure pits (subject buildings) located at Mountain Institution in Agassiz, British Columbia.

The objective of the project was to assess for the presence (or absence) of hazardous building materials within the subject buildings in order to develop Class B cost estimates for their demolition. The assessment was conducted to meet the requirements of the following:

- Canada Labour Code, Part II Occupational Health and Safety Regulations (Canada Labour Code)
- British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97).

The hazardous building materials considered included asbestos-containing materials (ACMs), lead-containing materials including lead-containing paints (LCPs), polychlorinated biphenyls (PCBs), mercury-containing items, ozone-depleting substances (ODSs), equipment with radioactive components (RACs) and suspected mould-impacted building materials.

Site work was completed within the subject buildings October 1 and 2, 2012, by Tiffany Waite and Zack Kranjec of Stantec.

Please note: An "Opinion of Probable Costs" letter will be forwarded under separate cover, and will outline the expected costs associated with abatement of identified hazardous building materials along with building demolition, including removal of concrete, driveways and services.

2 BACKGROUND

The subject buildings are located on agricultural land, on a lot that is located at the northeast corner of the intersection of Sutherland Road and Humphries Road in Agassiz, BC. The subject buildings are owned by Correctional Services Canada (CSC), and include the following:

- FB1—Single Storey Dwelling
- FB2—Storage Shed/Vehicle Shed
- FB3—Animal Shed/Stable
- FB4—Residence (2 Storey Dwelling)
- FB5—Saw Dust Shed
- FB6—Bunker Silo and Lean to Addition
- FB7—Stall Barn
- FB8—Loafing Barn/Milking Parlour

- FB9—Workshop/Machine Shed/Calf Barn
- 2 Manure Pits.

Stantec understands that demolition activities are proposed to occur within the subject buildings, which have reported construction dates ranging from 1945 to 2006.

The construction time periods outlined above are consistent with those dates when hazardous building materials were commonly used including, but not limited to ACMs, LCPs, PCBs, mould, mercury, ODSs and RACs.

As a measure of diligence in maintaining compliance with federal and provincial regulations pertaining to the identification of hazardous materials prior to demolition activities, CSC commissioned this assessment.

3 SCOPE AND METHODOLOGY

Tiffany Waite and Zack Kranjec of Stantec conducted visual assessments within the subject buildings October 1 and 2, 2012. Site work was conducted in general accordance with the requirements of the Canada Labour Code and BC Reg. 296/97.

Mechanical systems, structures and finishes of the subject buildings were visually examined to determine the suspected presence of ACMs, lead and LCPs, PCBs, mould, mercury, radioactive materials, ODSs and silica. Where building materials were suspected but not confirmed to contain asbestos and LCPs, samples were collected for analysis to confirm or deny the presence of these hazardous materials. Based on analytical results, visually similar materials were referenced to specific analyzed samples to reduce the number of samples collected.

Additional background information and the methodology used for the determination of presence or absence of each specific hazardous material considered in this assessment are outlined in the following sections.

3.1 Asbestos

The common use of friable (materials which, when dry, can be easily crumbled or powdered by hand pressure) ACMs in construction generally ceased voluntarily in the mid-1970s but was only banned through legislation by the late 1980s. Friable asbestos was used in many building products, primarily high temperature insulations, spray-applied structural fireproofing, and a material called vermiculite that was commonly used as block wall insulation and may be contaminated with asbestos fibres. Asbestos was also used in many non-friable manufactured products such as floor tiles, ceiling tiles, Transite™ cement products, and various other construction materials. Some cement products currently used in the construction of buildings may still contain asbestos.

The presence of asbestos in federal workplaces, and pertaining to federally regulated workers is governed by the Canada Labour Code. The presence of asbestos in the workplace in British Columbia

pertaining to provincially regulated workers is governed by BC Reg. 296/97. As both federally regulated workers and provincially regulated workers (e.g., contractors) are expected to carry out work activities within the subject buildings, and as the provincial regulations are generally more prescriptive pertaining to asbestos (and generally include the requirements noted in the Canada Labour Code), this assessment was conducted to meet the requirements of the BC Reg. 296/97.

According to the current version of BC Reg. 296/97, asbestos-containing material (ACM) means any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.Based on these criteria, samples of suspected ACMs were collected and submitted to EMSL Canada Inc. (EMSL) in Mississauga, Ontario for analysis of asbestos content using Polarized Light Microscopy (PLM) with dispersion staining, in accordance with the National Institute for Occupational Safety and Health (NIOSH) Analytical Method 9002, “Asbestos (bulk) by PLM”.

Where samples were found to contain detectable concentrations of asbestos reported as “< 1%” through PLM analysis (and no asbestos was detected in additional samples of the same material, if applicable), supplemental analysis using 400 Point Count procedure via EPA 600/R-93/116 and/or EPA 600/M4-82-020 was conducted by EMSL to determine whether the concentration of asbestos present was greater or less than 0.5%.

A positive stop option was used during the laboratory analysis of the building materials suspected to contain asbestos. Multiple samples of visually similar material were collected and submitted for laboratory analysis. If the first sample of the set analyzed was identified to contain asbestos, further analysis of the subsequent samples was deemed to be unnecessary and not conducted.

EMSL analytical laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

3.1.1 Asbestos Sampling Quality Assurance/Quality Control

Sampling activities pertaining to asbestos were conducted in accordance with Stantec’s Safe Work Practices (SWPs), which take into account current provincial regulations pertaining to such work (i.e., sampling procedures, required number of samples, and laboratory analytical procedures).

Representative bulk samples were collected of accessible suspect ACMs in sufficient quantities for laboratory analyses. Suspect ACM samples were sealed in polyethylene zip-lock bags labeled with the sample number, suspect material description, and sample location. As part of sampling procedures, sampling tools were cleaned between sample collection events to avoid the potential for cross-contamination of samples.

Sample bags were compiled in order and placed into a single container accompanied with a Chain of Custody form outlining the project information, date, building location, number of samples, and sample description. Samples were submitted to the analytical laboratory in a sealed container via courier.

3.2 Lead

Lead may be used in its pure metallic form or combined chemically with other elements to form lead compounds. Metallic lead is used to make products such as electric storage batteries, ammunition, lead solder, radiation shields, pipes, and sheaths for electric cables. Metallic lead is sometimes combined with other metals such as copper, tin, and antimony as lead alloys for use in the manufacture of a variety of metal products. Lead is commonly found in buildings in the solder used on copper domestic pipes, in the caulking on bell fittings of cast iron drainage pipes and in electrical equipment.

The presence of lead-containing materials (other than paint) was assessed through visual means.

With respect to paint, the lead content of interior paint was limited to 0.5% by weight (5,000 parts per million, or "ppm") in 1976 under the federal *Hazardous Products Act*. Recently, the *Hazardous Products Act* reduced the criteria for surface coatings (including paint) to 600 mg/kg (600 ppm) to define them as "lead-containing" (this has since been reduced to 90 ppm). In addition, WorkSafe BC has compiled a manual titled "*Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry*", (Lead Guideline) which defines a "lead-containing surface coating material" and sets out requirements for coatings with a lead content that exceeds 600 mg/kg (or 600 ppm). As such, Stantec will reference this value (600 ppm) in defining paints as "lead-containing".

Samples of suspected LCPs were collected from major paint applications, and were collected to substrate, where possible, in sufficient quantity to conduct analyses for total lead content. Samples collected were placed into separate, sealed, and labelled polyethylene bags, and submitted to EMSL for analyses of total lead content using Flame Atomic Absorption Spectrometry AAS (SW 846 3050B/7420).

EMSL's analytical laboratory is also accredited by the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Approval Program.

3.3 Polychlorinated Biphenyls

PCBs were used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. In fluorescent fixtures, PCBs were usually found within the small capacitors inside the ballast that controls the lamp. The *Federal Chlorobiphenyls Regulation*, SOR/91-152, prohibited the use of PCBs in electrical equipment manufactured after July 1, 1980.

The presence of PCB-containing equipment was assessed through visual means.

With respect to fluorescent lamp ballasts, due to the risk of electrical shock associated with dismantling operating fixtures, fluorescent lamp ballasts were not removed to view identification numbers/information. However, fluorescent lamp lenses and covers were removed to view ballast labels, in some instances, for comparison to the Environment Canada reference guide entitled "*Identification of Lamp Ballasts Containing PCBs, Report EPS 2/CC/2*", dated August 1991 (PCB Guide).

Based on this information and observations pertaining to lighting retro-fits and/or high-efficiency lighting that had been installed (where applicable), the total number of fluorescent lamp ballasts that may contain PCBs within the subject buildings was approximated.

3.4 Mercury

Mercury is commonly found in buildings as mercury vapour lighting, thermostats and/or thermometers with mercury-containing glass ampoules, electrical switches and can also be found in minor amounts in fluorescent lamp tubes and vapour bulbs and may be present in stable forms in adhesives. Exposure to mercury in federal workplaces is governed by the Canada Labour Code, while provincially it is governed by BC Reg. 296/97.

The presence of mercury and mercury-containing equipment was assessed through visual means.

3.5 Ozone-Depleting Substances

Chlorofluorocarbons (CFCs) and other ODSs are often found in refrigeration units associated with air-conditioning or other refrigeration equipment. In September 1987, 47 countries agreed to the Montreal Protocol on Substances that Deplete the Ozone Layer. Federally, ODSs are regulated by the *Federal Halocarbon Regulations, 2003* (FHR 2003). Provincially, ODSs in BC are regulated through the *British Columbia Waste Management Act – Ozone Depleting Substances and Other Halocarbons Regulation* (BC Reg. 387/99).

The presence of ODSs and equipment containing these materials was assessed through visual means.

3.6 Mould

Moist building materials may provide suitable conditions for mould growth, and the removal of building materials impacted by mould growth may require workers with specific training and experience using work procedures that have been developed to protect workers and work areas from exposure to elevated concentrations of airborne mould.

The presence of suspect visible mould was assessed through visual means. Material observed with dark-colored staining and/or a textured and discolored appearance is described as “suspected mould”. Mould identified visually is defined as “suspected mould” unless it is confirmed as mould by laboratory analysis.

3.6.1 Mould Reference Guidelines

With respect to mould and/or moisture, the assessment procedures utilized and abatement scope of work developed during this project were based on the recommendations provided in the documents listed below.

- Standard Construction Document CCA 82 “*mould guidelines for the Canadian construction industry*”, Canadian Construction Association, 2004 (referred to as “CCA 82”)

- "*Guidelines on Assessment and Remediation of Fungi in Indoor Environment*", New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology, April 2000 (referred to as the "NYC Guidelines")
- "*Fungal Contamination in Public Buildings: Heath Effects and Investigation Methods*", Federal-Provincial Committee on Environmental and Occupational Health, 2004 (referred to as the "Health Canada Guide")
- "*Indoor Air Quality in Office Buildings: A Technical Guide*", Report of the Federal-Provincial Advisory Committee on Environmental and Occupational Health, 1995. (referred to as the "IAQ Guide")
- "*Bioaerosols: Assessment and Control*", American Conference of Governmental Industrial Hygienists (ACGIH), 1999 (referred to as the ACGIH Report).

4 ASSESSMENT LIMITATIONS

This report reflects the observations made within accessed areas of the subject buildings, and the results of analyses performed on specific materials sampled during the assessment. Analytical results reflect the sampled materials at the specific sample locations.

Due to safety considerations and access restrictions imposed by Correctional Services Canada, access to FB-7 (Stall Barn) was not provided (building was deemed unsafe to enter).

As such, limited comments, if any, will be provided regarding the presence, quantity or condition of hazardous building materials within FB-7, though visual assessment was conducted as much as practical, from the exterior.

The limitations of this assessment pertaining to each of the considered hazardous building materials are outlined in the following sub-sections.

4.1 Asbestos

Due to the limitations of sampling techniques, and the restrictions imposed through working in occupied and operational areas, the asbestos content of some materials could neither be confirmed nor denied within the subject buildings. Suspected ACMs that were not sampled include, but are not limited to, the following:

- Sub-grade materials
- Flooring material concealed beneath ceramic tile, brickwork, hardwood flooring, and/or concealed beneath existing sub-floors
- Drywall and/or wall plaster materials concealed behind new and/or additional walls
- Woven tape inside duct connection joints
- Pipe straight-run and pipe elbow insulation within wall cavities or crawlspaces

- Loose-fill insulation (e.g. vermiculite) within sealed wall cavities
- Heat protection materials inside mechanical installations and light fixtures.

If encountered during demolition or other activities, any suspected ACMs not identified within this report should be presumed to contain asbestos and handled as such until otherwise proven, through analytical testing.

4.2 Lead

Assessment for the presence of lead or lead-containing materials was visual in nature, and was conducted pertaining to readily visible surfaces within accessible spaces of the subject buildings only. The presence of lead or lead-containing materials in inaccessible areas not assessed includes, but is not limited to: ceiling spaces, wall cavities, crawlspaces, and buried materials.

With respect to paint, samples of suspected LCPs were collected within the subject buildings only from surfaces of major paint applications where visually different paint colours and/or types were identified. Although the surfaces where samples were collected may be covered with more than one coat of paint, the paint samples are described by the surface (visible) colour only.

Attempts were made to represent all layers of paint in the samples collected. As analytical results are referenced to the surface paint colour only, the lead content of all painted surfaces similar to that represented by the surface paint colour will be presumed to be the same, regardless of differing sub-surface paints, if any.

4.3 Polychlorinated Biphenyls

Due to height restrictions and the risk of electrical shock in handling operational light fixtures, the ballasts present in the fixtures observed within the subject building were not removed for comparison to the PCB Guide. However, fluorescent light lenses and ballast covers were removed to view ballast labels.

Conclusions and recommendations regarding the presence of PCBs within the subject buildings are based on limited observations and is presented to provide guidance regarding the likelihood that PCB-containing equipment is or is not present within the subject buildings. The exact extent and/or number of fluorescent lamp ballasts containing PCBs, if any, within the subject buildings will not be commented on.

4.4 Mercury

Visual assessment for the presence of mercury-containing equipment within the subject buildings was conducted in accessible areas only. The presence of mercury or mercury-containing equipment in inaccessible areas including, but not limited to ceiling spaces, wall cavities, and crawlspaces, or as internal parts of HVAC mechanisms, was not assessed.

4.5 Ozone-Depleting Substances

Visual assessment for the presence of ODSs within the subject buildings was conducted in accessible areas only. The presence of ODS-containing equipment in inaccessible areas including, but not limited to, ceiling spaces, wall cavities and crawlspaces, was not assessed.

4.6 Mould

Visual assessment for the presence of suspected visible mould and/or suitable conditions for mould growth (e.g., moist and/or water-stained building materials) were conducted in accessed areas of the subject buildings only. The assessment was non-intrusive in nature and included visual assessment of exposed surfaces only.

The conclusions made in this report provide description(s) of the potential source(s) of moisture within the subject buildings that may have led to suitable conditions for mould growth, only in those cases where potential source(s) of moisture were identified. These conclusions will not necessarily identify all sources of moisture leading to suitable conditions for mould growth within the subject buildings or within the impacted area(s).

This assessment does not constitute a building envelope/building systems assessment, which would include an intrusive investigation to assess the internal condition, potential moisture sources, and expected remaining service life of the various components and systems comprising the envelope of a building.

5 FINDINGS

A site plan indicating the locations of the subject buildings is attached in **Appendix 1**. The results of our assessment are provided on a building-by-building basis in **Appendices A through J**. Each Appendix contains the following (where applicable):

- Separate sections with written summaries of findings pertaining to each hazardous building material, including the following:
    - A listing of suspect materials observed
    - Tables including a summaries of the sample types, locations, and analytical results
    - Interpretations of observations and/or sample analytical results.

- Photographs of identified hazardous building materials
- Floor plan drawings for the subject building, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical)
- Copies of the Certificates of Analysis for samples analysed.

6 GENERAL RECOMMENDATIONS

Building-specific recommendations pertaining to the identified hazardous building materials are provided in **Appendices A through J**. General recommendations pertaining to management of identified hazardous building materials in good condition are provided below.

6.1 Asbestos

If demolition activities are to impact identified ACMs, these materials should be managed and handled in accordance with the requirements of the BC Reg. 296/97, and will require the involvement of a qualified, licensed asbestos abatement contractor.

Suspected ACMs deemed visually similar to the ACMs identified in this report should be considered asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

If encountered during demolition activities, any suspected ACMs not accessible and/or identified during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

Ensure asbestos containing waste is handled, stored, and disposed of in accordance with the requirements of the *Federal Transportation of Dangerous Goods Regulation* and the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88).

6.2 Lead

If LCPs or other lead-containing materials are to be disturbed and/or removed during demolition activities, ensure compliance with the following:

- The occupational exposure control requirements of the Canada Labour Code and BC Reg. 296/97—including provisions indicated in the Lead Guideline
- The disposal requirements of the BC Reg. 63/88
- The transportation requirements of the Federal Transportation of Dangerous Goods Regulation.

Corrective action or remedial work on paint applications containing any concentration of lead should be undertaken in a manner so as to avoid generating fine particulate matter or dust (i.e., avoid sanding). The use of personal protective equipment is recommended to reduce the potential for over-exposure to lead dust.

6.3 Polychlorinated Biphenyls

As fluorescent lamp ballasts may contain PCBs, if these items are removed from service, they should be assessed in reference to the PCB Guide.

If PCB-containing items are identified and require removal, they should be handled, transported, stored and disposed of according to the *Federal Transportation of Dangerous Goods Regulation,* BC Reg. 63/88, and the *PCB Regulations* (SOR/2008-273).

6.4 Mercury

If mercury-containing materials (e.g., thermostats, fluorescent light bulbs, HID lighting) are to be removed from service, ensure all mercury waste is handled, stored and disposed of in accordance with the requirements of the requirements of BC Reg. 63/88 and the *Transportation of Dangerous Goods Regulation*.

6.5 Ozone-Depleting Substances

If ODS-containing equipment is to be removed from service or drained of coolants, ODSs must be handled, recycled, stored, and/or disposed of in accordance with the requirements of the FHR 2003 and BC Reg. 387/99.

6.6 Mould

While there are few definitive guidelines on the interpretation of laboratory results for mould analysis, documents published by Health Canada, Ontario Ministry of Health, American Industrial Hygiene Association (AIHA), American Conference of Governmental Industrial Hygienists (ACGIH) and others, provide guidance for interpreting the results of mould investigations. The *Health Canada Guide* states that:

> *"Identifiable promoters of fungal growth require correction, and any visible fungi require removal"*

As the most controllable promoter of fungal growth is moisture, buildings should be managed to minimize moisture ingress or moisture impacts to building materials that are not intended to be wetted.

7 CLOSURE

This report has been prepared by Stantec Consulting Ltd. for the sole benefit of Correctional Service Canada c/o Public Works and Government Services Canada. This report may not be relied upon by any other person or entity without the express written consent of Stantec Consulting Ltd., Correctional Service Canada and Public Works and Government Services Canada.

Any use that a third party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The conclusions presented represent the best judgment of the assessor based on current environmental standards and the site conditions observed on the date cited within this report. This report is based on, and limited by, circumstances and conditions stated herein, and on information available at the time of preparation of the report. Due to the limited nature of the investigation and the limited data available, Stantec Consulting Ltd. cannot warrant against undiscovered environmental liabilities. It is possible that additional, concealed hazardous materials may become evident during demolition activities within the subject buildings.

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

We trust that the report meets your current requirements. Should you have any questions or concerns regarding the above, please do not hesitate to contact the undersigned.

Respectfully submitted,

Stantec Consulting Ltd.

Tiffany Waite, B.Sc.
Project Scientist
Indoor Environments

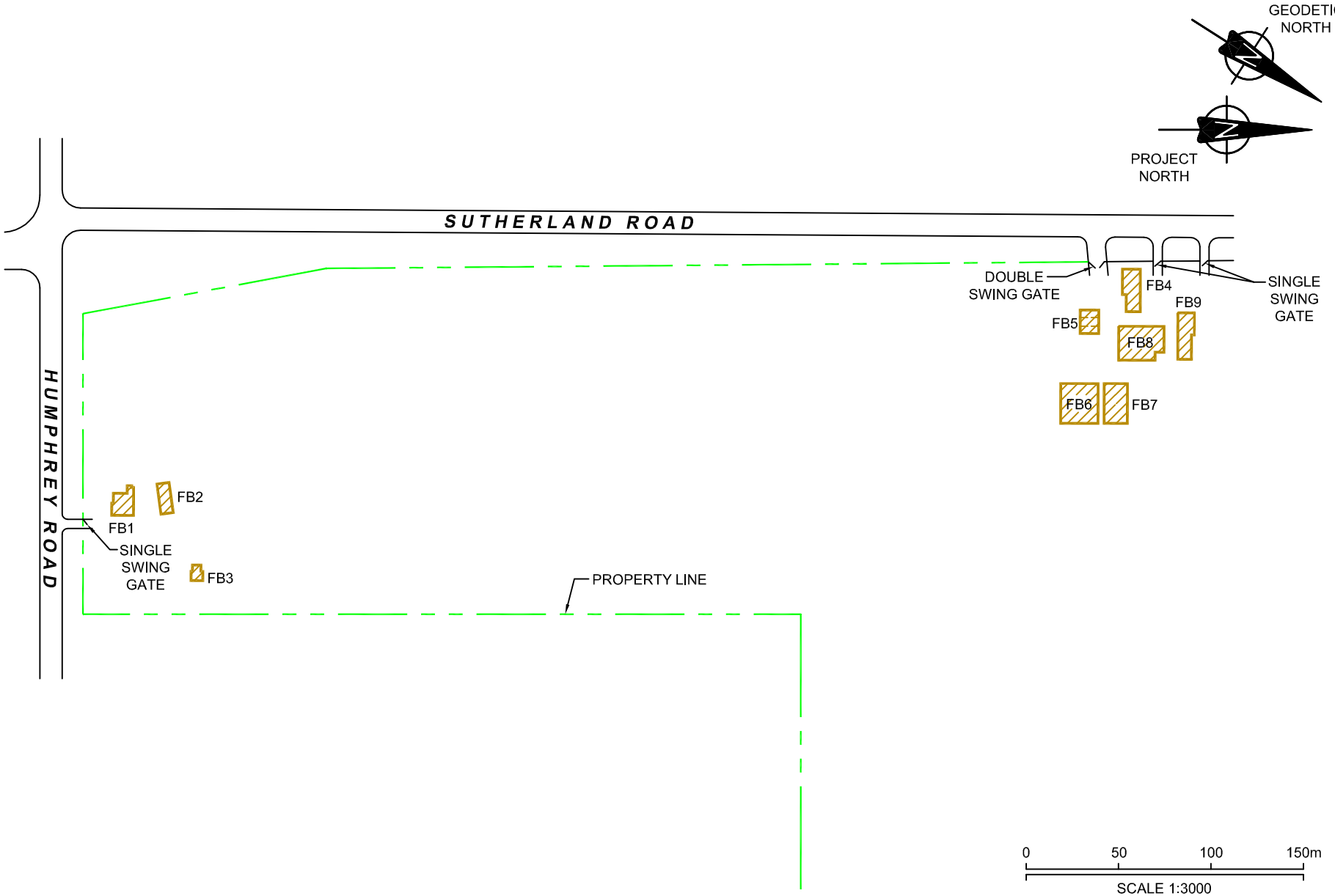
Reviewed by:

Sean Brigden, B.Sc., P.B.Dipl.
Project Manager
Indoor Environments

TW/SB/pf

APPENDIX 1

Site Plan



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

SITE PLAN

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	1 : 3000
Date:	12/11/10
Dwn. By:	CD CS SL2012110143
App'd By:	SB

Dwg. No.: 1

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APPENDIX A

FB1—Single Storey Dwelling

5.0 FINDINGS – FB1 - SINGLE STOREY DWELLING

The Single Storey Dwelling was reportedly constructed in 1945.

The results of the assessment for each of the considered hazardous materials within the Single Storey Dwelling are provided in the following sub-sections.

Floor plan drawings for the Single Storey Dwelling, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

Stantec identified and sampled various suspected ACMs, including the following:

- Sheet flooring
- Vinyl floor tiles
- Drywall joint fill compound
- Ceiling tiles
- Window caulking
- Wall paper.

Thirty-three samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature. A summary of the sample types, locations and analytical results is presented in Table A5.1.1, below. Copies of the certificates of analysis provided by EMSL for the suspected ACM samples submitted are attached at the end of this Appendix.

Table A5.1.1: Suspected ACM Sample Collection and Analysis Summary Single Storey Dwelling – CSC's Mountain Institution

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB1-DJC-01A	Drywall joint compound	Bedroom (Room 106)	None Detected
A-FB1-DJC-01B	Drywall joint compound	Bedroom (Room 106)	None Detected
A-FB1-DJC-01C	Drywall joint compound	Bedroom (Room 106)	2% Chrysotile
A-FB1-SF-01A	Sheet flooring Stones pattern	Kitchen (Room 107)	15% Chrysotile
A-FB1-SF-01B	Sheet flooring Stones pattern	Kitchen (Room 107)	Stop Positive (not analyzed)
A-FB1-SF-01C	Sheet flooring Stones pattern	Kitchen (Room 107)	Stop Positive (not analyzed)
A-FB1-SF-02A	Sheet flooring Multi-colored	Hallway closet (Room 108)	None Detected

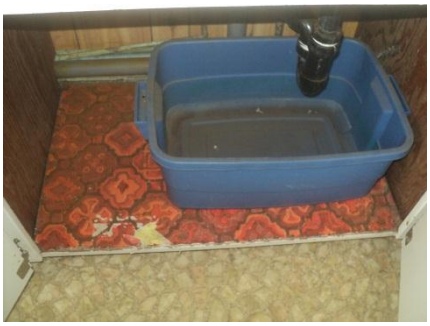
Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB1-SF-02B	Sheet flooring Multi-colored	Hallway closet (Room 108)	None Detected
A-FB1-SF-02C	Sheet flooring Multi-colored	Hallway closet (Room 108)	None Detected
A-FB1-SF-03A	Sheet flooring Beige squares pattern	Washroom (Room 109)	None Detected
A-FB1-SF-03B	Sheet flooring Beige squares pattern	Washroom (Room 109)	None Detected
A-FB1-SF-03C	Sheet flooring Beige squares pattern	Washroom (Room 109)	None Detected
A-FB1-SF-04A	Sheet flooring Red	Kitchen - under sink (Room 107)	20% Chrysotile
A-FB1-SF-04B	Sheet flooring Red	Kitchen - under sink (Room 107)	Stop Positive (not analyzed)
A-FB1-SF-04C	Sheet flooring Red	Kitchen - under sink (Room 107)	Stop Positive (not analyzed)
A-FB1-FT-01A	Floor tile 12"x12" tan	Beneath laminate in dining room (Room 105)	None Detected
A-FB1-FT-01B	Floor tile 12"x12" tan	Beneath laminate in dining room (Room 105)	None Detected
A-FB1-FT-01C	Floor tile 12"x12" tan	Beneath laminate in dining room (Room 105)	None Detected
A-FB1-CT-01A	Ceiling tile 1'x2'	Living room (Room 101)	None Detected
A-FB1-CT-01B	Ceiling tile 1'x2'	Living room (Room 101)	None Detected
A-FB1-CT-01C	Ceiling tile 1'x2'	Living room (Room 101)	None Detected
A-FB1-CAU-01A	Window caulking White	Window exterior	None Detected
A-FB1-CAU-01B	Window caulking White	Window exterior	None Detected
A-FB1-CAU-01C	Window caulking White	Window exterior	None Detected
A-FB1-WP-01A	Wall paper burgundy colour	Top layer - living room (Room 101)	None Detected
A-FB1-WP-01B	Wall paper burgundy colour	Top layer - living room (Room 101)	None Detected
A-FB1-WP-01C	Wall paper burgundy colour	Top layer - living room (Room 101)	None Detected
A-FB1-WP-02A	Wall paper white colour	Bottom layer - living room (Room 101)	None Detected
A-FB1-WP-02B	Wall paper white colour	Bottom layer - living room (Room 101)	None Detected
A-FB1-WP-02C	Wall paper white colour	Bottom layer - living room (Room 101)	None Detected

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB1-WP-03A	Wall paper pink colour	Bedroom (Room 106)	None Detected
A-FB1-WP-03B	Wall paper pink colour	Bedroom (Room 106)	None Detected
A-FB1-WP-03C	Wall paper pink colour	Bedroom (Room 106)	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table A5.1.2, below were identified as ACMs.

Table A5.1.2: Summary of Identified ACMs
Single Storey Dwelling – CSC's Mountain Institution

Identified ACM Description and Condition Information	Photo
Drywall joint compound – walls within Room 106, and may be present beneath wallpaper throughout.	
Vinyl sheet flooring – stones pattern, kitchen (Room 107).	

Identified ACM Description and Condition Information	Photo
Vinyl sheet flooring – red, in kitchen cabinets (Room 107)	

5.2 Lead

Lead is expected to be present in the following materials within the Single Storey Dwelling:

- Solder used on copper domestic pipes
- Caulking on bell fittings for cast iron drainage pipes, if present
- Electrical equipment.

With respect to paint, 6 paint chip samples were obtained, where suspected LCPs were observed. A summary of the sample types, locations and analytical results is presented in Table A5.2.1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table A5.2.1: Suspected LCP Sample Collection and Analysis Summary Single Storey Dwelling – CSC's Mountain Institution

Sample No.	Sample Location	Sample Colour	Lab Result (ppm)	Lead Containing (Yes/No)
P-FB1-01	Exterior wall	White	3,500	Yes
P-FB1-02	Room 108 wall	White/green	650	Yes
P-FB1-03	Room 103 wall	Yellow	380	No
P-FB1-04	Room 111 floor	Grey	<90	No
P-FB1-05	Room 107 wall	Red	<90	No
P-FB1-06	Room 107 trim	Beige	210	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table A5.2.2, below were identified as LCPs.

Table A5.2.2: Summary of Identified LCPs
Single Storey Dwelling – CSC's Mountain Institution

Identified LCP Description	Photo
White paint on the exterior walls of the building.	
White / green (layered) paint on the interior walls.	

5.3 Polychlorinated Biphenyls

One (1) fluorescent light fixture was observed within the Single Storey Dwelling. Based on the reported construction era of the building, the ballast(s) within the fixture may be PCB-containing.

5.4 Mercury

Mercury vapour may be present within fluorescent light tubes.

No other mercury-containing equipment was identified in the Single Storey Dwelling during the assessment.

5.5 Ozone-Depleting Substances

One (1) refrigerator was observed within the Single Storey Dwelling, which may contain ODSs in the form of refrigerant. No other suspected ODS containing equipment was identified at the time of the assessment.

5.6 Mould

Moisture damage and suspect mould was identified within the Single Storey Dwelling, as summarized in **Table 5A.6.1**, below.

Table A5.6.1: Summary of Identified Mould and/or Moisture-Impacted Materials Single Storey Dwelling – CSC's Mountain Institution

Identified Mould and/or Moisture Impacted Materials Description	Photo
Suspect mould and moisture damage was observed on the north and west walls of the northeast bedroom (Room 106).	

6.0 RECOMMENDATIONS – SINGLE STOREY DWELLING

The recommendations pertaining to each of the identified hazardous materials within the Single Storey Dwelling are presented in the sub-sections below.

6.1 Asbestos

Identified ACMS as listed in Section 5.1 should be removed and disposed of in accordance with the requirements of BC Reg. 296/97 prior to demolition activities that may impact them.

If materials that are visually similar to identified ACMs are discovered within the Single Storey Dwelling in locations not outlined in this report, these materials should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

If encountered during demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

Ensure asbestos containing waste is handled, stored, and disposed of in accordance with the requirements of the *Federal Transportation of Dangerous Goods Regulation* and the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88).

6.2 Lead

For LCPs and other lead-containing materials identified within the subject building that are to be disturbed and/or removed, ensure compliance with the following:

- The occupational exposure control requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- The disposal requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the *Federal Transportation of Dangerous Goods Regulation*.

6.3 Polychlorinated Biphenyls

As fluorescent lamp ballasts may contain PCBs, if these items are removed from service, they should be assessed in reference to the PCB Guide.

If PCB-containing items are identified and require removal, they should be handled, transported, stored and disposed of according to the *Federal Transportation of Dangerous Goods Regulation,* BC Reg. 63/88, and the *PCB Regulations* (SOR/2008-273).

6.4 Mercury

Mercury-containing materials (e.g. fluorescent light bulbs) are to be removed, stored and disposed of in accordance with the requirements of the requirements of BC Reg. 63/88 and the *Transportation of Dangerous Goods Regulation*.

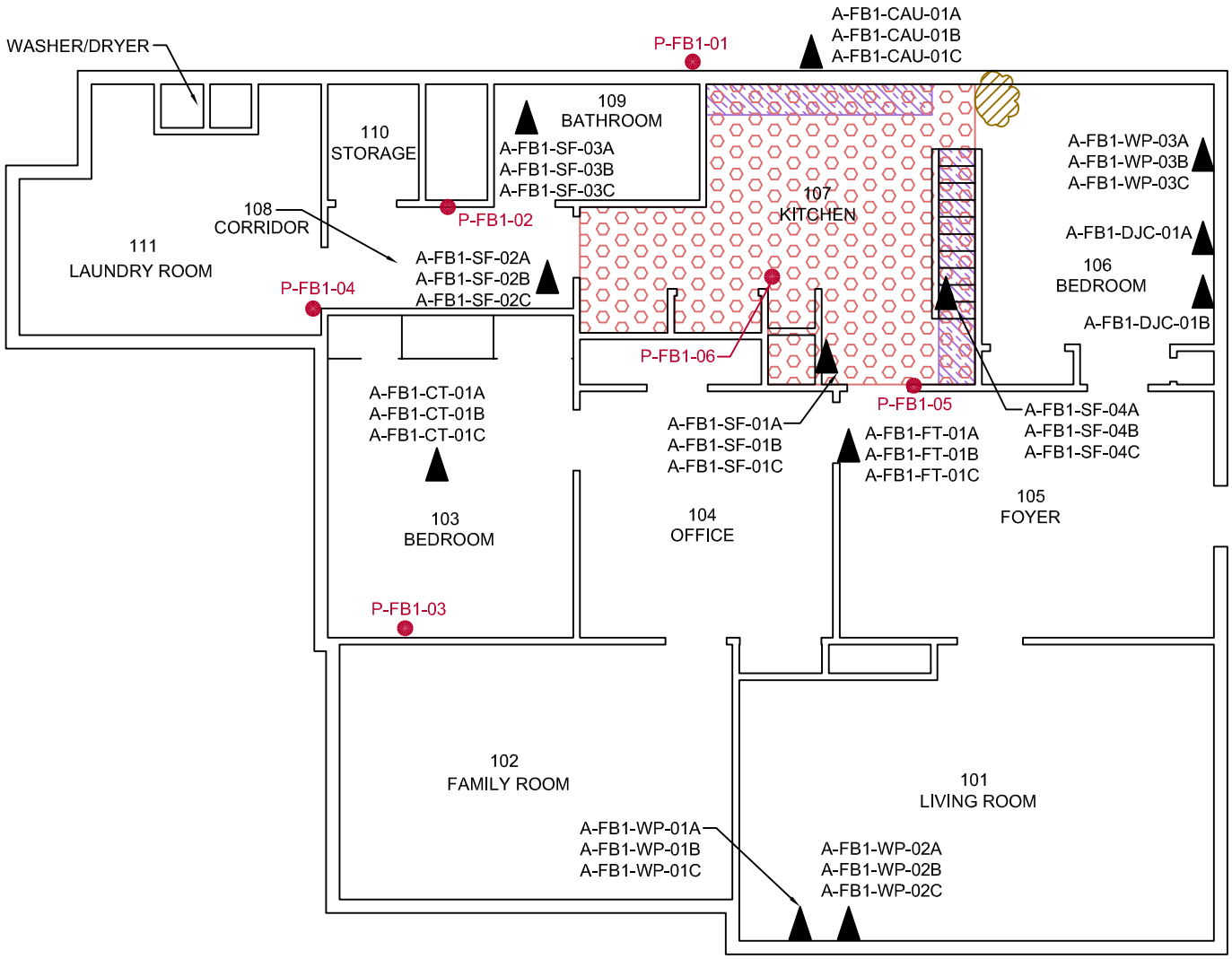
6.5 Ozone-Depleting Substances

If ODS-containing equipment is to be removed from service or drained of coolants, ODSs must be handled, recycled, stored, and/or disposed of in accordance with the requirements of the FHR 2003 and BC Reg. 387/99.

6.6 Mould

When demolition within the subject building proceeds, it is expected that mould and/or moisture-impacted building materials will be removed and disposed of during that process. Due to the suspected presence of mould on building materials, and if those impacted materials are to be removed by hand, demolition workers should be notified of the presence of mould-impacted building materials and be provided with respiratory protection and/or other personal protective equipment (PPE) as deemed necessary for the work that they will be conducting.

As the impacted drywall materials are finished with asbestos-containing joint compound, the work procedures and PPE that will be required to address the asbestos will be sufficient in protecting workers and adjacent areas from exposure to mould.



UNIT FB1
SINGLE STOREY DWELLING

LEGEND

- BULK SAMPLE
- PAINT CHIP SAMPLE
- ASBESTOS-CONTAINING VINYL SHEET FLOORING
- ASBESTOS-CONTAINING VINYL SHEETING IN CABINETS
- SUSPECT MOULD ON DRYWALL

NOTES: **1. ASBESTOS-CONTAINING DRYWALL JOINT COMPOUND WAS IDENTIFIED ON THE DRYWALL WALLS IN ROOM 106 AND MAY BE PRESENT BENEATH WALLPAPER THROUGHOUT.**

2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100381
App'd By:	SB

Dwg. No.: 1

Stantec

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Received:	10/11/12 12:25 PM
Analysis Date:	10/18/2012
Collected:	

Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos	
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**%**	**Type**
A-FB1-DJC-01A *551204655-0001*	Bedroom Room 106 - Drywall Joint Compound	Brown/Gray Fibrous Heterogeneous	90%	Cellulose	10%	Non-fibrous (other)		**None Detected**
A-FB1-DJC-01B *551204655-0002*	Bedroom Room 106 - Drywall Joint Compound	Brown/Gray Fibrous Heterogeneous	90%	Cellulose	10%	Non-fibrous (other)		**None Detected**
A-FB1-DJC-01C *551204655-0003*	Bedroom Room 106 - Drywall Joint Compound	Gray Fibrous Homogeneous			98%	Non-fibrous (other)	**2%**	**Chrysotile**
A-FB1-SF-01A *551204655-0004*	Kitchen Room 107 - Sheet Flooring Stones Pattern	Brown/Gray/Tan Fibrous Heterogeneous	2%	Cellulose	83%	Non-fibrous (other)	**15%**	**Chrysotile**
A-FB1-SF-01B *551204655-0005*	Kitchen Room 107 - Sheet Flooring Stones Pattern							**Stop Positive (Not Analyzed)**
A-FB1-SF-01C *551204655-0006*	Kitchen Room 107 - Sheet Flooring Stones Pattern							**Stop Positive (Not Analyzed)**
A-FB1-SF-02A *551204655-0007*	Hallway Closet Room 108 - Sheet Flooring Multi Colored	Various/Black/Green Non-Fibrous Homogeneous	12%	Cellulose	88%	Non-fibrous (other)		**None Detected**

Analyst(s)

Orlando J. Ivey II (10)
Ryan Shannon (22)

Kevin Pang
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

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Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos	
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**%**	**Type**
A-FB1-SF-02B *551204655-0008*	Hallway Closet Room 108 - Sheet Flooring Multi Colored	Various/Black/Green Non-Fibrous Homogeneous	6%	Cellulose	94%	Non-fibrous (other)		**None Detected**
A-FB1-SF-02C *551204655-0009*	Hallway Closet Room 108 - Sheet Flooring Multi Colored	Brown/Gray Fibrous Homogeneous	4%	Cellulose	96%	Non-fibrous (other)		**None Detected**
A-FB1-SF-03A *551204655-0010*	Washroom Room 109 - Sheet Flooring Beige Squares Pattern	Gray/White/Various Fibrous Heterogeneous	6% 2%	Cellulose Glass	92%	Non-fibrous (other)		**None Detected**
A-FB1-SF-03B *551204655-0011*	Washroom Room 109 - Sheet Flooring Beige Squares Pattern	Gray/Tan/White Fibrous Heterogeneous	4% 3%	Cellulose Glass	93%	Non-fibrous (other)		**None Detected**
A-FB1-SF-03C *551204655-0012*	Washroom Room 109 - Sheet Flooring Beige Squares Pattern	Gray Fibrous Homogeneous	10%	Cellulose	90%	Non-fibrous (other)		**None Detected**
A-FB1-SF-04A *551204655-0013*	Kitchen Under Sink Room 107 - Sheet Flooring Red	Brown/Tan/Red Fibrous Heterogeneous	8%	Glass	72%	Non-fibrous (other)	**20%**	**Chrysotile**
A-FB1-SF-04B *551204655-0014*	Kitchen Under Sink Room 107 - Sheet Flooring Red							**Stop Positive (Not Analyzed)**

Analyst(s)

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Kevin Pang
or other approved signatory

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Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**	**% Type**
A-FB1-SF-04C *551204655-0015*	Kitchen Under Sink Room 107 - Sheet Flooring Red					**Stop Positive (Not Analyzed)**
A-FB1-FT-01A-Floor Tile *551204655-0016*	Beneath Laminate in Dining Room - Room 105 - Floor Tile 12"x12" Tan	Tan Non-Fibrous Homogeneous			100% Non-fibrous (other)	**None Detected**
A-FB1-FT-01A-Paper Backing *551204655-0016A*	Beneath Laminate in Dining Room - Room 105 - Floor Tile 12"x12" Tan	Red/Black Fibrous Homogeneous	85%	Cellulose	15% Non-fibrous (other)	**None Detected**
A-FB1-FT-01B-Floor Tile *551204655-0017*	Beneath Laminate in Dining Room - Room 105 - Floor Tile 12"x12" Tan	Tan Non-Fibrous Homogeneous			100% Non-fibrous (other)	**None Detected**
A-FB1-FT-01B-Paper Backing *551204655-0017A*	Beneath Laminate in Dining Room - Room 105 - Floor Tile 12"x12" Tan	Red/Black Non-Fibrous Heterogeneous	80% 2%	Cellulose Glass	18% Non-fibrous (other)	**None Detected**
A-FB1-FT-01C-Floor Tile *551204655-0018*	Beneath Laminate in Dining Room - Room 105 - Floor Tile 12"x12" Tan	Tan/Beige Non-Fibrous Homogeneous			100% Non-fibrous (other)	**None Detected**
A-FB1-FT-01C-Paper Backing *551204655-0018A*	Beneath Laminate in Dining Room - Room 105 - Floor Tile 12"x12" Tan	Red/Black Fibrous Homogeneous	75%	Cellulose	25% Non-fibrous (other)	**None Detected**

Analyst(s)

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Kevin Pang
or other approved signatory

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Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
A-FB1-CT-01A *551204655-0019*	Living Room - Room 101 - Ceiling Tile 1'x2'	Tan/Cream Fibrous Heterogeneous	95%	Cellulose	5%	Non-fibrous (other)	**None Detected**
A-FB1-CT-01B *551204655-0020*	Living Room - Room 101 - Ceiling Tile 1'x2'	Tan/Cream Fibrous Heterogeneous	95% <1%	Cellulose Glass	5%	Non-fibrous (other)	**None Detected**
A-FB1-CT-01C *551204655-0021*	Living Room - Room 101 - Ceiling Tile 1'x2'	Gray/Tan Fibrous Homogeneous	80%	Cellulose	20%	Non-fibrous (other)	**None Detected**
A-FB1-CAU-01A *551204655-0022*	Window Exterior - Window Caulking White	Gray/Tan Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
A-FB1-CAU-01B *551204655-0023*	Window Exterior - Window Caulking White	Gray/Beige Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
A-FB1-CAU-01C *551204655-0024*	Window Exterior - Window Caulking White	Gray Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**
A-FB1-WP-01A *551204655-0025*	Top Layer Living Room - Room 101 - Wall Paper Burgundy Colour	Brown/White/Yellow Fibrous Homogeneous	80%	Cellulose	20%	Non-fibrous (other)	**None Detected**

Analyst(s)

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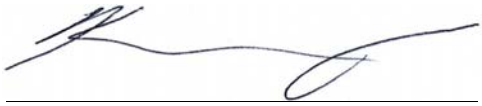
Ryan Shannon (22)



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Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
A-FB1-WP-01B *551204655-0026*	Top Layer Living Room - Room 101 - Wall Paper Burgundy Colour	Brown/White/Yellow Fibrous Homogeneous	80%	Cellulose	20%	Non-fibrous (other)	**None Detected**
A-FB1-WP-01C *551204655-0027*	Top Layer Living Room - Room 101 - Wall Paper Burgundy Colour	Brown/White/Yellow Fibrous Homogeneous	65%	Cellulose	35%	Non-fibrous (other)	**None Detected**
A-FB1-WP-02A *551204655-0028*	Bottom Layer Living Room - Room 101 - Wall Paper White Colour	Tan/Cream Fibrous Homogeneous	60%	Cellulose	40%	Non-fibrous (other)	**None Detected**
A-FB1-WP-02B *551204655-0029*	Bottom Layer Living Room - Room 101 - Wall Paper White Colour	Tan/Cream Fibrous Homogeneous	60%	Cellulose	40%	Non-fibrous (other)	**None Detected**
A-FB1-WP-02C *551204655-0030*	Bottom Layer Living Room - Room 101 - Wall Paper White Colour	Tan/Beige/Cream Fibrous Homogeneous	85%	Cellulose	15%	Non-fibrous (other)	**None Detected**
A-FB1-WP-03A *551204655-0031*	Bedroom - Room 106 - Wall Paper Pink Colour	Brown/Tan/Green Fibrous Heterogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

Analyst(s)

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Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

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

EMSL Canada Or	551204655
CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
Stantec Consulting, Ltd.
1100- 111 Dunsmuir Street
Vancouver, BC V6B 6A3

Phone:	(604) 696-8272
Fax:	
Received:	10/11/12 12:25 PM
Analysis Date:	10/18/2012
Collected:	

Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
A-FB1-WP-03B *551204655-0032*	Bedroom - Room 106 - Wall Paper Pink Colour	Brown/Tan/Green Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
A-FB1-WP-03C *551204655-0033*	Bedroom - Room 106 - Wall Paper Pink Colour	Brown/Gray/Tan Fibrous Homogeneous	95%	Cellulose	5%	Non-fibrous (other)	**None Detected**

Analyst(s)

Orlando J. Ivey II (10)
Ryan Shannon (22)

Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

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Attn: **Tiffany Waite**
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Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Received: 10/11/12 12:23 PM
Collected:

Project: **123710533**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB1-01	*0001*		10/16/2012	3500 ppm
	Site: Exterior Wall Desc: White Colour Paint			
P-FB1-02	*0002*		10/16/2012	650 ppm
	Site: Room 108 Wall Desc: White/Green Colour Paint			
P-FB1-03	*0003*		10/16/2012	380 ppm
	Site: Room 103 Wall Desc: Yellow Colour Paint			
P-FB1-04	*0004*		10/16/2012	<90 ppm
	Site: Room 111 Floor Desc: Grey Colour Paint			
P-FB1-05	*0005*		10/16/2012	<90 ppm
	Site: Room 107 Wall Desc: Red Colour Paint			
P-FB1-06	*0006*		10/16/2012	210 ppm
	Site: Room 107 Trim Desc: Beige Colour Paint			

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 10/17/2012 16:20:30

APPENDIX B

FB2—Storage Shed/Vehicle Shed

5.0 FINDINGS – FB2 - STORAGE SHED/VEHICLE SHED

The Storage Shed/Vehicle Shed was reportedly constructed in 1973.

The results of the assessment for each of the considered hazardous materials within the Storage Shed/Vehicle Shed are provided in the following sub-sections.

Floor plan drawings for the Storage Shed/Vehicle Shed, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

Stantec identified and sampled various suspected ACMs, including the following:

- Drywall joint fill compound
- Window caulking
- Building paper
- Wallboard.

12 samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature. A summary of the sample types, locations and analytical results is presented in Table A5.1.1, below. Copies of the certificates of analysis provided by EMSL for the suspected ACM samples submitted are attached at the end of this Appendix.

Table A5.1.1: Suspected ACM Sample Collection and Analysis Summary Storage Shed/Vehicle Shed – CSC's Mountain Institution

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB2-DJC-01A	Drywall joint compound	Room 102	1.25% Chrysotile
A-FB2-DJC-01B	Drywall joint compound	Room 102	3.5% Chrysotile
A-FB2-DJC-01C	Drywall joint compound	Room 102	0.75% Chrysotile
A-FB2-CAU-01A	Window caulking White	Room 105	None Detected
A-FB2-CAU-01B	Window caulking White	Room 105	None Detected
A-FB2-CAU-01C	Window caulking White	Room 105	None Detected
A-FB2-BP-01A	Building paper black colour	Room 105	None Detected
A-FB2-BP-01B	Building paper black colour	Room 105	None Detected

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB2-BP-01C	Building paper black colour	Room 105	None Detected
A-FB2-WB-02A	Wallboard	Room 103	None Detected
A-FB2-WB-02B	Wallboard	Room 103	None Detected
A-FB2-WB-02C	Wallboard	Room 103	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, the materials presented in Table A5.1.2, below were identified as ACMs.

Table A5.1.2: Summary of Identified ACMs
Storage Shed/Vehicle Shed – CSC's Mountain Institution

Identified ACM Description and Condition Information	Photo
Drywall joint compound – walls and ceiling within Room 102.	

5.2 Lead

Lead is expected to be present in the following materials within the Storage Shed/Vehicle Shed:

- Solder used on copper domestic pipes
- Caulking on bell fittings for cast iron drainage pipes
- Electrical equipment.

With respect to paint, one (1) paint chip sample was obtained, where suspected LCPs were observed. A summary of the sample type, location and analytical result is presented in Table A5.2.1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP sample submitted is attached to this Appendix.

Table A5.2.1: Suspected LCP Sample Collection and Analysis Summary Storage Shed/Vehicle Shed – CSC's Mountain Institution

Sample No.	Sample Location	Sample Colour	Lab Result (ppm)	Lead Containing (Yes/No)
P-FB2-01	Exterior wall	Red	560	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, no sampled paints were identified as LCPs.

5.3 Polychlorinated Biphenyls

No PCB-containing equipment was identified in the Storage Shed/Vehicle Shed during the assessment.

5.4 Mercury

No mercury-containing equipment was identified in the Storage Shed/Vehicle Shed during the assessment.

5.5 Ozone-Depleting Substances

No suspected ODS containing equipment was identified in the Storage Shed/Vehicle Shed at the time of the assessment.

5.6 Mould

No suspect mould was identified within the Storage Shed/Vehicle Shed.

6.0 RECOMMENDATIONS – STORAGE SHED/VEHICLE SHED

The recommendations pertaining to each of the identified hazardous materials within the Storage Shed/Vehicle Shed are presented in the sub-sections below.

6.1 Asbestos

Identified ACMS as listed in Section 5.1 should be removed and disposed of in accordance with the requirements of BC Reg. 296/97 prior to demolition activities that may impact them.

If materials that are visually similar to identified ACMs are discovered within the Storage Shed/Vehicle Shed in locations not outlined in this report, these materials should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

If encountered during demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

Ensure asbestos containing waste is handled, stored, and disposed of in accordance with the requirements of the *Federal Transportation of Dangerous Goods Regulation* and the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88).

6.2 Lead

For LCPs and other lead-containing materials identified within the subject building that are to be disturbed and/or removed, ensure compliance with the following:

- The occupational exposure control requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- The disposal requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the *Federal Transportation of Dangerous Goods Regulation*.

6.3 Polychlorinated Biphenyls

As PCB-containing items were not observed, no specific recommendations have been developed.

6.4 Mercury

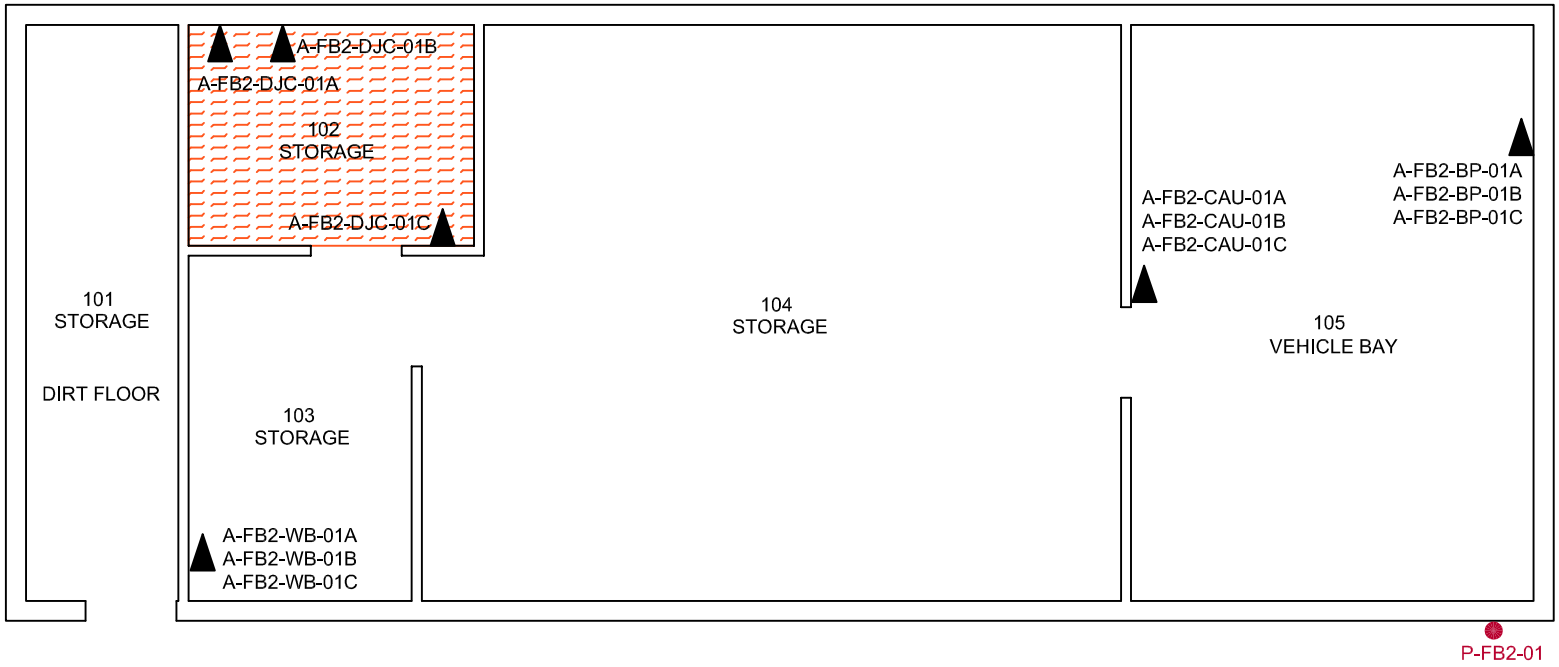
As mercury-containing items were not observed, no specific recommendations have been developed.

6.5 Ozone-Depleting Substances

As equipment containing ODSs was not observed, no specific recommendations have been developed.

6.6 Mould

As materials impacted by suspect mould were not observed, no specific recommendations have been developed.



UNIT FB2
STORAGE/VEHICLE SHED

LEGEND

- BULK SAMPLE
- PAINT CHIP SAMPLE
- ASBESTOS-CONTAINING DRYWALL JOINT COMPOUND

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100382
App'd By:	SB

Dwg. No.: 1

Stantec

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CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
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Phone:	(604) 696-8272
Fax:	
Received:	10/11/12 12:25 PM
Analysis Date:	10/18/2012
Collected:	

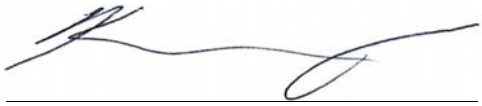
Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos	
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**%**	**Type**
A-FB2-DJC-01A *551204655-0034*	Room 102 - Drywall Joint Compound	Gray Fibrous Heterogeneous	3%	Cellulose	97%	Non-fibrous (other)	**<1%**	**Chrysotile**
A-FB2-DJC-01B *551204655-0035*	Room 102 - Drywall Joint Compound	Gray Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**<1%**	**Chrysotile**
A-FB2-DJC-01C *551204655-0036*	Room 102 - Drywall Joint Compound	Gray Fibrous Homogeneous			100%	Non-fibrous (other)	**<1%**	**Chrysotile**
A-FB2-CAU-01A *551204655-0037*	Room 105 - Window Caulking White	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
A-FB2-CAU-01B *551204655-0038*	Room 105 - Window Caulking White	Gray Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)		**None Detected**
A-FB2-CAU-01C *551204655-0039*	Room 105 - Window Caulking White	Gray Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)		**None Detected**
A-FB2-BP-01A *551204655-0040*	Room 105 - Building Paper Black Colour	Brown Fibrous Homogeneous	80%	Cellulose	20%	Non-fibrous (other)		**None Detected**
A-FB2-BP-01B *551204655-0041*	Room 105 - Building Paper Black Colour	Brown Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)		**None Detected**

Analyst(s)

Orlando J. Ivey II (4)
Ryan Shannon (8)



Kevin Pang
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

EMSL Canada Inc.
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EMSL Canada Or	551204655
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CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
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Phone:	(604) 696-8272
Fax:	
Received:	10/11/12 12:25 PM
Analysis Date:	10/18/2012
Collected:	

Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
A-FB2-BP-01C *551204655-0042*	Room 105 - Building Paper Black Colour	Brown Fibrous Homogeneous	97%	Cellulose	3%	Non-fibrous (other)	**None Detected**
A-FB2-WB-01A *551204655-0043*	Room 103 - Wallboard	Tan/White Fibrous Homogeneous	80%	Cellulose	20%	Non-fibrous (other)	**None Detected**
A-FB2-WB-01B *551204655-0044*	Room 103 - Wallboard	Tan Fibrous Homogeneous	95%	Cellulose	5%	Non-fibrous (other)	**None Detected**
A-FB2-WB-01C *551204655-0045*	Room 103 - Wallboard	Tan/White Fibrous Homogeneous	97%	Cellulose	3%	Non-fibrous (other)	**None Detected**

Analyst(s)

Orlando J. Ivey II (4)
Ryan Shannon (8)

Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

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Customer ID: 55JACQ30L
Customer PO: 123710533-300
Project ID:

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Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Collected:
Received: 10/11/2012
Analyzed: 10/18/2012

Proj: 123710533

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: A-FB2-DJC-01A ***Lab Sample ID:*** **551204655-0034**

Sample Description: Room 102/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
400 PLM Pt Ct	10/17/2012	Gray	0%	98.75%	**1.25% Chrysotile**	

Client Sample ID: A-FB2-DJC-01B ***Lab Sample ID:*** **551204655-0035**

Sample Description: Room 102/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
400 PLM Pt Ct	10/17/2012	Gray	0%	96.5%	**3.50% Chrysotile**	

Client Sample ID: A-FB2-DJC-01C ***Lab Sample ID:*** **551204655-0036**

Sample Description: Room 102/Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
400 PLM Pt Ct	10/18/2012	Gray	0%	99.25%	**0.75% Chrysotile**	

Analyst(s)

Orlando J. Ivey II	400 PLM Pt Ct	(1)
Ryan Shannon	400 PLM Pt Ct	(2)

Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

Initial report from: 10/18/201218:18:07

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

EMSL Canada Or	551204656
CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
Stantec Consulting, Ltd.
1100- 111 Dunsmuir Street
Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Received: 10/11/12 12:23 PM
Collected:

Project: **123710533**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB2-01	*0007*		10/16/2012	560 ppm
	Site: Exterior Wall Desc: Red Colour Paint			

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 10/17/2012 16:20:30

APPENDIX C

FB3—Animal Shed/Stable

5.0 FINDINGS – FB3 - ANIMAL SHED/STABLE

The Animal Shed/Stable was reportedly constructed in 1973.

The results of the assessment for each of the considered hazardous materials within the Animal Shed/Stable are provided in the following sub-sections.

Floor plan drawings for the Animal Shed/Stable, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

Stantec identified and sampled suspected ACMs, including the following:

- Window caulking.

Three (3) samples of the above-noted suspected ACM were collected and submitted to EMSL for analysis of asbestos content and nature. A summary of the sample types, locations and analytical results is presented in Table A5.1.1, below. Copies of the certificates of analysis provided by EMSL for the suspected ACM samples submitted are attached at the end of this Appendix.

Table A5.1.1: Suspected ACM Sample Collection and Analysis Summary Animal Shed/Stable – CSC's Mountain Institution

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB3-CAU-01A	Window caulking White	Window exterior	None Detected
A-FB3-CAU-01B	Window caulking White	Window exterior	None Detected
A-FB3-CAU-01C	Window caulking White	Window exterior	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, ACMs were not identified in the Animal Shed/Stable.

5.2 Lead

Lead is expected to be present in solder used in some electrical equipment. With respect to paint, 1 paint chip sample was obtained, where suspected LCPs were observed. A summary of the sample type, location and analytical result is presented in Table A5.2.1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP sample submitted is attached to this Appendix.

Table A5.2.1: Suspected LCP Sample Collection and Analysis Summary Animal Shed/Stable – CSC's Mountain Institution

Sample No.	Sample Location	Sample Colour	Lab Result (ppm)	Lead Containing (Yes/No)
P-FB3-01	Exterior wall	Red	<90	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials sampled were not identified as LCPs.

5.3 Polychlorinated Biphenyls

No PCB-containing equipment was identified in the Animal Shed/Stable during the assessment.

5.4 Mercury

No mercury-containing equipment was identified in the Animal Shed/Stable during the assessment.

5.5 Ozone-Depleting Substances

No suspected ODS containing equipment was identified in the Animal Shed/Stable at the time of the assessment.

5.6 Mould

No suspect mould was identified within the Animal Shed/Stable at the time of the assessment.

6.0 RECOMMENDATIONS – ANIMAL SHED/STABLE

The recommendations pertaining to each of the identified hazardous materials within the Animal Shed/Stable are presented in the sub-sections below.

6.1 Asbestos

If encountered during demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

6.2 Lead

For LCPs and other lead-containing materials identified within the subject building that are to be disturbed and/or removed, ensure compliance with the following:

- The occupational exposure control requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- The disposal requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the *Federal Transportation of Dangerous Goods Regulation*.

6.3 Polychlorinated Biphenyls

As PCB-containing items were not observed, no specific recommendations have been developed.

6.4 Mercury

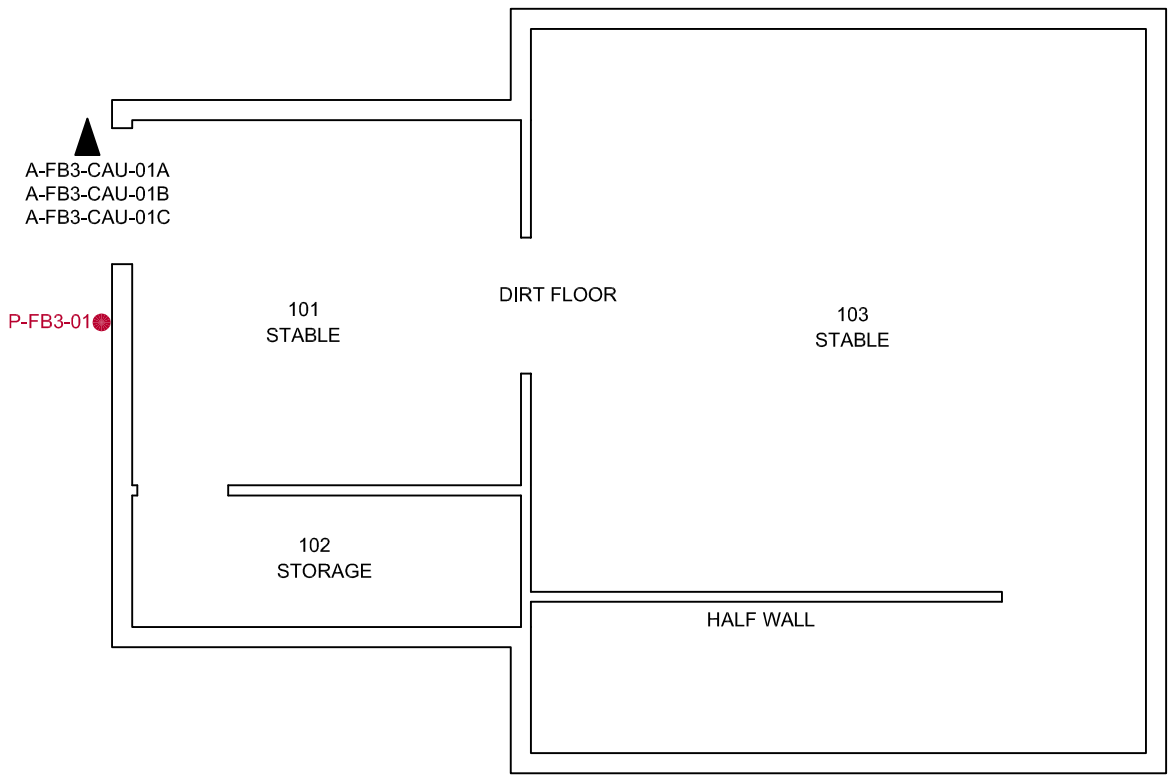
As mercury-containing items were not observed, no specific recommendations have been developed.

6.5 Ozone-Depleting Substances

As equipment containing ODSs were not observed, no specific recommendations have been developed.

6.6 Mould

As materials impacted by suspect mould were not observed, no specific recommendations have been developed.



UNIT FB3
ANIMAL SHED/STABLE

LEGEND

- BULK SAMPLE
- PAINT CHIP SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100383
App'd By:	SB

Dwg. No.: 1

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EMSL Canada Or	551204655
CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
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Received:	10/11/12 12:25 PM
Analysis Date:	10/18/2012
Collected:	

Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
A-FB3-CAU-01A *551204655-0046*	Window Exterior - Window Caulking White	Gray/Beige Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**
A-FB3-CAU-01B *551204655-0047*	Window Exterior - Window Caulking White	Gray/Beige Non-Fibrous Homogeneous	15%	Cellulose	85%	Non-fibrous (other)	**None Detected**
A-FB3-CAU-01C *551204655-0048*	Window Exterior - Window Caulking White	Gray Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**

Analyst(s)

Orlando J. Ivey II (1)
Ryan Shannon (2)

Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

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CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

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Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Received: 10/11/12 12:23 PM
Collected:

Project: **123710533**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB3-01	*0008*		10/16/2012	<90 ppm
	Site: Exterior Wall Desc: Red Colour Paint			

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 10/17/2012 16:20:30

APPENDIX D

FB4—Residence (2 Storey Dwelling)

5.0 FINDINGS – FB4 - RESIDENCE (2-STOREY DWELLING)

The Residence (2-Storey Dwelling) was reportedly constructed in 1987.

The results of the assessment for each of the considered hazardous materials within the Residence (2-Storey Dwelling) are provided in the following sub-sections.

Floor plan drawings for the Residence (2-Storey Dwelling), which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

Stantec identified and sampled various suspected ACMs, including the following:

- Drywall joint compound
- Vinyl sheet flooring
- Ceiling texture-coat
- Brick mortar
- Building paper.

Thirty samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature. A summary of the sample types, locations and analytical results is presented in Table A5.1.1, below. Copies of the certificates of analysis provided by EMSL for the suspected ACM samples submitted are attached at the end of this Appendix.

Table A5.1.1: Suspected ACM Sample Collection and Analysis Summary Residence (2-Storey Dwelling) – CSC's Mountain Institution

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB4-DJC-01A	Drywall joint compound	Upper floor washroom (Room 202)	None Detected
A-FB4-DJC-01B	Drywall joint compound	Upper floor bedroom (Room 205)	None Detected
A-FB4-DJC-01C	Drywall joint compound	Upper floor bedroom (Room 204)	None Detected
A-FB4-DJC-01D	Drywall joint compound	Main floor hallway (Room 105)	None Detected
A-FB4-DJC-01E	Drywall joint compound	Main floor den (Room 101)	None Detected
A-FB4-DJC-01F	Drywall joint compound	Main floor dining area (Room 112)	None Detected
A-FB4-DJC-01G	Drywall joint compound	Main floor garage (Room 114)	None Detected
A-FB4-SF-01A	Sheet flooring Beige square pattern	Main floor dining area (Room 112)	None Detected

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB4-SF-01B	Sheet flooring Beige square pattern	Main floor dining area (Room 112)	None Detected
A-FB4-SF-01C	Sheet flooring Beige square pattern	Main floor dining area (Room 112)	None Detected
A-FB4-SF-02A	Sheet flooring Multi-colored speckled pattern	Main floor washroom (Room 111)	None Detected
A-FB4-SF-02B	Sheet flooring Multi-colored speckled pattern	Main floor washroom (Room 111)	None Detected
A-FB4-SF-02C	Sheet flooring Multi-colored speckled pattern	Main floor washroom (Room 111)	None Detected
A-FB4-SF-03A	Sheet flooring Beige with tan	Main floor washroom (Room 109)	None Detected
A-FB4-SF-03B	Sheet flooring Beige with tan	Main floor washroom (Room 109)	None Detected
A-FB4-SF-03C	Sheet flooring Beige with tan	Main floor washroom (Room 109)	None Detected
A-FB4-CTC-01A	Ceiling texture-coat	Upper floor bedroom (Room 204)	None Detected
A-FB4-CTC-01B	Ceiling texture-coat	Upper floor bedroom (Room 203)	None Detected
A-FB4-CTC-01C	Ceiling texture-coat	Main floor dining area (Room 112)	None Detected
A-FB4-CTC-01D	Ceiling texture-coat	Main floor living room (Room 102)	None Detected
A-FB4-CTC-01E	Ceiling texture-coat	Main floor garage (Room 114)	None Detected
A-FB4-BM-01A	Brick mortar	Main floor living room (Room 102)	None Detected
A-FB4-BM-01B	Brick mortar	Main floor living room (Room 102)	None Detected
A-FB4-BM-01C	Brick mortar	Main floor living room (Room 102)	None Detected
A-FB4-BP-01A	Building paper Black colour	Upper floor attic above west end of residence	None Detected
A-FB4-BP-01B	Building paper Black colour	Upper floor attic above west end of residence	None Detected
A-FB4-BP-01C	Building paper Black colour	Upper floor attic above west end of residence	None Detected
A-FB4-BP-02A	Building paper Black colour	Building exterior	None Detected
A-FB4-BP-02B	Building paper Black colour	Building exterior	None Detected
A-FB4-BP-02C	Building paper Black colour	Building exterior	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, ACMs were not identified within the Residence (2-Storey Dwelling).

5.1.1 Potential Loose-Fill (Vermiculite) Insulation

It should be noted that vermiculite insulation, a potential ACM, was historically used as insulating material in masonry block or brick walls. The east exterior wall of the Residence (2-Storey Dwelling) was comprised of masonry blocks.

Inspection ports were created within the block wall, and no vermiculite insulation was identified within the wall cavities.

5.2 Lead

Lead is expected to be present in the following materials within the Residence (2-Storey Dwelling):

- Solder used on copper domestic pipes
- Electrical equipment

With respect to paint, 2 paint chip samples were obtained, where suspected LCPs were observed. A summary of the sample types, locations and analytical results is presented in Table A5.2.1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table A5.2.1: Suspected LCP Sample Collection and Analysis Summary Residence (2-Storey Dwelling) – CSC's Mountain Institution

Sample No.	Sample Location	Sample Colour	Lab Result (ppm)	Lead Containing (Yes/No)
P-FB4-01	Room 101 wall	Beige	440	No
P-FB4-02	Exterior wall	White	<90	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials sampled were not identified as LCPs.

5.3 Polychlorinated Biphenyls

Two (2) fluorescent light fixtures were observed within the Residence (2-Storey Dwelling). One (1) ballast was inspected and was labeled "non-PCB". Based on the reported construction era of the building, and the ballast inspected, the ballasts within the fixtures are not likely to be PCB-containing.

5.4 Mercury

Mercury vapour may be present within fluorescent light tubes.

No other mercury-containing equipment was identified in the Residence (2-Storey Dwelling) during the assessment.

5.5 Ozone-Depleting Substances

No suspected ODS containing equipment was identified in the Residence (2-Storey Dwelling) at the time of the assessment.

5.6 Mould

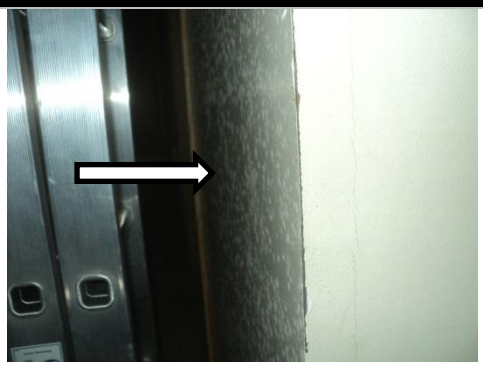
Moisture damage and suspect mould was identified within the Residence (2-Storey Dwelling).

The observations pertaining to mould and/or moisture impacted building materials are summarized in **Table 5A.6.1**, below.

Table A5.6.1: Summary of Identified Mould and/or Moisture-Impacted Materials Residence (2-Storey Dwelling) – CSC's Mountain Institution

Identified Mould and/or Moisture Impacted Materials Description	Photo
Suspect mould and moisture damage was observed on the ceiling within Room 102.	
Suspect mould and moisture damage was observed on the ceiling within Room 111.	

Identified Mould and/or Moisture Impacted Materials Description	Photo
Suspect mould and moisture damage was observed on the ceiling within the garage (Room 114).	
In addition to the above areas that appeared to be impacted by specific moisture intrusion issues, suspect mould was observed on the majority of surfaces throughout, which appeared to be associated with overall interior humidity/condensation issues.	 

Identified Mould and/or Moisture Impacted Materials Description	Photo
	

6.0 RECOMMENDATIONS – RESIDENCE (2-STOREY DWELLING)

The recommendations pertaining to each of the identified hazardous materials within the Residence (2-Storey Dwelling) are presented in the sub-sections below.

6.1 Asbestos

If encountered during demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

6.2 Lead

For lead-containing materials identified within the subject building that are to be disturbed and/or removed, ensure compliance with the following:

- The occupational exposure control requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- The disposal requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the *Federal Transportation of Dangerous Goods Regulation*.

6.3 Polychlorinated Biphenyls

As PCB-containing items were not observed, no specific recommendations have been developed.

6.4 Mercury

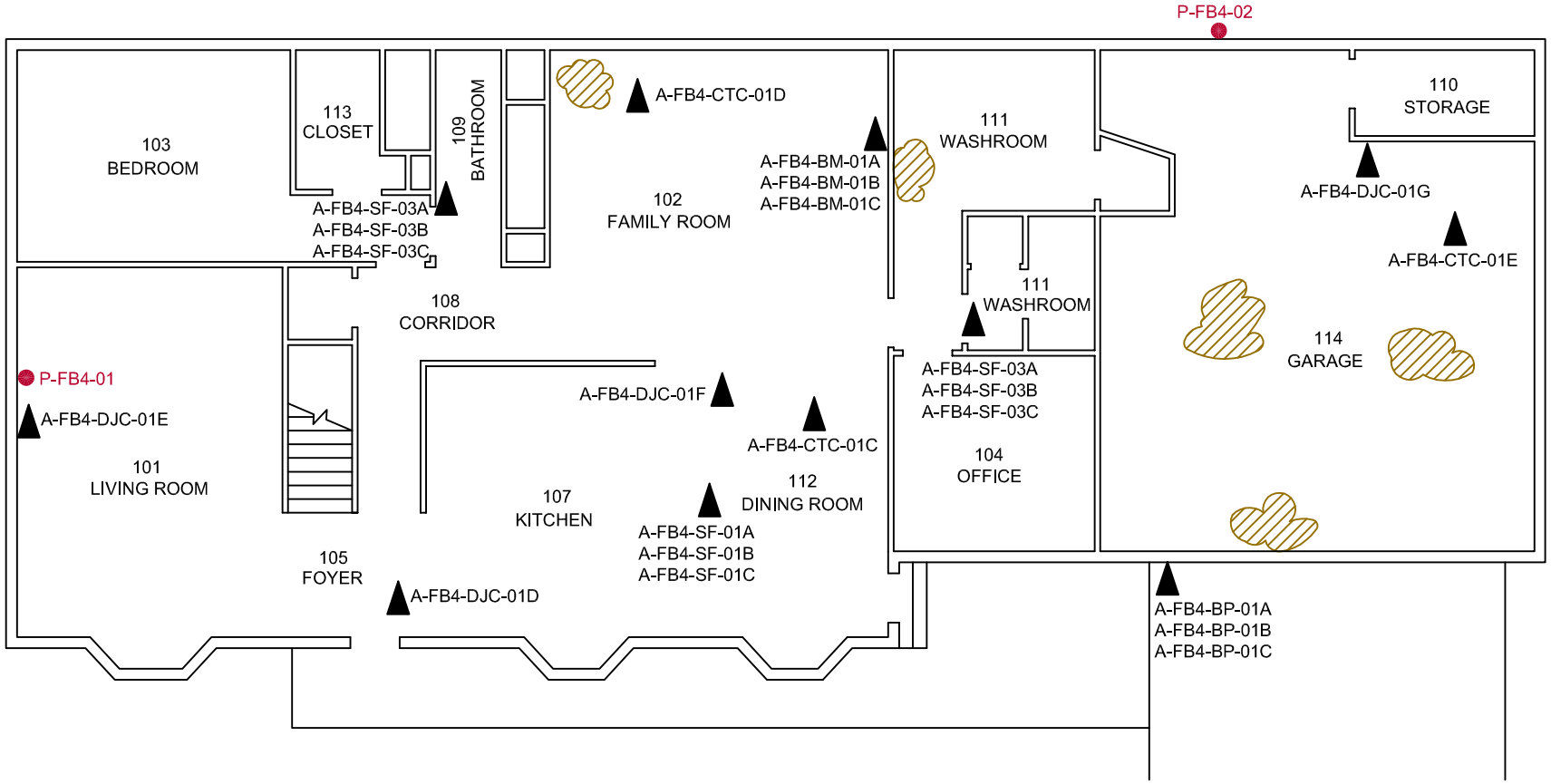
Mercury-containing materials (e.g. fluorescent light bulbs) are to be removed, stored and disposed of in accordance with the requirements of the requirements of BC Reg. 63/88 and the *Transportation of Dangerous Goods Regulation*.

6.5 Ozone-Depleting Substances

As equipment containing ODSs was not observed, no specific recommendations have been developed.

6.6 Mould

When demolition within the subject building proceeds, it is expected that mould and/or moisture-impacted building materials will be removed and disposed of during that process. Due to the suspected presence of mould on building materials, and if those impacted materials are to be removed by hand, demolition workers should be notified of the presence of mould-impacted building materials and be provided with respiratory protection and/or other personal protective equipment (PPE) as deemed necessary for the work that they will be conducting.



UNIT FB4
MAIN FLOOR
RESIDENCE (2 STOREY)

LEGEND

- BULK SAMPLE
- PAINT CHIP SAMPLE
- SUSPECT MOULD ON DRYWALL CEILING

NOTES: **1. SUSPECT MOULD WAS OBSERVED ON ALL SURFACES THROUGHOUT.**
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

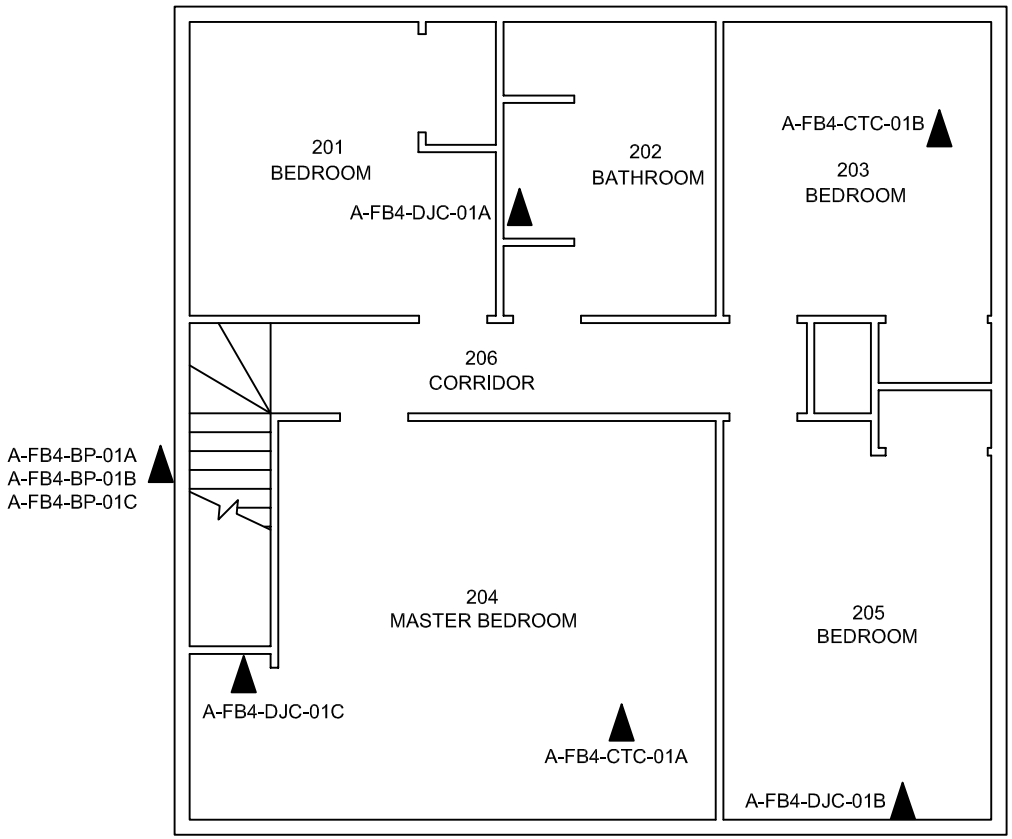
CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100384
App'd By:	SB

Dwg. No.: 1

Stantec



UNIT FB4
SECOND FLOOR
RESIDENCE (2 STOREY)

LEGEND

▲ BULK SAMPLE

NOTES: **1. SUSPECT MOULD WAS OBSERVED ON ALL SURFACES THROUGHOUT.**
2. THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100385
App'd By:	SB

Dwg. No.: 2

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Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
A-FB4-DJC-01A *551204655-0049*	Upper Floor Washroom - Room 202 - Drywall Joint Compound	White Non-Fibrous Homogeneous	8%	Cellulose	92%	Non-fibrous (other)	**None Detected**
A-FB4-DJC-01B *551204655-0050*	Upper Floor Washroom - Room 205 - Drywall Joint Compound	White Non-Fibrous Homogeneous	3%	Cellulose	97%	Non-fibrous (other)	**None Detected**
A-FB4-DJC-01C *551204655-0051*	Upper Floor Washroom - Room 204 - Drywall Joint Compound	White Non-Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**
A-FB4-DJC-01D *551204655-0052*	Main Floor Hallway Room 105 - Drywall Joint Compound	White Non-Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**
A-FB4-DJC-01E *551204655-0053*	Main Floor Den Room 101 - Drywall Joint Compound	Gray/Tan/White Fibrous Heterogeneous	7%	Cellulose	93%	Non-fibrous (other)	**None Detected**
A-FB4-DJC-01F *551204655-0054*	Main Floor Dining Area Room 112 - Drywall Joint Compound	White Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**
A-FB4-DJC-01G *551204655-0055*	Main Floor Garage Room 114 - Drywall Joint Compound	Gray/White Fibrous Heterogeneous	6%	Cellulose	94%	Non-fibrous (other)	**None Detected**

Analyst(s)

Orlando J. Ivey II (11)
Ryan Shannon (19)

Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

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Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
A-FB4-SF-01A *551204655-0056*	Main Floor Dining Area Room 112 - Sheet Flooring Beige Square Pattern	Tan/Yellow Fibrous Heterogeneous	30% 5%	Cellulose Glass	65%	Non-fibrous (other)	**None Detected**
A-FB4-SF-01B *551204655-0057*	Main Floor Dining Area Room 112 - Sheet Flooring Beige Square Pattern	Brown/Tan Fibrous Heterogeneous	40% 3%	Cellulose Glass	57%	Non-fibrous (other)	**None Detected**
A-FB4-SF-01C *551204655-0058*	Main Floor Dining Area Room 112 - Sheet Flooring Beige Square Pattern	Brown/Gray/Tan Fibrous Homogeneous	55%	Cellulose	45%	Non-fibrous (other)	**None Detected**
A-FB4-SF-02A *551204655-0059*	Main Floor Washroom - Room 111 - Sheet Flooring Multi Colored Speckled Pattern	Gray/White Fibrous Heterogeneous	30% 3%	Cellulose Glass	67%	Non-fibrous (other)	**None Detected**
A-FB4-SF-02B *551204655-0060*	Main Floor Washroom - Room 111 - Sheet Flooring Multi Colored Speckled Pattern	Brown/Gray/White Fibrous Heterogeneous	60% 2%	Cellulose Glass	38%	Non-fibrous (other)	**None Detected**

Analyst(s)

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Ryan Shannon (19)

Kevin Pang
or other approved signatory

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			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
A-FB4-SF-02C *551204655-0061*	Main Floor Washroom - Room 111 - Sheet Flooring Multi Colored Speckled Pattern	Gray Fibrous Homogeneous	55%	Cellulose	45%	Non-fibrous (other)	**None Detected**
A-FB4-SF-03A *551204655-0062*	Main Floor Washroom - Room 109 - Sheet Flooring Beige w/Tan	Gray/Tan/White Fibrous Heterogeneous	20%	Cellulose	80%	Non-fibrous (other)	**None Detected**
A-FB4-SF-03B *551204655-0063*	Main Floor Washroom - Room 109 - Sheet Flooring Beige w/Tan	Gray/Tan/White Fibrous Heterogeneous	15%	Cellulose	85%	Non-fibrous (other)	**None Detected**
A-FB4-SF-03C *551204655-0064*	Main Floor Washroom - Room 109 - Sheet Flooring Beige w/Tan	Gray Fibrous Homogeneous	30%	Cellulose	70%	Non-fibrous (other)	**None Detected**
A-FB4-CTC-01A *551204655-0065*	Upper Floor Bedroom - Room 204 - Ceiling Texture Coat	White Fibrous Homogeneous	8%	Cellulose	92%	Non-fibrous (other)	**None Detected**
A-FB4-CTC-01B *551204655-0066*	Upper Floor Bedroom - Room 203 - Ceiling Texture Coat	White Fibrous Homogeneous	6%	Cellulose	94%	Non-fibrous (other)	**None Detected**

Analyst(s)

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Ryan Shannon (19)

Kevin Pang
or other approved signatory

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Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
A-FB4-CTC-01C *551204655-0067*	Main Floor Dining Room - Room 112 - Ceiling Texture Coat	White Fibrous Homogeneous	6%	Cellulose	94%	Non-fibrous (other)	**None Detected**
A-FB4-CTC-01D *551204655-0068*	Main Floor Living Room - Room 102 - Ceiling Texture Coat	Gray/Beige Fibrous Homogeneous	8%	Cellulose	92%	Non-fibrous (other)	**None Detected**
A-FB4-CTC-01E *551204655-0069*	Main Floor Garage - Room 114 - Ceiling Texture Coat	Gray Fibrous Homogeneous	4%	Cellulose	96%	Non-fibrous (other)	**None Detected**
A-FB4-BM-01A *551204655-0070*	Main Floor Living Room - Room 102 - Brick Mortar	Gray Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
A-FB4-BM-01B *551204655-0071*	Main Floor Living Room - Room 102 - Brick Mortar	Gray Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
A-FB4-BM-01C *551204655-0072*	Main Floor Living Room - Room 102 - Brick Mortar	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
A-FB4-BP-01A *551204655-0073*	Upper Floor Atic Above West End of Residence - Building Paper Black Colour	Black Fibrous Homogeneous	80%	Cellulose	20%	Non-fibrous (other)	**None Detected**

Analyst(s)

Orlando J. Ivey II (11)
Ryan Shannon (19)

Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

EMSL Canada Inc.
10 Falconer Drive, Unit #3, Mississauga, ON L5N 3L8
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EMSL Canada Or	551204655
CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
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1100- 111 Dunsmuir Street
Vancouver, BC V6B 6A3

Phone:	(604) 696-8272
Fax:	
Received:	10/11/12 12:25 PM
Analysis Date:	10/18/2012
Collected:	

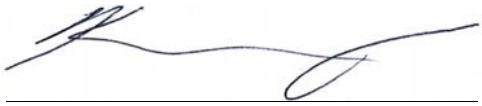
Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
A-FB4-BP-01B *551204655-0074*	Upper Floor Atic Above West End of Residence - Building Paper Black Colour	Black Fibrous Homogeneous	80%	Cellulose	20%	Non-fibrous (other)	**None Detected**
A-FB4-BP-01C *551204655-0075*	Upper Floor Atic Above West End of Residence - Building Paper Black Colour	Brown/Black Fibrous Homogeneous	92%	Cellulose	8%	Non-fibrous (other)	**None Detected**
A-FB4-BP-02A *551204655-0076*	Building Exterior - Building Paper Black Colour	Brown Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
A-FB4-BP-02B *551204655-0077*	Building Exterior - Building Paper Black Colour	Brown Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
A-FB4-BP-02C *551204655-0078*	Building Exterior - Building Paper Black Colour	Brown Fibrous Homogeneous	80%	Cellulose	20%	Non-fibrous (other)	**None Detected**

Analyst(s)

Orlando J. Ivey II (11)
Ryan Shannon (19)



Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

EMSL Canada Inc.
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ProjectID:	

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Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Received: 10/11/12 12:23 PM
Collected:

Project: **123710533**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB4-01	*0009*		10/16/2012	440 ppm
	Site: Room 101 Wall Desc: Beige Colour Paint			
P-FB4-02	*0010*		10/16/2012	<90 ppm
	Site: Exterior Wall Desc: White Colour Paint			

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 10/17/2012 16:20:30

APPENDIX E

FB5—Saw Dust Shed

5.0 FINDINGS – FB5 - SAW DUST SHED

The Saw Dust Shed was reportedly constructed in 2006.

The results of the assessment for each of the considered hazardous materials within the Saw Dust Shed are provided in the following sub-sections.

Floor plan drawings for the Saw Dust Shed, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

No suspected ACMs were identified in the Saw Dust Shed during the assessment

5.2 Lead

Lead-containing items (other than paint) were not observed.

With respect to paint, one (1) paint chip sample was obtained, where suspected LCPs were observed. A summary of the sample type, location and analytical result is presented in Table A5.2.1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP sample submitted is attached to this Appendix.

Table A5.2.1: Suspected LCP Sample Collection and Analysis Summary
Saw Dust Shed – CSC's Mountain Institution

Sample No.	Sample Location	Sample Colour	Lab Result (ppm)	Lead Containing (Yes/No)
P-FB5-01	Exterior wall	Blue	< 830	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials sampled were not identified as LCPs. Considering the age of the subject building, and the pre-fabricated/pre-painted nature of the exterior walls the paint sampled may be considered a non-LCP.

5.3 Polychlorinated Biphenyls

PCB-containing equipment is not expected to be present in the Saw Dust Shed, based on the construction date (2006).

5.4 Mercury

No mercury-containing equipment was identified in the Saw Dust Shed during the assessment.

5.5 Ozone-Depleting Substances

No suspected ODS containing equipment was identified in the Saw Dust Shed at the time of the assessment.

5.6 Mould

No suspect mould was identified within the Saw Dust Shed at the time of the assessment.

6.0 RECOMMENDATIONS – SAW DUST SHED

The recommendations pertaining to each of the identified hazardous materials within the Saw Dust Shed are presented in the sub-sections below.

6.1 Asbestos

Although unlikely to be present given the construction date of the building, if encountered during demolition activities, any suspected ACMs not accessible during this assessment (e.g. sub-grade cement pipe) should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

6.2 Lead

As lead-containing items were not observed, no specific recommendations have been developed.

6.3 Polychlorinated Biphenyls

As PCB-containing items are not expected to be present, no specific recommendations have been developed.

6.4 Mercury

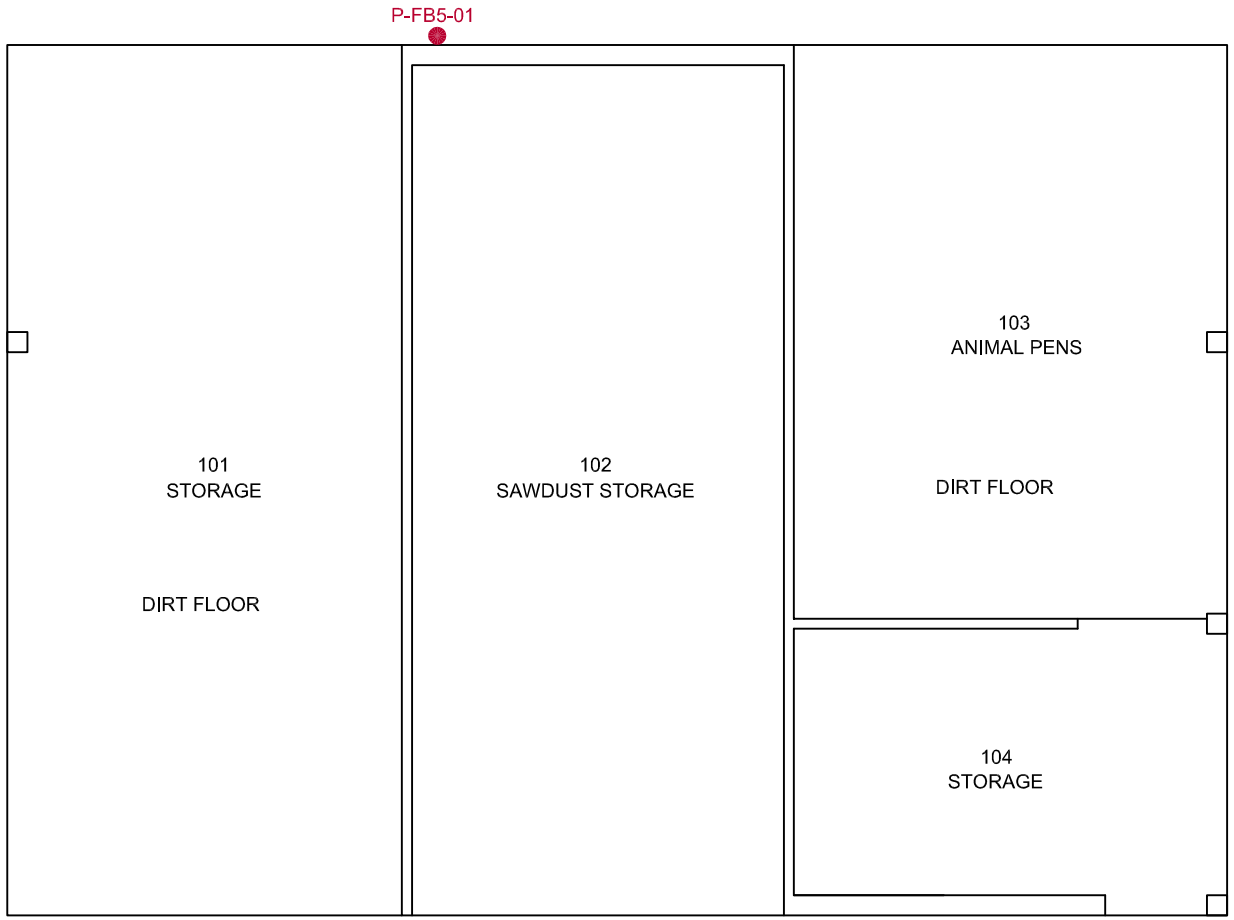
As mercury-containing items were not observed, no specific recommendations have been developed.

6.5 Ozone-Depleting Substances

As equipment containing ODSs was not observed, no specific recommendations have been developed.

6.6 Mould

As materials impacted by suspect mould were not observed, no specific recommendations have been developed.



UNIT FB5
SAWDUST SHED

LEGEND

● PAINT CHIP SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100386
App'd By:	SB

Dwg. No.: 1

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CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

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Phone: (604) 696-8272
Fax:
Received: 10/11/12 12:23 PM
Collected:

Project: **123710533**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB5-01	*0011*		10/16/2012	<830 ppm
	Site: Exterior Wall Desc: Blue Colour Paint INSUFFICIENT SAMPLE TO REACH REPORTING LIMIT.			

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 10/17/2012 16:20:30

APPENDIX F

FB6—Bunker Silo and Lean-to Addition

5.0 FINDINGS – FB6 - BUNKER SILO/LEAN-TO ADDITION

The Bunker Silo/Lean-to Addition was reportedly constructed in 1975.

The results of the assessment for each of the considered hazardous materials within the Bunker Silo/Lean-to Addition are provided in the following sub-sections.

Floor plan drawings for the Bunker Silo/Lean-to Addition, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

No suspected ACMs were identified in the Bunker Silo/Lean-to Addition during the assessment

5.2 Lead

Lead is expected to be present in electrical equipment within the Bunker Silo/Lean-to Addition:

With respect to paint, 1 paint chip sample was obtained, where suspected LCPs were observed. A summary of the sample type, location and analytical result is presented in Table A5.2.1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP sample submitted is attached to this Appendix.

Table A5.2.1: Suspected LCP Sample Collection and Analysis Summary
Bunker Silo/Lean-to Addition – CSC's Mountain Institution

Sample No.	Sample Location	Sample Colour	Lab Result (ppm)	Lead Containing (Yes/No)
P-FB6-01	Exterior wall	Blue	Insufficient material – not analysed	Potential

Attempts were made to collect a paint sample from the prefabricated (and pre-painted) metal cladding. However, it is very difficult to separate the paint from the substrate in this type of application, and insufficient material for analysis (as indicated by the lab) was collected after significant sampling efforts were expended. As such, the material presented in Table A5.2.2, below should be treated as a potential LCP unless further testing is conducted.

Table A5.2.2: Summary of Identified LCPs
Bunker Silo/Lean-to Addition – CSC's Mountain Institution

Identified LCP Description	Photo
Blue paint on the exterior walls.	

5.3 Polychlorinated Biphenyls

One (1) fluorescent light fixture was observed within the Bunker Silo/Lean-to Addition. Based on the reported construction era of the building, the ballast(s) within the fixture may be PCB-containing.

5.4 Mercury

No mercury-containing equipment was identified in the Bunker Silo/Lean-to Addition during the assessment.

5.5 Ozone-Depleting Substances

No suspected ODS containing equipment was identified in the Bunker Silo/Lean-to Addition at the time of the assessment.

5.6 Mould

No suspect mould was identified within the Bunker Silo/Lean-to Addition at the time of the assessment.

6.0 RECOMMENDATIONS – BUNKER SILO/LEAN-TO ADDITION

The recommendations pertaining to each of the identified hazardous materials within the Bunker Silo/Lean-to Addition are presented in the sub-sections below.

6.1 Asbestos

If encountered during demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

6.2 Lead

For potential LCPs and other lead-containing materials identified within the subject building that are to be disturbed and/or removed, ensure compliance with the following:

- The occupational exposure control requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- The disposal requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the *Federal Transportation of Dangerous Goods Regulation*.

6.3 Polychlorinated Biphenyls

As fluorescent lamp ballasts may contain PCBs, if these items are removed from service, they should be assessed in reference to the PCB Guide.

If PCB-containing items are identified and require removal, they should be handled, transported, stored and disposed of according to the *Federal Transportation of Dangerous Goods Regulation,* BC Reg. 63/88, and the *PCB Regulations* (SOR/2008-273).

6.4 Mercury

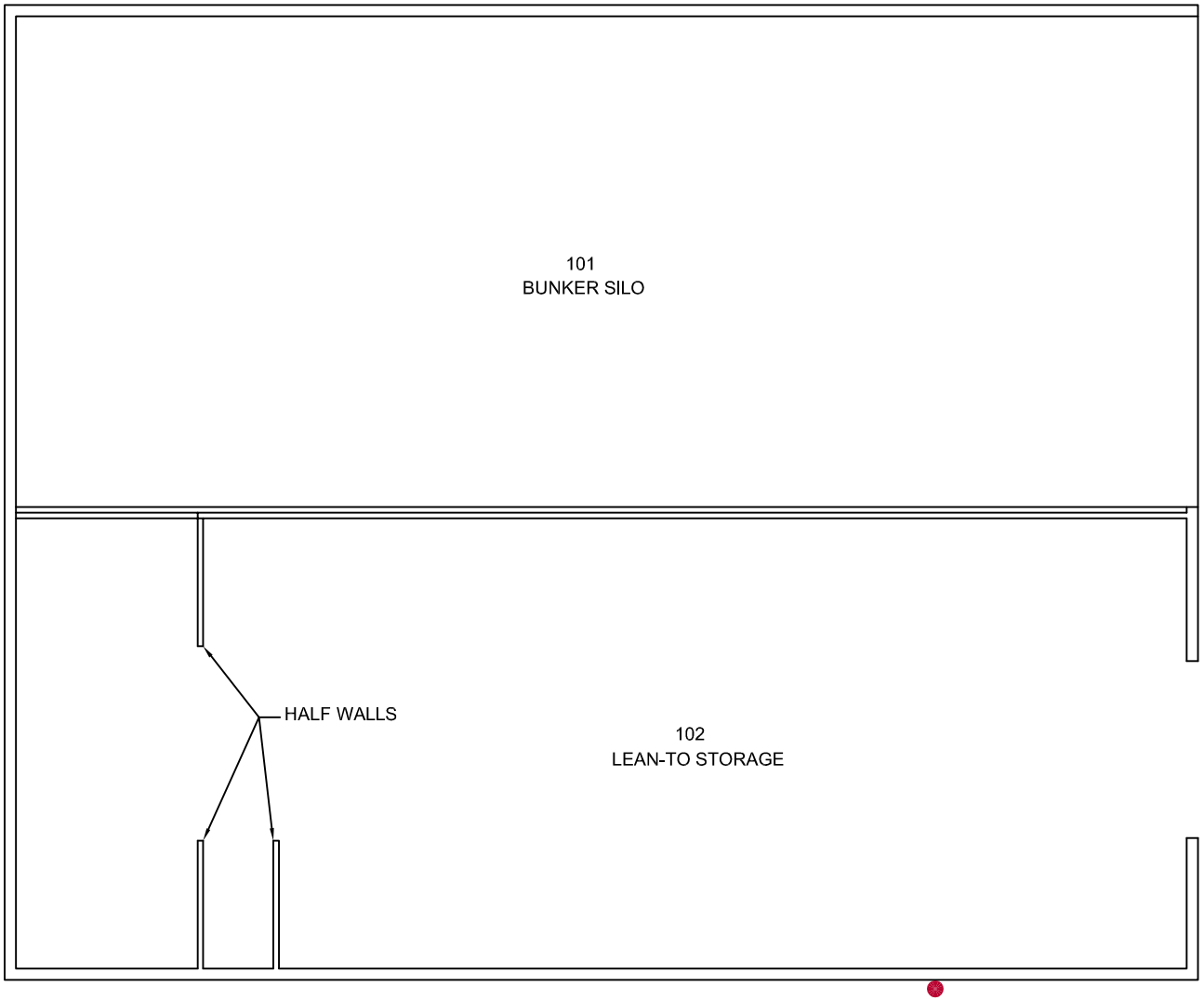
As mercury-containing items were not observed, no specific recommendations have been developed.

6.5 Ozone-Depleting Substances

As equipment containing ODSs was not observed, no specific recommendations have been developed.

6.6 Mould

As materials impacted by suspect mould were not observed, no specific recommendations have been developed.



UNIT FB6
BUNKER SILO/LEAN-TO ADDITION

LEGEND

● PAINT CHIP SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100387
App'd By:	SB

Dwg. No.: 1

Stantec

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Phone: (604) 696-8272
Fax:
Received: 10/11/12 12:23 PM
Collected:

Project: **123710533**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB6-01	*0012*			ppm
	Site: Exterior Wall Desc: Blue Colour Paint INSUFFICIENT MATERIAL, NOT ANALYZED.			

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 10/17/2012 16:20:30

APPENDIX G

FB7—Stall Barn

5.0 FINDINGS – FB7 - STALL BARN

The Stall Barn was reportedly constructed in 1960.

The results of the assessment for each of the considered hazardous materials within the Stall Barn are provided in the following sub-sections.

Floor plan drawings for the Stall Barn, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

Stantec identified and sampled suspected ACMs, including the following:

- Window caulking.

Three (3) samples of the above-noted suspected ACMs were collected and submitted to EMSL for analysis of asbestos content and nature. A summary of the sample types, locations and analytical results is presented in Table A5.1.1, below. Copies of the certificates of analysis provided by EMSL for the suspected ACM samples submitted are attached at the end of this Appendix.

Table A5.1.1: Suspected ACM Sample Collection and Analysis Summary Stall Barn – CSC's Mountain Institution

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB7-CAU-01A	Window caulking White	Window exterior	None Detected
A-FB7-CAU-01B	Window caulking White	Window exterior	None Detected
A-FB7-CAU-01C	Window caulking White	Window exterior	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, ACMs were not identified within the Stall Barn.

5.2 Lead

Lead is expected to be present in electrical equipment within the Stall Barn. Suspected LCPs were not identified within the Stall Barn.

5.3 Polychlorinated Biphenyls

No PCB-containing equipment was identified in the Stall Barn during the assessment.

5.4 Mercury

No mercury-containing equipment was identified in the Stall Barn during the assessment.

5.5 Ozone-Depleting Substances

No suspected ODS containing equipment was identified in the Stall Barn at the time of the assessment.

5.6 Mould

No suspect mould was identified within the Stall Barn at the time of the assessment.

6.0 RECOMMENDATIONS – BUNKER SILO / LEAN-TO ADDITION

The recommendations pertaining to each of the identified hazardous materials within the Stall Barn are presented in the sub-sections below.

6.1 Asbestos

If encountered during demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

6.2 Lead

For lead-containing materials identified within the subject building that are to be disturbed and/or removed, ensure compliance with the following:

- The occupational exposure control requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- The disposal requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the *Federal Transportation of Dangerous Goods Regulation*.

6.3 Polychlorinated Biphenyls

As PCB-containing items were not observed, no specific recommendations have been developed.

6.4 Mercury

As mercury-containing items were not observed, no specific recommendations have been developed.

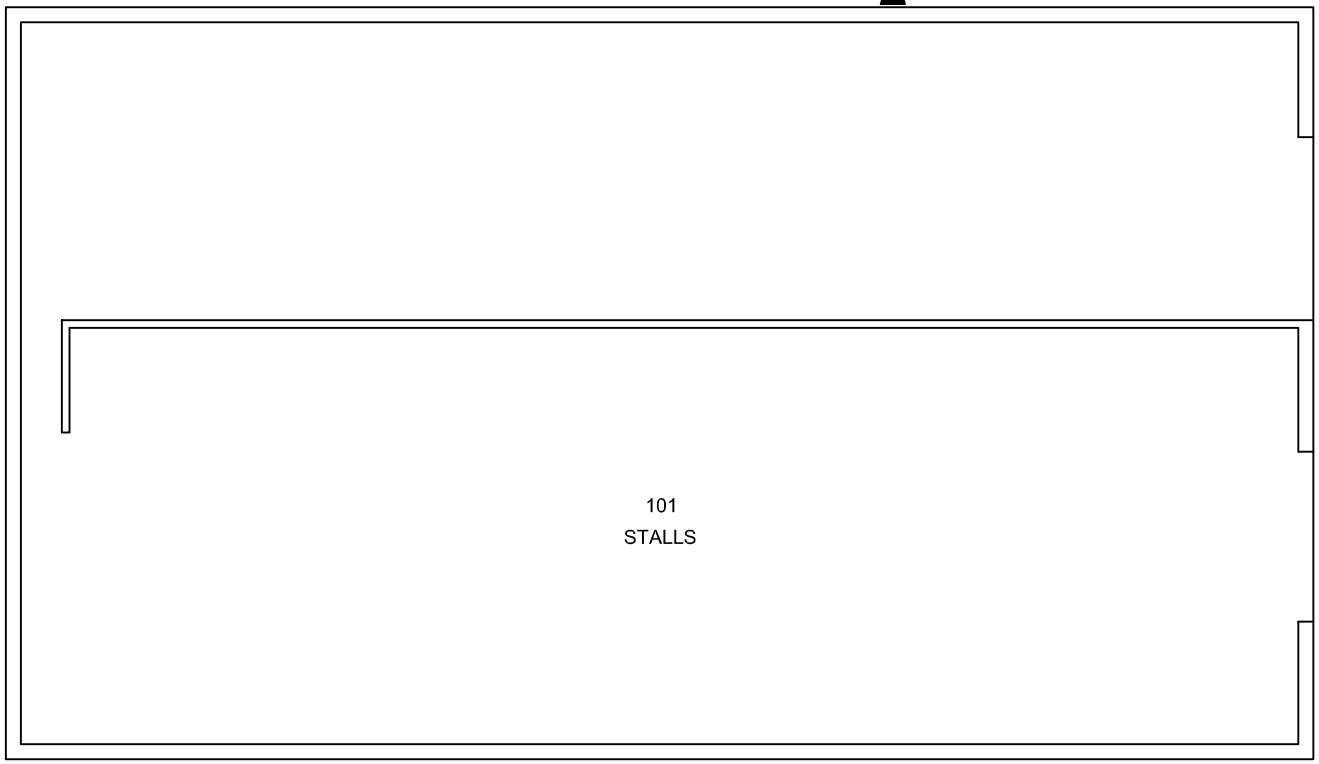
6.5 Ozone-Depleting Substances

As equipment containing ODSs was not observed, no specific recommendations have been developed.

6.6 Mould

As materials impacted by suspect mould were not observed, no specific recommendations have been developed.

A-FB7-CAU-01A
A-FB7-CAU-01B
A-FB7-CAU-01C



UNIT FB7
MAIN FLOOR
STALL BARN

LEGEND

▲ BULK SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100388
App'd By:	SB

Dwg. No.: 1

Stantec

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CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
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Phone:	(604) 696-8272
Fax:	
Received:	10/11/12 12:25 PM
Analysis Date:	10/18/2012
Collected:	

Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
A-FB7-CAU-01A *551204655-0079*	Window Exterior - Window Caulking White	Gray/Beige Non-Fibrous Homogeneous	<1%	Cellulose	100%	Non-fibrous (other)	**None Detected**
A-FB7-CAU-01B *551204655-0080*	Window Exterior - Window Caulking White	Gray/Beige Non-Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**
A-FB7-CAU-01C *551204655-0081*	Window Exterior - Window Caulking White	Gray/Tan Fibrous Homogeneous	2%	Cellulose	98%	Non-fibrous (other)	**None Detected**

Analyst(s)

Orlando J. Ivey II (1)
Ryan Shannon (2)

Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

APPENDIX H

FB8—Loafing Barn/Milking Parlour

5.0 FINDINGS – FB8 - LOAFING BARN/MILKING PARLOUR

The Loafing Barn/Milking Parlour was reportedly constructed in 1979.

The results of the assessment for each of the considered hazardous materials within the Loafing Barn/Milking Parlour are provided in the following sub-sections.

Floor plan drawings for the Loafing Barn/Milking Parlour, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

Stantec identified and sampled suspected ACMs, including the following:

- Exterior sealant/mastic.

Three (3) samples of the above-noted suspected ACM were collected and submitted to EMSL for analysis of asbestos content and nature. A summary of the sample types, locations and analytical results is presented in Table A5.1.1, below. Copies of the certificates of analysis provided by EMSL for the suspected ACM samples submitted are attached at the end of this Appendix.

Table A5.1.1: Suspected ACM Sample Collection and Analysis Summary
Loafing Barn/Milking Parlour – CSC's Mountain Institution

Sample Number	Material Description	Sample Location	PLM Result (% and Type of Asbestos)
A-FB8-MAS-01A	Mastic Dark brown	Tank – exterior of building	None Detected
A-FB8-MAS-01B	Mastic Dark brown	Tank – exterior of building	None Detected
A-FB8-MAS-01C	Mastic Dark brown	Tank – exterior of building	None Detected

Based on our observations of building construction (estimated vintage of interior finishes and uniformity of building material use) and on our interpretations of suspected ACM sample analytical results, ACMs were not identified within the Loafing Barn/Milking Parlour.

5.2 Lead

Lead is expected to be present in the following materials within the Loafing Barn/Milking Parlour:

- Solder used on copper domestic pipes
- Caulking on bell fittings for cast iron drainage pipes
- Electrical equipment (i.e. batteries for emergency lighting/signage).

With respect to paint, two (2) paint chip samples were obtained, where suspected LCPs were observed. A summary of the sample types, locations and analytical results is presented in Table A5.2.1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP samples submitted is attached to this Appendix.

Table A5.2.1: Suspected LCP Sample Collection and Analysis Summary Loafing Barn/Milking Parlour – CSC's Mountain Institution

Sample No.	Sample Location	Sample Colour	Lab Result (ppm)	Lead Containing (Yes/No)
P-FB8-01	Room 103 wall	Green	940	Yes
P-FB8-02	Exterior wall	Blue	400	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials presented in Table A5.2.2, below were identified as LCPs.

Table A5.2.2: Summary of Identified LCPs Loafing Barn/Milking Parlour – CSC's Mountain Institution

Identified LCP Description	Photo
Green paint on the interior door in Room 103.	

5.3 Polychlorinated Biphenyls

Approximately six (6) fluorescent light fixtures and two (2) HID lamps were observed within the Loafing Barn/Milking Parlour. Based on the reported construction era of the building, the ballasts within the fixtures may be PCB-containing.

5.4 Mercury

Mercury vapour may be present within fluorescent light tubes.

No other mercury-containing equipment was identified in the Loafing Barn/Milking Parlour during the assessment.

5.5 Ozone-Depleting Substances

One (1) ODS-containing air-handling unit, which contains R-22 refrigerant, was observed within Room 101 at the time of the assessment.

5.6 Mould

Moisture damage and suspect mould was identified within the Loafing Barn/Milking Parlour.

The observations pertaining to mould and/or moisture impacted building materials are summarized in **Table A5.6.1**, below.

Table A5.6.1: Summary of Identified Mould and/or Moisture-Impacted Materials
Loafing Barn/Milking Parlour – CSC's Mountain Institution

Identified Mould and/or Moisture Impacted Materials Description	Photo
Suspect mould was observed on the ceiling within Room 101.	

6.0 RECOMMENDATIONS – LOAFING BARN/MILKING PARLOUR

The recommendations pertaining to each of the identified hazardous materials within the Loafing Barn/Milking Parlour are presented in the sub-sections below.

6.1 Asbestos

If encountered during demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

6.2 Lead

For LCPs and other lead-containing materials identified within the subject building that are to be disturbed and/or removed, ensure compliance with the following:

- The occupational exposure control requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- The disposal requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the *Federal Transportation of Dangerous Goods Regulation*.

6.3 Polychlorinated Biphenyls

As fluorescent lamp and HID light ballasts may contain PCBs, if these items are removed from service, they should be assessed in reference to the PCB Guide.

If PCB-containing items are identified and require removal, they should be handled, transported, stored and disposed of according to the *Federal Transportation of Dangerous Goods Regulation,* BC Reg. 63/88, and the *PCB Regulations* (SOR/2008-273).

6.4 Mercury

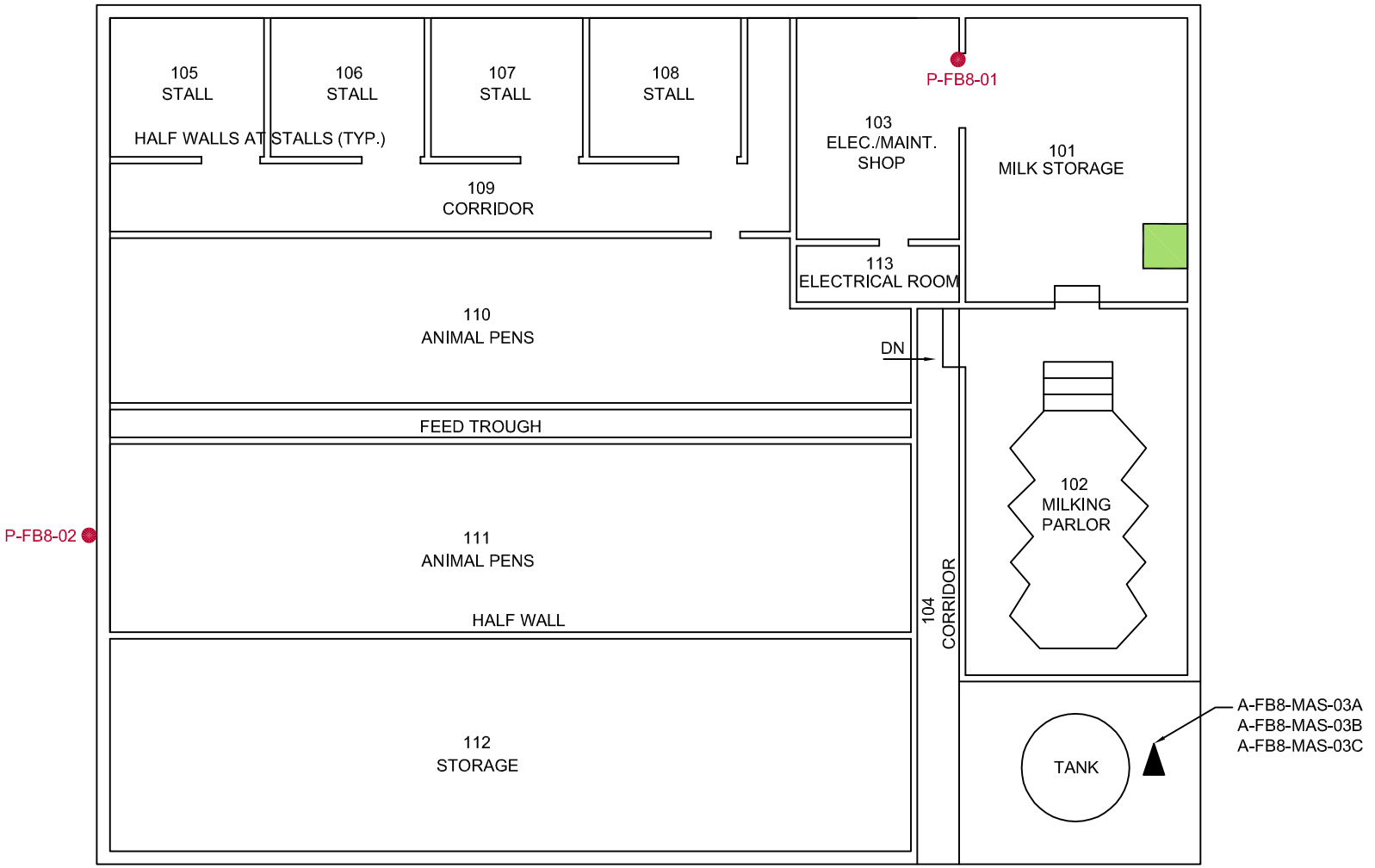
Mercury-containing materials (e.g. fluorescent light bulbs) are to be removed, stored and disposed of in accordance with the requirements of the requirements of BC Reg. 63/88 and the *Transportation of Dangerous Goods Regulation*.

6.5 Ozone-Depleting Substances

ODSs must be handled, recycled, stored, and/or disposed of in accordance with the requirements of the *British Columbia Waste Management Act - Ozone Depleting Substances and Other Halocarbons Regulation* (BC Reg. 387/99).

6.6 Mould

When demolition within the subject building proceeds, it is expected that mould and/or moisture-impacted building materials will be removed and disposed of during that process. Due to the suspected presence of mould on building materials, and if those impacted materials are to be removed by hand, demolition workers should be notified of the presence of mould-impacted building materials and be provided with respiratory protection and/or other personal protective equipment (PPE) as deemed necessary for the work that they will be conducting.



UNIT FB8
LOAFING BARN/MILKING PARLOR

LEGEND

- BULK SAMPLE
- PAINT CHIP SAMPLE
- CONFIRMED ODS CONTAINING EQUIPMENT

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100389
App'd By:	SB

Dwg. No.: 1

Stantec

EMSL Canada Inc.
10 Falconer Drive, Unit #3, Mississauga, ON L5N 3L8
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http://www.emsl.com torontolab@emsl.com

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CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
Stantec Consulting, Ltd.
1100- 111 Dunsmuir Street
Vancouver, BC V6B 6A3

Phone:	(604) 696-8272
Fax:	
Received:	10/11/12 12:25 PM
Analysis Date:	10/18/2012
Collected:	

Project: **123710533**

Test Report: Polarized Light Microscopy (PLM) Performed by Modified NIOSH Method 9002, Issue 2

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**		**% Type**
A-FB8-MAS-01A *551204655-0082*	Tank - Exterior of Building - Mastic Dark Brown	Brown/Black Fibrous Homogeneous	12% 5%	Cellulose Glass	83%	Non-fibrous (other)	**None Detected**
A-FB8-MAS-01B *551204655-0083*	Tank - Exterior of Building - Mastic Dark Brown	Brown/Black Fibrous Homogeneous	15% 10%	Cellulose Glass	75%	Non-fibrous (other)	**None Detected**
A-FB8-MAS-01C *551204655-0084*	Tank - Exterior of Building - Mastic Dark Brown	Black Fibrous Homogeneous	10% 5%	Cellulose Glass	85%	Non-fibrous (other)	**None Detected**

Analyst(s)

Orlando J. Ivey II (1)
Ryan Shannon (2)

Kevin Pang
or other approved signatory

Disclaimers: This report format for the NIOSH 9002 method has been modified to report discreet asbestos concentrations instead of ranges. PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Ann Arbor, MI

Initial report from 10/18/2012 18:18:07

EMSL Canada Inc.
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CustomerID:	55JACQ30L
CustomerPO:	123710533-300
ProjectID:	

Attn: **Tiffany Waite**
Stantec Consulting, Ltd.
1100- 111 Dunsmuir Street
Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Received: 10/11/12 12:23 PM
Collected:

Project: **123710533**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB8-01	*0013*		10/16/2012	940 ppm
	Site: Room 103 Wall Desc: Green Colour Paint			
P-FB8-02	*0014*		10/16/2012	400 ppm
	Site: Exterior Wall Desc: Blue Colour Paint			

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 10/17/2012 16:20:30

APPENDIX I

FB9—Workshop/Machine Shed/Calf Barn

5.0 FINDINGS – FB9 - WORKSHOP/MACHINE SHED/CALF BARN

The Workshop/Machine Shed/Calf Barn was reportedly constructed in 1958.

The results of the assessment for each of the considered hazardous materials within the Workshop/Machine Shed/Calf Barn are provided in the following sub-sections.

Floor plan drawings for the Workshop/Machine Shed/Calf Barn, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

No suspected ACMs were identified in the Workshop/Machine Shed/Calf Barn during the assessment

5.2 Lead

Lead is expected to be present in electrical equipment within the Workshop/Machine Shed/Calf Barn:

With respect to paint, one (1) paint chip sample was obtained, where suspected LCP was observed. A summary of the sample type, location and analytical result is presented in Table A5.2.1, below. A copy of the certificate of analysis provided by EMSL for the suspected LCP sample submitted is attached to this Appendix.

Table A5.2.1: Suspected LCP Sample Collection and Analysis Summary Workshop/Machine Shed/Calf Barn – CSC's Mountain Institution

Sample No.	Sample Location	Sample Colour	Lab Result (ppm)	Lead Containing (Yes/No)
P-FB9-01	Exterior wall	Blue	< 400	No

Based on our observations and on our interpretations of suspected LCP sample analytical results, the materials sampled were not identified as LCPs.

5.3 Polychlorinated Biphenyls

No PCB-containing equipment was identified in the Workshop/Machine Shed/Calf Barn during the assessment.

5.4 Mercury

No mercury-containing equipment was identified in the Workshop/Machine Shed/Calf Barn during the assessment.

5.5 Ozone-Depleting Substances

No suspected ODS containing equipment was identified in the Workshop/Machine Shed/Calf Barn at the time of the assessment.

5.6 Mould

No suspect mould was identified within the Workshop/Machine Shed/Calf Barn at the time of the assessment.

6.0 RECOMMENDATIONS – WORKSHOP/MACHINE SHED/CALF BARN

The recommendations pertaining to each of the identified hazardous materials within the Workshop/Machine Shed/Calf Barn are presented in the sub-sections below.

6.1 Asbestos

If encountered during demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

6.2 Lead

For any lead-containing materials identified within the subject building that are to be disturbed and/or removed, ensure compliance with the following:

- The occupational exposure control requirements of BC Reg. 296/97, including the provisions of the Lead Guideline
- The disposal requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the *Federal Transportation of Dangerous Goods Regulation*.

6.3 Polychlorinated Biphenyls

As PCB-containing items that were not observed, no specific recommendations have been developed.

6.4 Mercury

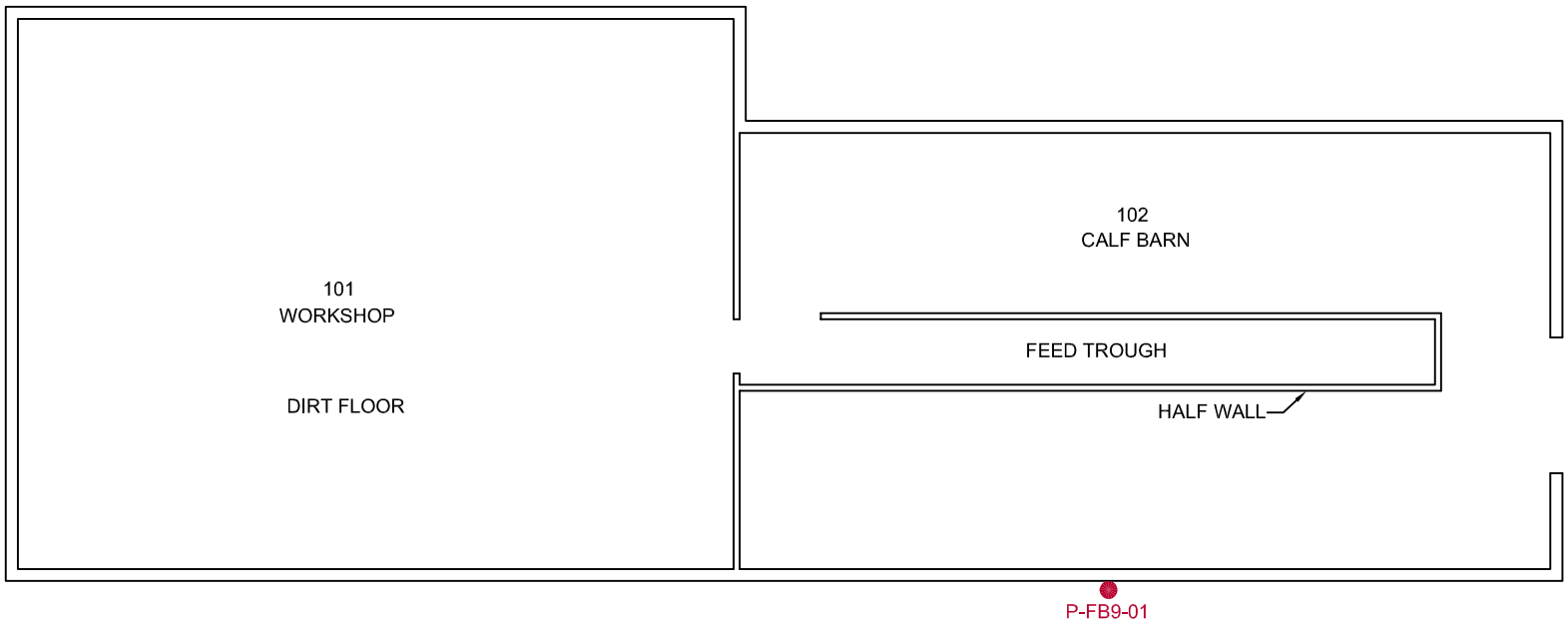
As mercury-containing items were not observed, no specific recommendations have been developed.

6.5 Ozone-Depleting Substances

As equipment containing ODSs was not observed, no specific recommendations have been developed.

6.6 Mould

As materials impacted by suspect mould were not observed, no specific recommendations have been developed.



UNIT FB9
WORKSHOP/MACHINE SHED AND CALF BARN

LEGEND

● PAINT CHIP SAMPLE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING LOCATIONS OF HAZARDOUS BUILDING MATERIALS INCLUDING BULK SAMPLE LOCATIONS

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100390
App'd By:	SB

Dwg. No.: 1

Stantec

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

EMSL Canada Or	551204656
CustomerID:	55JACQ30L
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ProjectID:	

Attn: **Tiffany Waite**
Stantec Consulting, Ltd.
1100- 111 Dunsmuir Street
Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Received: 10/11/12 12:23 PM
Collected:

Project: **123710533**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB9-01	*0015*		10/16/2012	<400 ppm
	Site: Exterior Wall Desc: Blue Colour Paint INSUFFICIENT SAMPLE TO REACH REPORTING LIMIT.			

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 10/17/2012 16:20:30

APPENDIX J

Manure Pits (2)

5.0 FINDINGS – MANURE PITS

The construction date for the Manure Pits is unknown.

The results of the assessment for each of the considered hazardous materials within the Manure Pits are provided in the following sub-sections.

Drawings for the Manure Pits, which include locations of the samples collected during this assessment, and locations of identified hazardous building materials (where practical), are attached to this Appendix.

5.1 Asbestos

No suspected ACMs were identified in the Manure Pits during the assessment.

5.2 Lead

Lead is not expected to be present within the Manure Pits.

5.3 Polychlorinated Biphenyls

No PCB-containing equipment was identified in the Manure Pits during the assessment.

5.4 Mercury

No mercury-containing equipment was identified in the Manure Pits during the assessment.

5.5 Ozone-Depleting Substances

No suspected ODS containing equipment was identified in the Manure Pits at the time of the assessment.

5.6 Mould

No suspect mould was identified within the Manure Pits at the time of the assessment.

It should be noted that soils and/or residues may have potential for coliform contamination.

6.0 RECOMMENDATIONS – MANURE PITS

The recommendations pertaining to each of the identified hazardous materials within the Manure Pits are presented in the sub-sections below. General recommendations pertaining to managing identified hazardous building materials in good condition are provided in the main body of this report.

6.1 Asbestos

If encountered during renovation and/or demolition activities, any suspected ACMs not accessible during this assessment should be considered as asbestos-containing and handled as such, unless proven otherwise, through analytical testing.

6.2 Lead

As lead-containing items were not observed, no specific recommendations have been developed.

6.3 Polychlorinated Biphenyls

As PCB-containing items were not observed, no specific recommendations have been developed.

6.4 Mercury

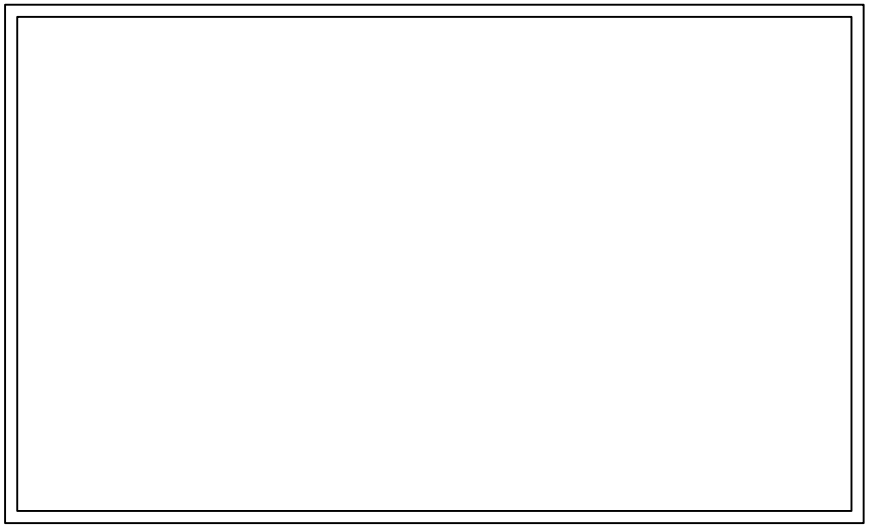
As mercury-containing items were not observed, no specific recommendations have been developed.

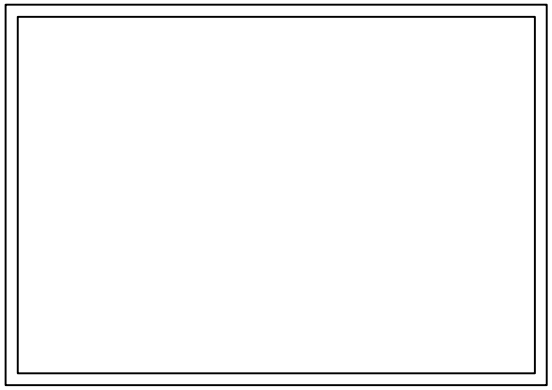
6.5 Ozone-Depleting Substances

As equipment containing ODSs was not observed, no specific recommendations have been developed.

6.6 Mould

Soils and/or residues within the Manure Pits may may have potential for coliform contamination. Workers conducting removal should be notified of the origins of the removal of material within the Manure Pits, and should take precautions appropriate to avoid personal contamination.





MANURE PITS

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN

CSC'S MOUNTAIN INSTITUTION

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123710533
Scale:	N.T.S.
Date:	12/10/27
Dwn. By:	CD CS SL2012100391
App'd By:	SB

Dwg. No.: 1

Stantec

Stantec Consulting Ltd.
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Tel: (604) 696-8000
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VIA EMAIL: Amy.Moizumi@pwgsc.gc.ca

August 8, 2013

Project No: 1237-10671

Public Works and Government Services Canada
Environmental Services, Pacific Region
219 – 800 Burrard Street
Vancouver, BC V6Z 0B9

Attention: Amy Moizumi

Reference: Pre-Demolition Hazardous Building Materials Assessment
CSC's Mountain Institution, Buildings FB1 – FB9 and Manure Pits
Sutherland and Humphries Road, Agassiz, BC
Addendum #1 – Supplemental Lead Leachate Testing

Dear Ms. Moizumi:

1 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by Public Works and Government Services Canada (PWGSC) to conduct supplemental leachate testing for lead pertaining to previously identified lead-containing paints (LCPs) prior to demolition activities pertaining to CSC Mountain Institution FB1 – FB9 (and associated manure pits) located on the property at Sutherland and Humphries Road, Agassiz, BC (subject buildings).

The sampling and leachate analysis was conducted to meet requirements of the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88), prior to the removal and disposal of building materials with LCPs from the subject buildings, which is to occur during demolition, and is intended to be read as an Addendum to the following report:

- Stantec Report No. 1237-10533 entitled "*Pre-Demolition Hazardous Building Materials Assessment CSC's Mountain Institution Buildings FB1 – FB9 and Manure Pits, Sutherland and Humphries Road, Agassiz, BC*," dated February, 2013 (Initial Assessment)

Site work associated with this supplemental report was completed within the subject buildings on July 17, 2013.

2 BACKGROUND

As indicated in the Initial Assessment Report, the paints on various surfaces throughout the subject buildings were identified to be lead-containing. In support of demolition of the subject buildings, and to address questions pertaining to the options for disposal of materials with lead-containing paint, Stantec was retained to conduct sampling of identified LCPs for leachate analysis, which would assist in determining options for disposal in accordance with applicable provincial waste regulations.

It should be noted that analysis of one paint sample that was collected for the Initial Assessment yielded "inconclusive" results pertaining to whether it would be considered an LCP. As such, supplemental sampling of that paint material was also included in this supplemental assessment.

3 SCOPE OF WORK

Stantec conducted the following scope of work to assist in determining whether materials coated with LCPs would require special disposal:

- Collection of an additional paint chip sample of one suspected LCP for which previous analytical data yielded inconclusive results pertaining to whether the paint should be considered an LCP.
- Collection of bulk samples of building materials painted with previously identified LCPs. Samples included the paint and substrate, and were collected in a form presumed to be representative of waste generated during demolition.
- Submission of bulk samples were collected to an independent laboratory for lead leachate and total lead content analysis
- Evaluation and interpretation of results

4 METHODOLOGY

The site work associated with this supplemental assessment was conducted in accordance with the requirements of the Canada Labour Code, BC Reg. 296/97 and Stantec's Safe Work Practices.

4.1 Supplemental Paint Chip Sampling and Analysis

As indicated in the Initial Assessment, the lead content of interior paint was limited to 0.5% by weight (5,000 parts per million, or "ppm") in 1976 under the Federal *Hazardous Products Act*. Recently, the *Hazardous Products Act* reduced the criteria for surface coatings (including paint) to 600 mg/kg (600 ppm) to define them as "lead-containing" (this has since been reduced to 90 ppm). In addition, WorkSafeBC has compiled a manual titled "Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry" (Lead Guideline), which defines a "lead-containing surface coating material" and sets out requirements for coatings with a lead content that exceeds 600 mg/kg (or 600 ppm). As such, Stantec will reference this value (600 ppm) in defining paints as "lead-containing".

As a preliminary step, one sample of the suspected LCP for which previous results were inconclusive, was collected to substrate in sufficient quantity to conduct analyses for total lead content. The sample was placed into a separate, sealed, and labeled polyethylene bag, and submitted to EMSL Canada Inc. (EMSL) of Mississauga, Ontario for analysis of total lead content using Flame Atomic Absorption Spectrometry AAS (SW 846 3050B/7420). Upon receipt of supplemental results, Stantec determined whether leachate testing was required for this sample.

4.2 Leachate Sampling and Analysis

According to the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88), lead waste may be considered a toxic leachate (and require special disposal) if lead is in a dispersible form and its leachate contains greater than 5.0 milligrams per litre (mg/L) lead.

Based on the above, bulk samples of materials coated with identified LCPs were collected from the subject buildings, each containing over 50 grams in weight. Samples were placed into separate labeled plastic bags that were sealed and submitted to EMSL. Leachate analysis was conducted by EMSL through Toxicity Characteristic Leaching Procedure (TCLP), using US EPA Method SW846, 1311/7420.

EMSL's analytical laboratory is accredited by the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Approval Program.

5 LIMITATIONS

This report reflects the observations made within the subject buildings, and the results of analyses performed on specific painted surfaces sampled during the assessment. Analytical results reflect the sampled materials at the specific sample locations.

Leachate sampling and analysis was conducted only pertaining to previously identified LCPs, as indicated in this report.

Sampling for analysis of lead leachate was conducted such that building material samples were collected in a form presumed to be representative of waste generated during demolition. The lead leachate samples are meant to represent the general waste that would be created when painted surfaces are demolished, without having paint removed.

Analytical results for paint chip samples are referenced to the surface paint colour only, the lead content of all painted surfaces similar to that represented by the surface paint colour will be presumed to be the same, regardless of differing sub-surface paints, if any.

6 FINDINGS

6.1 Supplemental Paint Chip Sampling and Analysis

An additional sample of paint for which previous analytical data was inconclusive (blue paint that was collected from the exterior aluminum siding on farm building 6; previous sample number P-FB6-01) was collected and submitted to EMSL for analysis of lead content. Analysis indicated a total lead concentration of 520 ppm, which would not indicate that this paint is an LCP, as the total lead concentration is less than 600 ppm. As such, a sample of this material was not submitted for leachate analysis.

A copy of the certificate of analysis provided by EMSL for the sample submitted is included in **Appendix A**.

6.2 Leachate Sampling and Analysis

Three (3) samples of the previously identified materials coated with LCPs were collected from the subject buildings on July 17, 2013 and submitted to EMSL for analysis of leachable lead content. A summary of the sample types, locations and analytical results is presented in Table 6.2, below. A copy of the certificate of analysis provided by EMSL for the samples submitted is included in **Appendix B**.

Table 6.2: Leachate Sample Collection and Analysis Summary
CSC Mountain Institution FB1 – FB9
Sutherland and Humphries Road, Agassiz, BC

Sample Number	Material Description	Paint Colour	Result (mg/L Leachable Lead)	Potential Lead Leachable Waste?
PL-FB1-01	Farm building 1 exterior siding	White	< 0.40	No
PL-FB1-02	Farm building 1 room 108 wall	White/green	< 0.40	No
PL-FB8-01	Farm building 8 interior door in room 103	Green	< 0.40	No

As indicated above, analytical results indicate that none of the materials tested contain lead in a dispersible form such that its leachate contains greater than 5.0 milligrams per litre (mg/L) lead.

7 CONCLUSIONS AND RECOMMENDATIONS

Supplemental sampling and analysis indicated that the paint material for which previous results were inconclusive (blue paint that was collected from the exterior aluminum siding on farm building 6) is not considered an LCP.

With respect to leachate testing, sampling and analysis indicate that waste materials generated during demolition will not contain lead in dispersible form such that the leachate contains greater than 5.0 mg/L lead. As such these materials can be disposed of as regular demolition waste along with all other waste materials destined for landfill in accordance with the following:

- The *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88)
- The transportation requirements of the Federal *Transportation of Dangerous Goods Regulation*

Lastly, and as indicated in the Initial Assessment, it should be noted that corrective action or remedial work on paint applications containing any concentration of lead should be undertaken in a manner so as to avoid generating fine particulate matter or dust (i.e., avoid sanding). Airborne lead dust or fumes should not exceed the BC Reg. 296/97 8-hour Occupational Exposure Limit (OEL) of 0.05 milligram per cubic metre (mg/m^3) during the removal of paints and products containing any concentration of lead. The use of personal protective equipment is recommended to reduce the potential for over-exposure to lead dust.

8 CLOSURE

This report has been prepared by Stantec Consulting Ltd. for the sole benefit of Public Works and Government Services Canada. This report may not be relied upon by any other person or entity without the express written consent of Stantec Consulting Ltd. and Public Works and Government Services Canada.

Any uses that a third party makes of this report, or any reliance on decisions to be made based on it, are the responsibility of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The conclusions presented represent the best judgment of the assessor based on current environmental standards and the site conditions observed on the date cited within this report. This report is based on, and limited by, circumstances and conditions stated herein, and on information available at the time of preparation of the report. Due to the limited nature of the investigation and the limited data available, Stantec Consulting Ltd. cannot warrant against undiscovered environmental liabilities. It is possible that additional, concealed hazardous materials may become evident during demolition activities within the subject buildings.

Reference: Pre-Demolition Hazardous Building Materials Assessment
CSC's Mountain Institution, Buildings FB1 – FB9 and Manure Pits
Sutherland and Humphries Road, Agassiz, BC
Addendum #1 – Supplemental Lead Leachate Testing

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

We trust that the report meets your current requirements. Should you have any questions or concerns regarding the above, please do not hesitate to contact the undersigned.

Respectfully submitted,

Stantec Consulting Ltd.

Keith Irwin, Dipl. Tech.
Report Author
Integrated Asset Management Solutions

Reviewed by:

Sean Brigden, B.Sc., P.B.Dipl.
Project Manager
Integrated Asset Management Solutions

Appendix A: Certificate of Analysis—Lead Paint Chip Sample
Appendix B: Certificate of Analysis—Lead Leachate Samples

KI/SB/dsc

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APPENDIX A

Certificate of Analysis—
Lead Paint Chip Sample

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

EMSL Canada Or	551304697
CustomerID:	55JACQ30L
CustomerPO:	123710671
ProjectID:	

Attn: **Keith Irwin**
Stantec Consulting, Ltd.
1100- 111 Dunsmuir Street
Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Received: 07/19/13 11:36 AM
Collected:

Project: **123710671 TASK 200**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
P-FB6-01	*0001*		7/22/2013	520 ppm
Site: BLUE EXTERIOR PAINT				

Kevin Pang
or other approved signatory

Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. The QC data associated with these results included in this report meet the method QC requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. * slight modifications to methods applied. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 07/22/2013 16:50:12

APPENDIX B

Certificate of Analysis—
Lead Leachate Samples

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

EMSL Canada Or	551304698
CustomerID:	55JACQ30L
CustomerPO:	123710671
ProjectID:	

Attn: **Keith Irwin**
Stantec Consulting, Ltd.
1100- 111 Dunsmuir Street
Vancouver, BC V6B 6A3

Phone: (604) 696-8272
Fax:
Received: 07/22/13 11:36 AM
Collected: 7/17/2013

Project: **123710671 TASK 200**

Test Report: Toxicity Characteristic Leaching Procedure (SW846, 1311/7420)

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead* ***Concentration***
PL-FB1-01	*0001*	7/17/2013	7/24/2013	<0.40 mg/L
	Site: WHITE EXTERIOR PAINT			
PL-FB1-02	*0002*	7/17/2013	7/24/2013	<0.40 mg/L
	Site: WHITE/GREEN LAYERED PAINT ON INTERIOR WALLS			
PL-FB8-01	*0003*	7/17/2013	7/24/2013	<0.40 mg/L
	Site: GREEN PAINT ON INTERIOR DOOR			

Kevin Pang
or other approved signatory

The test results contained within this report meet the requirements of NELAC unless otherwise noted. This report relates only to those items tested. Samples received in good condition unless otherwise noted. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NELAP Certifications: NJ 03036, NY 10872, PA 68-00367

Initial report from 07/25/2013 10:54:17

North

Overview of the site location
(Mountain Instiution Property at Humphry Road, Kent, B.C)

Not to scale

Legend

- Orange - Telephone
- Red - Electric
- Green - Sewer/Storm
- Pink - GPR Target
- Broken Line - Weak Signal

Ground Penetrating Radar and EM Survey
Mountain Institution Property

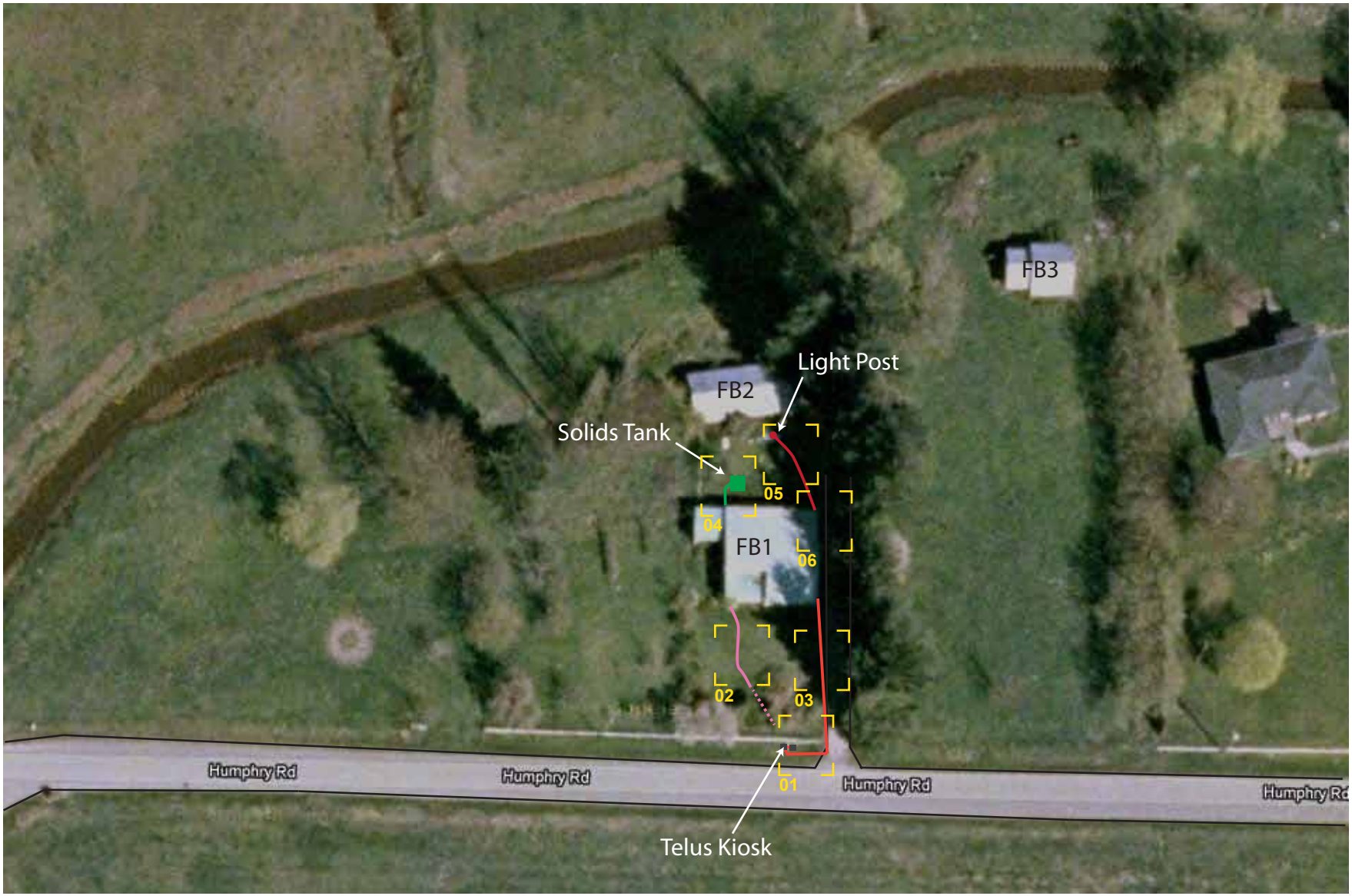
CSi

able1call.ca
Underground Utility Locators

Prepared By: Terry Wong	Date: Oct 2, 2012	Project No. CSI20121002A	Canadian Subsurface Investigations Inc. www.canadiansubsurface.com

North

Overview of the site location
(Mountain Instiution Property at Humphry Road, Kent, B.C)



Not to scale

Note: The Yellow Boxed Area indicates the photograph number taken on-site with the marked utility.

Legend

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- Red - Electric
- Green - Sewer/Storm
- Pink - GPR Target
- Broken Line - Weak Signal

Ground Penetrating Radar and EM Survey
Mountain Institution Property

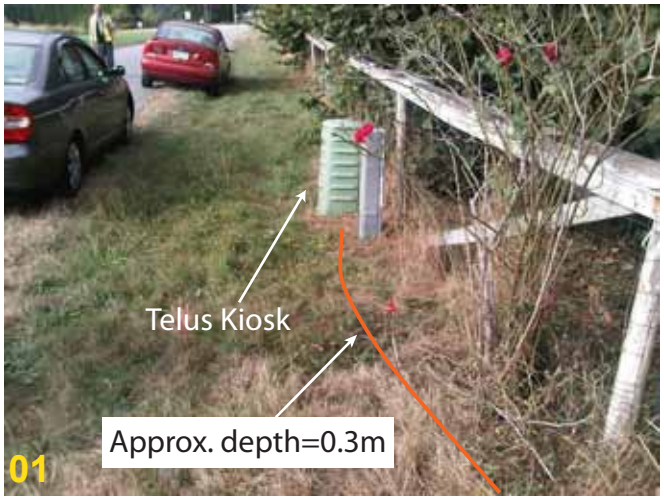
CSI

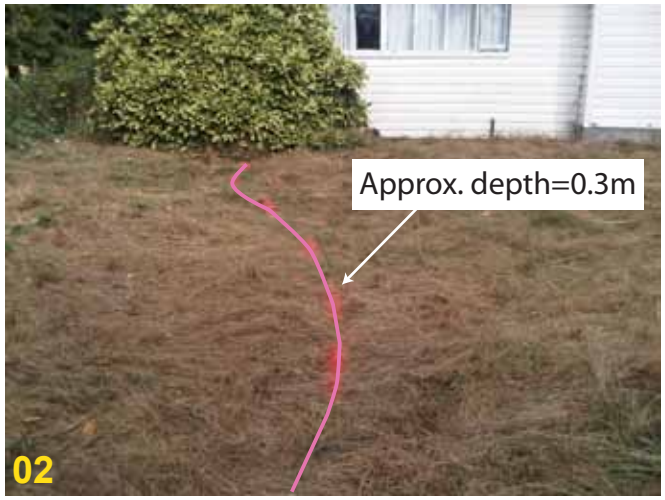
able1call.ca
Underground Utility Locators

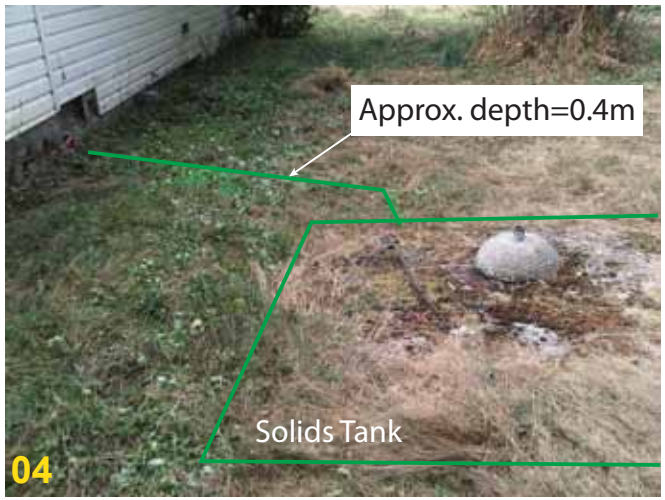
Prepared By: Terry Wong	Date: Oct 2, 2012	Project No. CSI20121002A

Canadian Subsurface Investigations Inc.
www.canadiansubsurface.com

Photographs of the Marked Utilities on Mountain Instiution Property at Humphry Road, Kent, B.C







Not to scale

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Ground Penetrating Radar and EM Survey
Mountain Institution Property

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Prepared By: Terry Wong	Date: Oct 2, 2012	Project No. CSI20121002A	Canadian Subsurface Investigations Inc. www.canadiansubsurface.com

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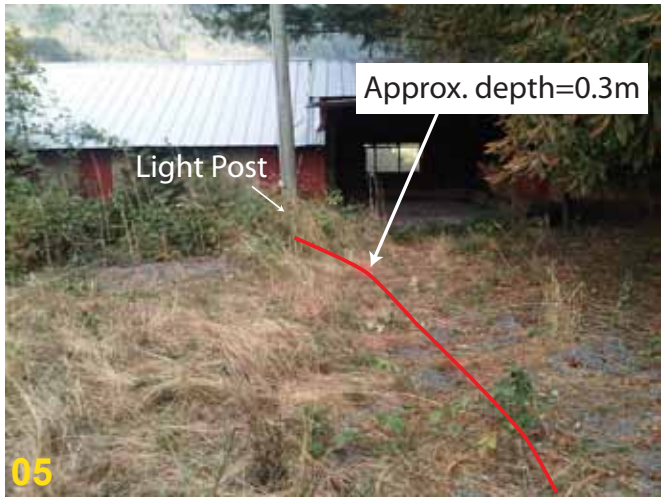

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Mountain Institution Property

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Canadian Subsurface Investigations Inc.
www.canadiansubsurface.com

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Overview of the site location
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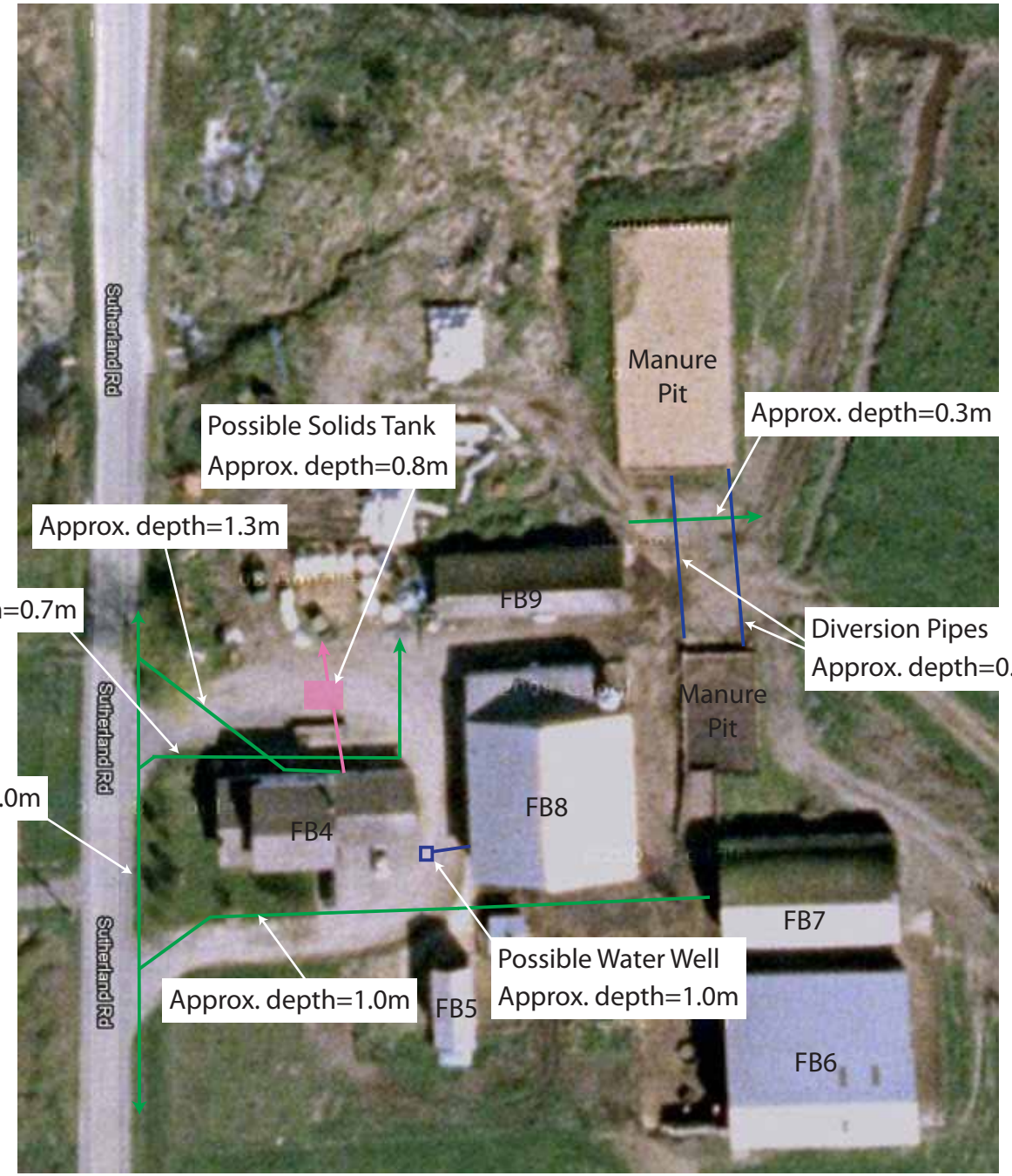

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- Blue - Water
- Blue - GPR Target Possible Water Well
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- Broken Line - Weak Signal
- Pink - GPR Target Possible Storage Tank

Ground Penetrating Radar and EM Survey

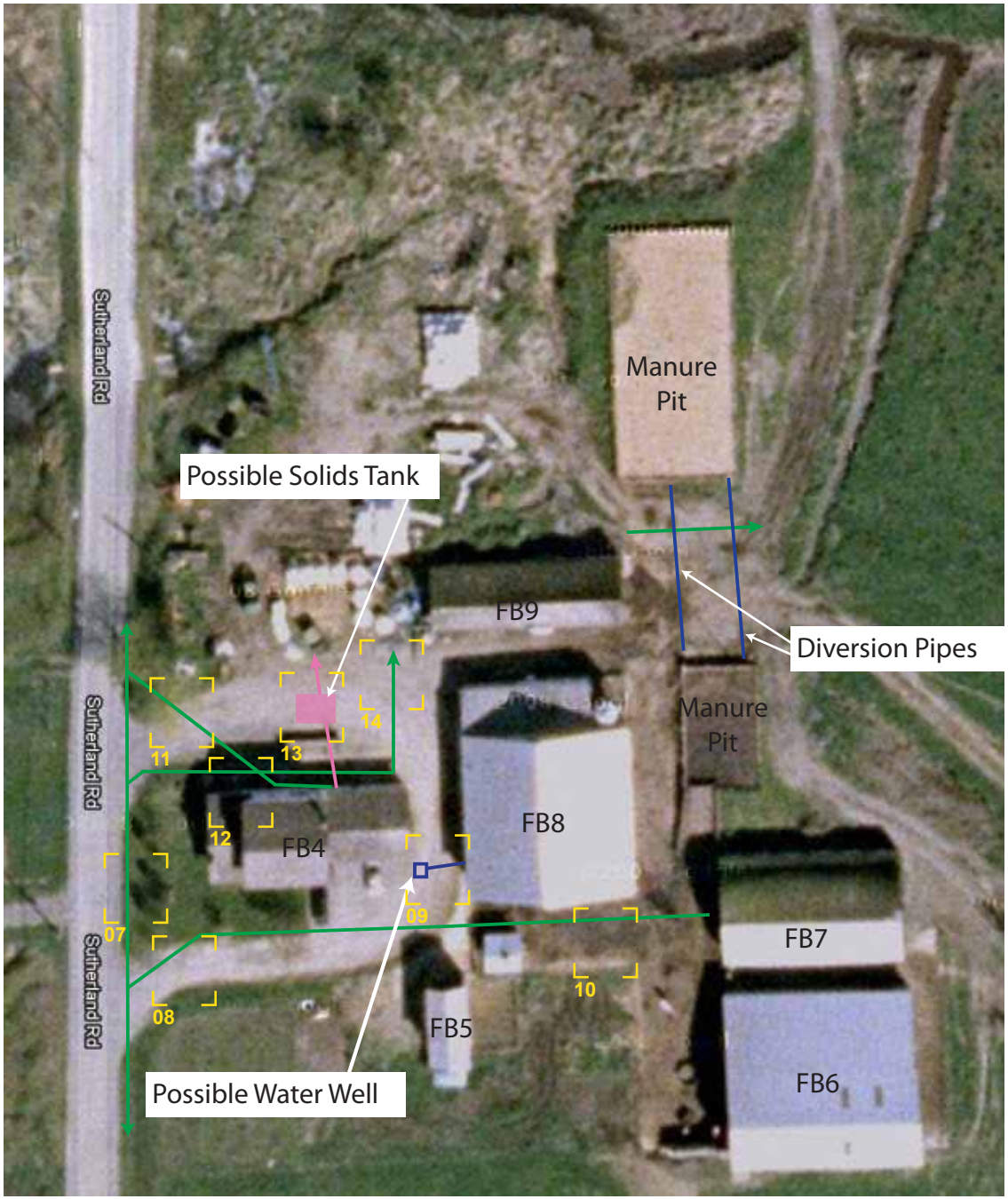
Mountain Institution Property
Sutherland Road, Kent, B.C.

Project No. CSI20121002A

Prepared By:	Date:
Terry Wong	Oct 2, 2012

North

Overview of the site location
(Mountain Instiution Property at Sutherland Road, Kent, B.C)



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Terry Wong	Oct 2, 2012

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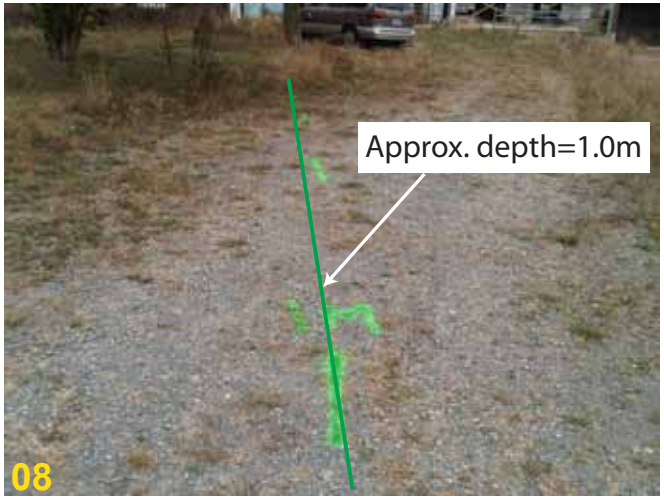

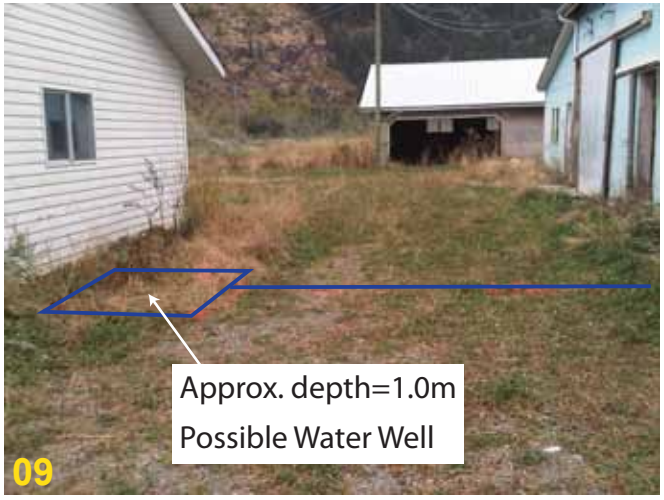

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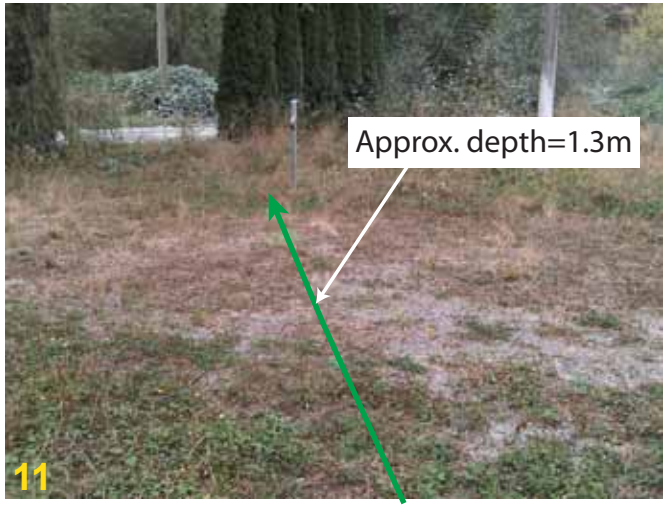

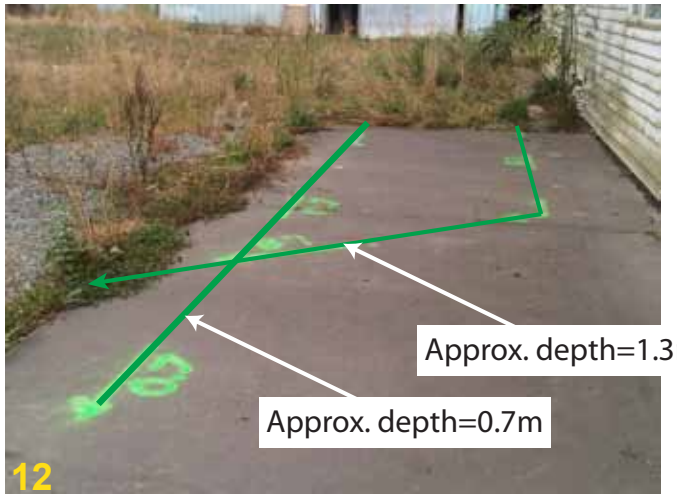

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Ground Penetrating Radar and EM Survey

Mountain Institution Property
Sutherland Road, Kent, B.C.

Project No. CSI20121002A

Prepared By:	Date:
Terry Wong	Oct 2, 2012

FINAL REPORT

Environmental Effects Evaluation (EEE) Report

Correctional Service Canada, 3024 Sutherland Road and 4469 Humphrey Road Building Demolition

Agassiz, BC

Conducted in Compliance with the

Sections 66-69 of the

Canadian Environmental Assessment Act (CEAA) 2012

Prepared for:
Public Works and Government Services Canada
Environmental Services
641 – 800 Burrard Street
Vancouver, BC V6Z 2V8

Prepared by:
Hemmera
250 – 1380 Burrard Street
Vancouver, BC V6Z 2H3

File: 376-216.01
May 2013

HEMMERA

HEMMERA

Suite 250 – 1380 Burrard Street
Vancouver, BC V6Z 2H3
T: 604.669.0424
F: 604.669.0430
hemmera.com

May 17, 2013
File: 376-216.01

Public Works and Government Services Canada
Environmental Services
401 – 1230 Government Street
Victoria, BC V8W 3X4

Attn: Michael Taylor, Environmental Specialist

Dear Mr. Taylor,

Re: Environmental Effects Evaluation – Correctional Service Canada, 3024 Sutherland Road and 4469 Humphrey Road Building Demolition

Hemmera is pleased to provide you with three hard copies of the above captioned final report. As requested, we have enclosed a digital copy at the back of each report.

Hemmera has appreciated the opportunity of working with you on this project and trust that this report is satisfactory to your requirements. Please feel free to contact the undersigned at 604.669.0424 regarding any questions or further information that you may require.

Regards,
Hemmera

Kathy Chamber, M.Sc., R.P. Bio.
Aquatics Biologist
604.669.0424 (106)
kchambers@hemmera.com

Ashleigh Ballevona, B.Sc., BIT
Environmental Specialist
604.669.0424 (129)
aballevona@hemmera.com

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1.0 PROJECT INFORMATION

Federal Authority:	Public Works and Government Services Canada (PWGSC)
Project Title:	Environmental Effects Evaluation (EEE) – Correctional Service Canada, 3024 Sutherland Road and 4469 Humphrey Road Building Demolition
Location:	Agassiz, BC
Contact Person:	Kevin Inouye, Environmental Specialist
Telephone:	250.363.8911 / 250.363.3573
EEE Assessor:	Kevin Inouye, Environmental Specialist
Telephone:	250.363.8911
PWGSC Project Number:	R.060161.007

2.0 ESTABLISHMENT OF DUTIES

☒ The project is not a designated project (as defined in S.2(1)),

and,

☒ The project is to be carried out, in whole or in part, on federal lands (as defined in S.2(1)),

and,

☒ The project is a physical activity that is carried out in relation to a physical work (as defined in S.66)),

and,

☒ The project has undergone a risk assessment and deemed to be "high risk" of likelihood to cause significant adverse environmental effects.

In addition to CEAA 2012, other federal and provincial legislation, regulations, and policies that also may be applicable to the project include:

- *Fisheries Act;*
- *Species at Risk Act (SARA);*
- *Migratory Birds Convention Act;*
- *Navigation Protection Act;*
- *BC Heritage Conservation Act;*
- *BC Environmental Management Act and Contaminated Site Regulations;*
- *BC Transportation of Dangerous Goods Act;*
- *BC Wildlife Act;*
- *Canadian Environmental Protection Act (CEPA).*

3.0 SCOPE OF PROJECT

This Work was performed in accordance with Contract EZ109-060201/001/XSB between Hemmera Envirochem Inc. and Public Works and Government Services Canada, dated November 22, 2007 ("the Contract"). This Report has been prepared by Hemmera, based on field work conducted by Hemmera, for Public Works and Government Services Canada. In performing this Work, Hemmera has relied in good faith on information provided by others, and has assumed that the information provided by those individuals is both complete and accurate. This Work was performed to current industry standard practice for similar environmental work, within the relevant jurisdiction and same locale. The findings presented herein should be considered within the context of the scope of work and project terms of reference; further, the findings are time-sensitive and are considered valid at the time the Report was produced. The conclusions and recommendations contained in this Report are based upon the applicable guidelines, regulations, and legislation existing at the time the Report was produced; any changes in the regulatory regime may alter the conclusions and/or recommendations.

3.1 PROJECT LOCATION

The proposed project ("the Project") will involve the demolition of nine buildings owned by Correctional Services Canada (CSC) and located near the Mountain Institution, Agassiz, BC ("the Site"). The Site location and general land features are shown on **Figure 1**. The Site is considered one property, but comprises two adjacent lots with the following addresses: 4469 Humphrey Road and 3024 Sutherland Road.

The Site is located at the southern base of Mount Agassiz, at the northern edge of a flat stretch of agricultural land that extends south to the Fraser River. The Site is approximately 200 m from, and bordered by, Mountain Institution to the north, and Kent Institution to the immediate east. The base of Mount Agassiz lies just beyond Mountain institution to the north, and agricultural lands surround the Site to the west, south and southeast. Light industrial and institutional (park and recreational) lands are also located to the east of the Site (**Figure 1**).

3.2 PROJECT DESCRIPTION

The proposed Project will involve the demolition of nine buildings on the Site, as well as the removal of two manure pits, site services (i.e., sewer lines), and driveways. Buildings 1 through 3 are located at 4469 Humphrey Road (**Figure 2**); Buildings 4 through 9 and manure pits 1 and 2 are located at 3024 Sutherland Road (**Figure 3**).

3.2.1 Purpose of the Project – Justification/Need

3.3 SCOPE OF THE PROJECT

3.3.1 Project Components

Table 1 below outlines the Project components and activities as described in the Request for Services email prepared by PWGSC (PWGSC, 2012). **Figures 2** and **3** show the location of the buildings proposed for demolition.

Table 1 Project Components / Activities

Project Phase	Project Components / Activities
Pre-Construction	• Not applicable
Construction	• Mobilization of demolition crew and equipment; • Silt fence installation around the demolition area boundaries (**Figure 2**), with 2.5 m clearance from all buildings/ manure pits proposed for demolition; • Dismantling of Buildings 1 through 9 using both hand tools and heavy equipment; • Removal of manure pits 1 and 2, including concrete sub-structures and all contents; • Removal of site services such as water wells, sewer systems, electrical and cable vision; o Water wells will be cut off below grade and filled with bentonite (or other type of concrete fill material); o Sewer system contents will be removed with a hydro-vacuum, and the associated piping excavated and removed; • Removal of asphalt and / or concrete driveway systems around the buildings; • Restoration of Site (as a minimum grassed with seed); • Recycling and salvage of as much material as possible; • Removal and disposal of waste material off-site; • Demobilization from the Site.
Operation /Modifications	• Not applicable
Decommissioning	• Not applicable

Equipment that may be required to conduct the structure removal and site cleanup include:

- Small to medium-size excavator;
- Small to medium-size bulldozer;
- Dump trucks;
- Medium to large-size rubbish bin vehicles to haul waste away from the Site;
- Hydro excavation truck.

During the Project, access to the Site by heavy equipment will be *via* Sutherland and McCallum Roads.

3.4 SCHEDULE

It is anticipated that site preparation, demolition and project completion will take approximately three weeks, and will occur in fall, 2013. Demolition will be timed to comply with the appropriate work windows for breeding birds and other wildlife (i.e., Barn Owl (*Tyto alba*) and Oregon Spotted Frog (*Rana pretiosa*)) that are potentially present on the site.

Least-risk work windows in the Lower Mainland for breeding birds protected by the *Migratory Birds Convention Act* and BC *Wildlife Act* are between August 1 and March 31 (Canada 1994; MoE 2012a). Clearing of vegetation will be avoided outside of this window.

Barn Owls in British Columbia usually breed between early March and May (Bentley, Sopuck, & Demarchi 2005; COSEWIC 2010); demolition of Buildings 1 through 9 will be take place outside this time period (i.e., demolition will occur between June and the end of February).

Oregon Spotted Frog (OSF) typically breeds between February and April (MoE 2012b; MWLAP 2004), although discussion with members of the OSF recovery team has suggested that disturbance should more conservatively be avoided between December and the beginning of May (M. Pearson, pers. comm.,, 2013). Demolition of the manure pits and any other structures that may impact on OSF habitat will be timed to occur between mid-May and the end of November.

No in-stream works are planned, and therefore fisheries timing windows do not apply to the Project.

3.5 REGULATORY CONSIDERATIONS

PWGSC will submit a Project Notification and Review Application Form (PRAF) to Fisheries and Oceans Canada (DFO). A Notification under Section 9 of the BC *Water Act* will be submitted to the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) as a courtesy on the part of PWGSC at least 45 days prior to the start of project works.

A SARA permit application will be submitted to Environment Canada (EC) in order to survey and potentially relocate OSF from the Site. A Wildlife Sundry Permit application will also be submitted to FLNRO, accompanied by a BC Animal Care form. Although the Project occurs on federal lands, OSF are a provincially managed species and so the Wildlife Sundry Permit is a requirement of the SARA permit (*pers. comm.*, M. Pearson 2013).

4.0 SCOPE OF EVALUATION

Hemmera conducted a review of available literature, reports provided by PWGSC, and provincial and federal databases, in order to develop a description of the existing environment, and to identify potential environmental issues at the Site. Provincial and federal databases were searched to identify the at-risk wildlife species that are potentially present on the Site. In addition, information concerning the habitats present in the areas around the Site was examined. A site reconnaissance was conducted by Hemmera on October 25, 2012.

Information reviewed included, but were not limited to the following:

- Baseline Environmental Data for Future Assessments under CEAA at the Kent Institution – Final Draft Report (PWGSC 1999);
- BC Conservation Data Centre (CDC)'s BC Species and Ecosystems Explorer (CDC 2013);
- BC MoE's Sensitive Ecosystems Inventory website (MoE 2013);
- Canadian Environmental Assessment Registry (CEAA 2012);
- Correctional Service Canada, Mountain Lands Agricultural Study (Upland Consulting 2011);
- Correctional Service Canada Mountain Lands Environmental Assessment, District of Kent, BC (Aquaterra 2011);
- Draft Mountain Institute Remediation HADD Authorization Application for Works Affecting Fish Habitat: Original Channel of Mountain Slough and Tributaries (Hemmera 2013a);
- Draft Supplemental Site Investigation 3024 Sutherland Road, District of Kent, Agassiz, BC (Keystone Environmental (Keystone) 2012a);
- Fisheries Inventory Summary System (FISS) (FISS 2013);
- iMapBC. (GeoBC 2013);
- Mountain Institute Remediation, Draft Supplementary Information for a SARA Permit (Hemmera 2013b);
- Phase I and II Environmental Site Assessment 3024 Sutherland Road and 4469 Humphrey Road, Agassiz, BC (Pottinger Gaherty Environmental Consultants (PGL) 2009);
- Phase III Environmental Site Assessment 3024 Sutherland Road and 4469 Humphrey Road, Agassiz, BC (PGL 2011);
- Species at Risk Inventories. Volume 1: Sensitive Animal Species, Pacific Region Federal Correctional Facilities, Multiple Sites, British Columbia (Keystone 2007);
- Species at Risk Inventories. Volume 2: Sensitive Plant Species, Pacific Region Federal Correctional Facilities, Multiple Site, British Columbia (Keystone 2008);
- Species at Risk Public Registry (Canada 2013);
- Supplemental Site Investigation 3024 Sutherland Road, District of Kent, Agassiz, BC (Keystone 2012b).

The following descriptions of the existing environment are based on literature review and information collected during the site visit.

4.1 ENVIRONMENTAL SETTING

The Site consists of two separate areas, one at 3024 Sutherland Road, and one at 4469 Humphrey Road (**Figures 2** and **3**). The two areas are approximately 0.5 km apart.

The 4469 Humphrey Road site ("Humphrey Yard")[1] covers approximately 0.17 ha and includes an empty single-family residence (Building 1; **Photo 1**), an outbuilding (Building 2; **Photo 2**) and a small barn (Building 3; **Photo 3**) (**Figure 2**). These buildings were constructed between 1945 and 1973. Humphrey Yard is surrounded by pasture (PGL 2011), with McCallum Ditch (**Photo 13**) located to the north.

The 3024 Sutherland Road site ("Sutherland Yard") covers an area of approximately 0.67 ha, and contains an empty single-family residence (Building 4; **Photo 4**), a series of outbuildings and barns (Buildings 5 through 9; **Photos 5 – 11**) and two manure pits (manure pits 1 and 2; **Photos 10** and **11**) (**Figure 3**). Buildings 5 and 4 are of relatively recent construction (2006 and 1987, respectively; the remainder of the buildings are older, dating from 1949 to the 1970s (PWGSC 7-Sep-12).

Mountain Slough is situated adjacent and north of 3024 Sutherland Road, and a series of drainage ditches, shallow depressions and ponded areas are also situated within the 3024 Sutherland Road property. Project works are anticipated to occur within the riparian zones of Original Channel of Mountain Slough and Tributary #2A, two ephemeral watercourses that drain to Mountain Slough (**Figure 3**).

Details of structures scheduled to be demolished are summarized in **Table 2.**

Table 2 Description of Structures Scheduled for Demolition at 3024 Sutherland Road and 4469 Humphrey Road

Building	Photo	Location	Description	Year Built	Size
1	**1**	4469 Humphrey Road	Single-storey Dwelling	1945	157 m^2 (first floor)
2	**2**	4469 Humphrey Road	Storage Shed/Vehicle Shed	1973	71 m^2
3	**3**	4469 Humphrey Road	Animal Shed/Stable	1973	47 m^2 (first floor)
4	**4**	3024 Sutherland Road	Residence – Two-storey Dwelling	1987	288 m^2
5	**5**	3024 Sutherland Road	Sawdust Shed	2006	15 m^2 (first floor)
6	**6**	3024 Sutherland Road	Bunker Silo and Lean-to Addition	1975	188 m^2 (first floor)
7	**7**	3024 Sutherland Road	Stall Barn	1960	266 m^2 (first floor)
8	**8**	3024 Sutherland Road	Loafing Barn / Milking Parlour	1979	485 m^2 (first floor)
9	**9**	3024 Sutherland Road	Workshop/Machine Shed/Calf Barn	1958	101 m^2 (first floor)
Manure pit 1	**10**	3024 Sutherland Road	manure pit	Unknown	1.2 m deep
Manure pit 2	**11**	3024 Sutherland Road	manure pit	Unknown	1.2 m deep

[1] In this report, "Humphrey Yard" refers to the area containing the buildings scheduled for demolition, plus a surrounding 2.5 m buffer; 4469 Humphrey Road refers to the entire property. A similar convention exists for "Sutherland Yard" and 3024 Sutherland Road. "The Site" is used to refer to both properties.

4.2 PHYSICAL ENVIRONMENT

4.2.1 Topography, Surficial Geology and Soils

The topography of the Site is generally flat, as the two component properties are located in the historic floodplain of the Fraser River. The surficial geology consists of alluvial and glaciofluvial deposits of silt, sand, clay and gravel (BC Geological Survey, as cited in Aquaterra 2011). These deposits are the result of Fraser River flooding, and are largely composed of quartz, feldspar, chlorite, mica and amphibole with monmorillonoid minerals (Lutttmerding and Sprout 1967, as cited in Upland Consulting 2011). A review of water-well records for the area indicates the subsurface consists primarily of sand and gravel to a depth of 20 to 25 m below ground surface (bgs), underlain by clay. Total depth to bedrock ranges between 130 and 172 m bgs (PGL 2009).

The soil landscape in the vicinity of the Site is generally characterized as ferro-humic podzol (FHP) (Valentine, Sprout, Baker, & Lavkulich 1978). FHP soils are typically dominated by thick dark reddish B horizons of +/-1 m and are rich in iron, aluminum and organic matter. FHP soils tend to occur in forested areas where leaching is intense (Valentine et al. 1978). The soil temperature regime varies from moderately cool to cold cryoboreal (Meidinger & Pojar 1991). Due to the large amount of precipitation and moderate temperatures in the winter and summers, soils are wet most of the year and rarely freeze to a significant depth (Meidinger & Pojar 1991). Agricultural lands surrounding the Site have five soil series consisting of laidlaw (orthic acid brown forest), hjorth (rego humic gleysol), annis (rego gysol), kent (rego humic glysol), and prest (rego glysol) (Upland Consulting 2011).

4.2.2 Soil, Groundwater and Surface Water Quality

Phase I, II and III Environmental Site Assessments were conducted by PGL in 2009 and 2010 to identify and evaluate the Site for potential adverse impacts on human health and the environment. Three areas of potential environmental concern (APECs) were identified on or nearby 3024 Sutherland Road during the Phase 1 ESA. These were: a former landfill area, a diesel above-ground storage tank (AST), and a former heating oil AST. No APECs were identified on or near 4469 Humphrey Road (PGL 2009; 2011).

It was determined that further investigation of the former heating oil AST could be delayed until such time as renovation or demolition projects were to take place near the buildings (PGL 2009). The former fuel heating AST is reported to be located under Building 4 (PGL 2009).

The area containing the former landfill and diesel AST, located immediately north of Sutherland Yard, was selected for further investigation. Results indicated that three zones of soil contamination are present within the historical fill area, showing exceedances of the *Contaminated Sites Regulation* (CSR) Residential (RL) criteria for hydrocarbons and metals. As a result, the identified contaminated area was classified as Class 1 – High Priority for Action (PGL 2009), and a Phase 3 ESA was conducted to delineate the zones of contamination associated with the landfill and diesel AST. Buried wood and debris

such as plastic was further determined as an area of environmental concern at the former landfill area (PGL 2011). A Supplemental Site Investigation (SSI) was conducted by Keystone in November 2011, with further delineation of contaminated areas conducted in July and September of 2012.

Polycyclic aromatic hydrocarbon (PAH) and metals contamination in exceedance of CSR RL and Canadian Council of Ministers for the Environment (CCME) Aquatic Life (AL) criteria has also been identified in some of the surface water and sediment sampled from ephemeral tributaries to Mountain Slough on the Site. Four zones of sediment contamination have been delineated within these watercourses (Keystone 2012b). Based on spatial distribution and concentration gradients of this contamination, the historical fill contamination is likely the source for the sediment and surface water contamination, although off-site sources are also a possibility (Keystone 2012a, 2012b).

Remediation of these areas of contamination, which is currently planned for summer 2013, will consist of excavation of the contaminated soil and sediment and disposal/treatment at a licensed facility. Based on the results of the SSI, approximately 5,718 m^3 of historical fill and 772.5 m^3 of contaminated sediment will need to be removed from the Site (Keystone 2012b). Following excavation and testing, the remediated area will be backfilled, affected watercourse channels reconstructed, and exposed surfaces revegetated.

Remediation works and their potential effects on the environment are described in *Environmental Assessment Screening: Mountain Institution Site Remediation Draft Report*, prepared by Hemmera for PWGSC (2011). Remediation of soil and sediment will result in improved groundwater and surface water quality, which will improve habitat for fish and other aquatic species both at and downstream of the area proposed for remediation (Hemmera 2011). While some spatial overlap exists between proposed remediation and demolition works (e.g. manure pit 1, building 9), these are considered two separate projects.

Domestic sewage from both properties has historically been treated by septic fields. The septic field at Sutherland Yard is located northeast of Building 4; the septic field at Humphrey Yard is located north of Building 1 (PGL 2009). Watercourses on both properties have little shade and slow moving water; it seems likely that elevated temperatures and low levels of dissolved oxygen occur during summer months.

4.2.3 Hydrology and Groundwater

Surface water from both 3024 Sutherland Road and 4469 Humphrey Road follow tributary watercourses to Mountain Slough. These watercourses drain in a generally southwest direction into Mountain Slough before joining with the Fraser River (FVRD 2011). Flow is often sluggish due to the area's very low gradient (Upland Consulting 2011). Regionally, groundwater is expected to flow south towards the Fraser River; however, groundwater flow at the Site is likely influenced by the above-noted watercourses (PGL 2009). MoE databases show 11 wells located within 1 km of the Site (GeoBC 2013).

Hydrology and groundwater are considered separately for each property, as follows.

4.2.3.1 Humphrey Yard

McCallum Ditch flows west through 4469 Humphrey Road, joining with Mountain Slough approximately 1.5 km to the southwest. McCallum Ditch (**Photo 12**) runs along the north side of Humphrey Yard, with the closest point located approximately 30 m north of Building 2. Ditches on the east and west side of 4469 Humphrey Road flow north into McCallum Ditch. The flows of these two tributary ditches are limited to surface water runoff from the surrounding pastures (Aquaterra 2011). An additional unnamed tributary collects runoff from the fields to the north of Humphrey Yard, connecting with McCallum Ditch near the southwest corner of 4469 Humphrey Road. Unlike Mountain Slough, the channel of McCallum Ditch in the vicinity of the Site does not appear to have been substantively realigned in the past (FVRD 2011). The locations of these watercourses are shown in **Figure 2.**

Buildings at 4469 Humphrey Road were previously supplied potable water from a well located immediately north of Building 1 (PGL 2009).

4.2.3.2 Sutherland Yard

Historical mapping indicates that Mountain Slough originally flowed through 3024 Sutherland Road (FVRD 2011). However, the channel of Mountain Slough has since been realigned, and the main channel currently flows along the northern boundary of the 3024 Sutherland Road property, crossing underneath Sutherland Road approximately 0.4 km north of the property boundary. It then flows southwest where it joins with the original channel of Mountain Slough ("Original Channel of Mountain Slough" west of Sutherland Road. Original Channel of Mountain Slough and its tributaries are now ephemeral, only receiving surface runoff from the surrounding area during precipitation events.

Original Channel of Mountain Slough and three tributary watercourses (Tributary #2, Tributary #2A and Sutherland Ditch) are located within 50 m of Sutherland Yard (**Photo 13**). Tributary #2 is a channelized watercourse that drains low-lying areas near the southern portion of the 3024 Sutherland Road parcel into Original Channel of Mountain Slough (Aquaterra 2011). Tributary #2A joins Tributary #2 immediately to the east of Sutherland Yard. Sutherland Road Ditch East is a narrow roadside ditch that flows north into Original Channel of Mountain Slough. Both Tributary #2A and Sutherland Road Ditch East are located within approximately 10 m of the boundaries of Sutherland Yard (near Building 4 and Building 7, respectively). **Figure 3** shows the locations of these watercourses with respect to Sutherland Yard.

Buildings at Sutherland Yard were previously supplied potable water from a well located immediately east of Building 4 (PGL 2009).

4.2.4 Climate

The climate at the Site is characterized by warm, relatively dry summers and moist, mild winters. Records from the climate station in Agassiz (Climate ID: 1100120) indicate a mean annual precipitation of 1,747.70 mm (from 1971 to 2000) and a mean annual temperature of 10.5°C (EC 2012a). Precipitation is highest in December and the lowest in October. Snowfall is the highest in January. The highest daily average temperature is in August while the lowest is in January. Temperature and precipitation averages for Agassiz from the El Dorado World Weather website (2012) are shown in **Figures 4-1** and **4-2**, below.

Figure 4-1 Agassiz Mean Monthly Temperatures (°C)

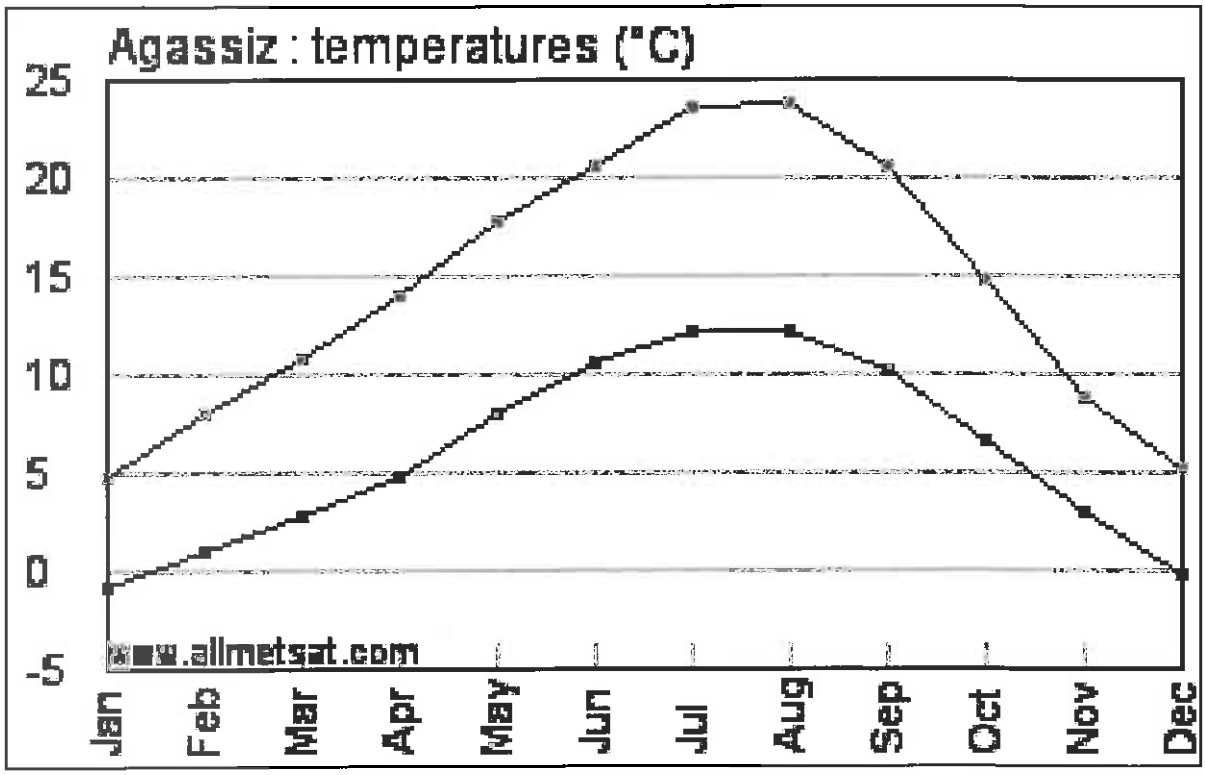
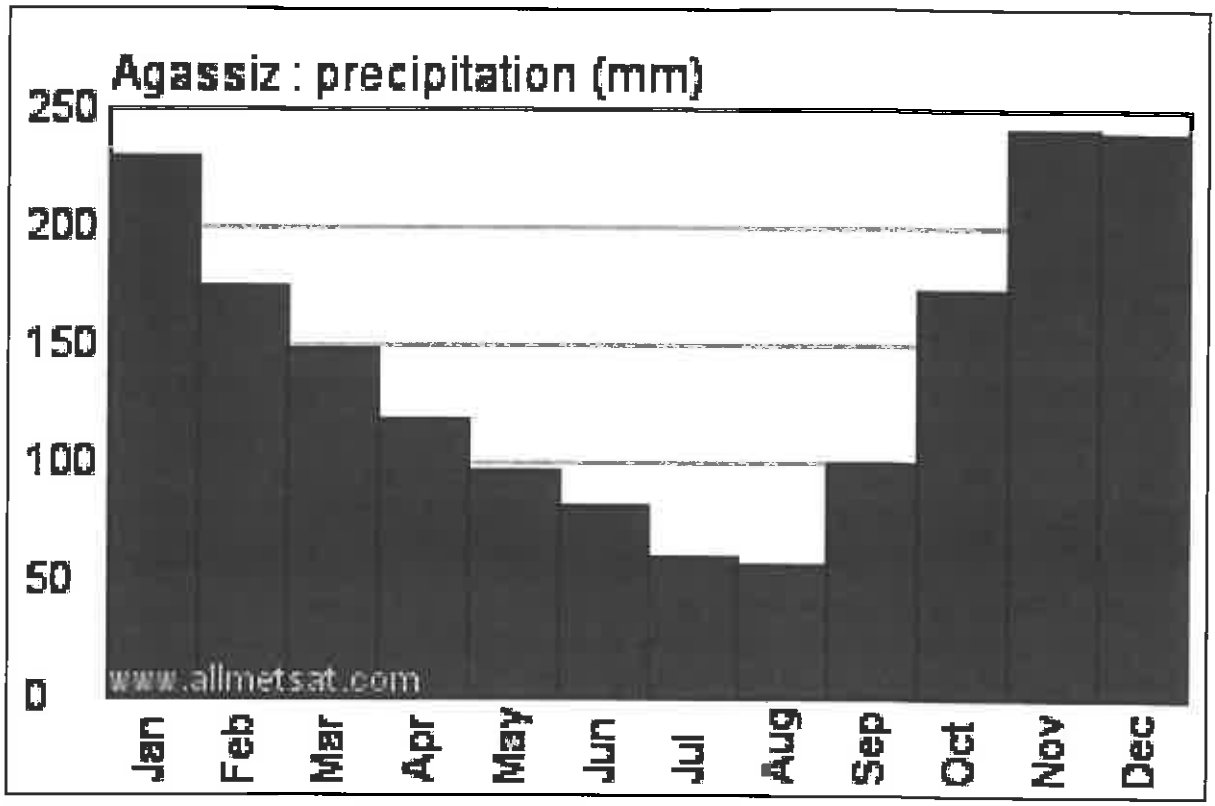


Figure 4-2 Agassiz Mean Monthly Precipitation (mm)



4.2.5 Air Quality

The Site is located in a confined airshed that is susceptible to the buildup of air pollution as a result of frequent temperature inversions and reversing winds in the lower Fraser Valley (FVRD 2008). Poor air quality commonly occurs on warm sunny days, particularly when ocean winds blow east up the valley from urban centers to the west (McKendry 2010; PWGSC 1999).

There are no industrial facilities located near the Site that are likely to affect the ambient air quality (PWGSC 1999).

4.3 BIOLOGICAL ENVIRONMENT

4.3.1 Vegetation and Ecological Communities

The Site is located within the Fraser Lowland ecosection of the Lower Mainland ecoregion, a lowland area formed primarily by deposition of materials washed down by the Fraser River (Demarchi 1995). Most of BC's human population lives within this ecoregion, and consequently much of this landscape has been modified from its natural state by anthropogenic activities (Demarchi 2011). The Site is located near the northern edge of a flat stretch of agricultural land that extends north from the Fraser River (**Figure 1**).

The Site is located within the Coastal Western Hemlock dry maritime subzone (CWHdm) biogeoclimatic zone, which typically experiences cool summers and mild winters (Pojar, Klimka, & Demarchi 1991). Natural vegetation in the CWHdm includes western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*), and western redcedar (*Thuja plicata*). Deciduous tree species include red alder (*Alnus rubra*) and black cottonwood (*Populus trichocarpa*). Common shrubs include salal (*Gaultheria shallon*), dull Oregon-grape (*Mahonia nervosa*), and red huckleberry (*Vaccinium parvifolium*). The moss layer is generally well-developed and dominated by step moss (*Hylocomium splendens*) and lanky moss (*Rhytidiadelphus loreus*) (Pojar et al. 1991).

Vegetation at both properties has been heavily impacted by anthropogenic activities, and little natural habitat remains. Most of the Site is currently occupied by buildings, pavement, manicured lawns and ornamental trees. At Humphrey Yard, vegetation included a row of mature western redcedar (*Thuja plicata*) and Douglas-fir (*Pseudotsuga menziesii*) trees adjacent to the driveway, and ornamental trees (*Malus* spp.) planted around the residence. To the north towards McCallum Ditch, reed canarygrass (*Phalaris arundinacea*) dominated the riparian area (**Photo 14**). Himalayan blackberry (*Rubus armeniacus*) was present around Building 3, and duckweed (*Lemna* sp.) was observed in McCallum Ditch. Plant species observed at Sutherland Yard during the October 2012 site visit included ornamental trees, Himalayan blackberry (**Photo 15**), reed canarygrass, Canada thistle (*Cirsium arvense*) and clover (*Trifolium* spp.).

4.3.2 Wildlife

A variety of terrestrial mammal species that occur within the forests and agricultural areas in the lower Fraser Valley region. Black-tailed deer (*Odocoileus hemionus columbianus*) and American Black Bear (*Ursus americanus*) are two large mammals common on the lands surrounding the Site. Other mammals found in the area include Bobcat (*Lynx rufus*), Muskrat (*Ondatra zibethica*), American Beaver (*Castor canadensis*), Cougar (*Felis concolor*), Raccoon (*Prycyon lotor*), Coyote (*Canis latrans*), rabbits, mice, moles, bats and the Douglas Squirrel (*Tamiasciurus douglasii*) (Meidinger & Pojar 1991).

Amphibians have been observed in channels around the Kent Institution, including American Bullfrog (*Rana catesbeiana*) tadpoles, neotenic Northwestern Salamander (*Ambystoma gracile*), Western Toad (*Anaxyrus boreas*) (PWGSC 1999) and Northern Red-legged Frog (*Rana aurora*) (Keystone 2006, 2007). Both Western Toad and Northern Red-legged Frog are provincially blue-listed ("special concern") and federally listed as species of special concern under Schedule 1 of SARA. Oregon Spotted Frog, which is provincially red-listed ("endangered") and federally listed as endangered under Schedule 1 of SARA, is known to occur downstream of the Site (Robbins, 2011). Common Garter Snake (*Thamnophis sirtalis*) is common to the region and likely present in the study area. Rubber Boa (*Charina bottae*), a SARA Schedule 1 species of Special Concern, has been observed nearby at the Mountain Institution (Aquaterra 2011).

Numerous bird species are present in the region. Songbirds utilize trees on the Site, waterfowl use flooded fields and watercourses, and raptors feed on rodents within the fields. The following species were observed on the properties during the 1999 biophysical assessment (PWGSC 1999):

- European Starling (*Sturnus vulgaris*);
- Northwestern Crow (*Corvus caurinus*);
- Brown-headed Cowbird (*Molothrus ater*);
- Canada Goose (*Branta canadensis*);
- Mallard Duck (*Anas platyrhynchos*);
- Trumpeter Swan (*Cygnus buccinator*);
- Bald Eagle (*Haliaeetus leucocephalus*);
- Turkey Vulture (*Cathartes aura*);
- Red-winged Blackbird (*Agelaius tricolor*);
- Tree Swallow (*Iridoprocne bicolor*);
- American Bittern (*Botaurus lentiginosus*);
- Black-capped Chickadee (*Parus atricapillus*).

Thirty-seven bird species, including 29 passerine species, four waterfowl/ water associated bird species, and four raptor species have been documented around the Mountain and Kent Institutions. This includes Great Blue Heron (*Ardea herodias* ssp. *fannini*), which is provincially blue-listed ("special concern") and included in Schedule 1 of SARA as "threatened" (Keystone 2007). The majority of these species were found in forested, wetland, agricultural and shrub habitat adjacent to the institutions.

Larger mammals such as black bear, deer, and coyote are common to the area and are likely to use the Site. Keystone (2006) observed or noted signs of eight mammal species at, or adjacent to, Mountain and Kent Institutions. These species were mostly observed in forested, shrub, agricultural, and wetland habitat adjacent to the facilities (Golder 2011), similar to or corresponding with the study area.

Species observed at Humphrey Yard during the October 2012 Site visit included an unidentified rodent near Building 3 and a coyote west of the property. Bird nests were observed in Buildings 2 and 3 (**Photo 16**), and black bear feces observed west of Building 1. A black bear and a coyote were previously observed near 4469 Humphrey Road during a site visit conducted by PWGSC earlier in October 2012 (pers. comm. K. Inouye, 2012).

Wildlife sightings at Sutherland Yard during the October 2012 site visit included Barn Owl, Red-tailed Hawk (*Buteo jamaicensis*), Dark-eyed Junco (*Junco hyemalis*); and a flock of European Starling. A total of five Barn Owl sightings occurred in Buildings 7 and 8, and Barn Owl feathers (**Photo 17**) and droppings were observed in Building 9. In addition to the species noted, numerous bird nests were observed on rafters and above doorways in Buildings 5 through 9 (**Photo 18**), and coyote feces were present throughout the property (**Photo 19**).

4.3.3 Aquatic Species and Habitat

4.3.3.1 Humphrey Yard

Documented occurrences of fish species in McCallum Ditch include Coho Salmon (*Oncorhynchus kisutch*), stickleback (*Gasterosteus* spp.), Redside Shiner (*Richardsonius balteatus*), and lamprey (*Lampreta* spp.) (FISS 2012). During the October 2012 site visit, Oregon Floater mussels (*Anodonta oregonensis*) and unidentified fish were observed in McCallum Ditch. No records of fish species were found for the tributary watercourses identified on the site (FISS 2012), but they are assumed to be fish-bearing is assumed due to their hydraulic connectivity with McCallum Ditch.

McCallum Ditch is separated from Humphrey Yard by 30 m at its closest point (i.e., near Building 2). During the October 2012 site visit the ditch had a wetted width of 4 m, a bankfull width of 6 m, and an average water depth of 0.5 m. Evidence of recent channel maintenance in McCallum Ditch, presumably by the District of Kent, was also observed (**Photo 13**). Substrate in the ditch is composed primarily of fines, and aquatic vegetation consists of reed canarygrass and duckweed. The riparian area of McCallum Ditch (near Humphrey Yard) consists of reed canarygrass, Himalayan blackberry, western redcedar and Douglas-fir, and unidentified grasses.

Tributary watercourses are similar in nature to those of Original Channel of Mountain Slough; ephemeral in nature and with riparian vegetation dominated by reed canarygrass.

4.3.3.2 Sutherland Yard

Documented presence of fish species in Mountain Slough includes Common Carp (*Cyprinus arpio*), Coho Salmon, Chum Salmon (*O. keta*), Northern Pikeminnow (*Ptychocheilus oregonensis*), Coastal Cutthroat Trout (*O. clarki clarki*), Peamouth Chub (*Mylocheilus caurinus*), Redside Shiner, Brassy Minnow (*Hybognathus hankinsoni*), Pumpkinseed (*Lepomis gibbosus*), and Salish Sucker (*Catostomus sp. 4*) (MoE 2012; Pearson Ecological 2007, 2008). No records of fish presence were identified for Original Channel of Mountain Slough or its tributaries (FISS, 2012) but good connectivity exists between these watercourses and Mountain Slough and so fish presence is assumed. While these watercourses do not provide salmonid spawning or overwintering habitat, they may provide rearing habitat value for fish species when they contain water.

Where it passes through 3024 Sutherland Road, Original Channel of Mountain Slough is sinuous with an average channel width of 3 m. The flow is natural and intermittent, and in a westward direction. Substrate consists primarily of fines, and aquatic vegetation consists of reed canarygrass (95%) and cattails (*Typha latifolia*) (5%). Riparian vegetation includes reed canarygrass (80-90%), sedges (*Carex* spp.), Himalayan blackberry, scattered willows (*Salix spp.*) and black cottonwood. Because the riparian vegetation in the original channel of Mountain Slough consists almost entirely grasses and shrubs, it does not greatly contribute to the instream area in terms of shading, litter drop and large woody debris (Hemmera, 2013a).

Aquatic and riparian vegetation in Tributary #2 consists mainly of reed canarygrass. As the riparian vegetation in the Tributary #2 is almost entirely made of grasses and shrubs, it does not greatly contribute to the instream area in terms of shading, litter drop and large woody debris (Hemmera, 2013a).

Tributary #2A is ephemeral, and its riparian vegetation consists almost entirely of reed canarygrass (**Photo 12**), with some Himalayan blackberry near Building 7 (**Photo 15**). The width of Tributary #2A is approximately 3 m. During the October 2012 site visit, some standing water was present in Tributary #2A; however, the watercourse did not appear to be flowing. Tributary #2A is separated by approximately 10 m from Building 7 and by 15 m from manure pit 1 (**Figure 3**). Similar to Tributary #2, the riparian habitat of Tributary #2A does not greatly contribute to or affect the instream area of the tributary in terms of shading, litter drop, and large woody debris.

Sutherland Road Ditch East is an channelized roadside ditch located immediately west of Sutherland Yard (**Figure 3**), which flows north into Original Channel of Mountain Slough. Flow is intermittent and ephemeral. The ditch is approximately 1.0 m wide, with a substrate consisting of fines. Riparian vegetation consists of ornamental grass and Himalayan blackberry. A row of western redcedar are located along the east side of the ditch.

4.4 SPECIES AT RISK

A desktop study was conducted to identify the potential presence of species considered to be "at risk" by federal and provincial regulators (i.e., Species at Risk or "SAR"). The CDC's "red list" includes indigenous species or subspecies ("species") that the CDC considers "extirpated", "endangered" or "threatened" in British Columbia[2]. The CDC's "blue list" includes species of "special concern" in BC. Although a species may be placed on the red or blue list by the CDC, this does not automatically confer protection to the species or its habitat. However, it does identify the species to regulators and proponents as being of potential concern in the context of an environmental effects evaluation.

In parallel to the CDC's red and blue lists, the Committee on the Status of Endangered Wildlife (COSEWIC) makes recommendations to the Canadian Endangered Species Conservation Council (CESCC) regarding species that should be formally designated as being "extirpated", "endangered", "threatened", or of "special concern" under the federal *Species at Risk Act* (SARA). Species accepted under SARA are listed in SARA's Schedules 1 through 3. Under SARA, the habitat of an endangered species may be legally protected, provided this habitat is federally regulated, and provided a formal recovery plan has been developed for the species (Canada, 2002).

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2 Extirpated species no longer exist in the wild in British Columbia, but occur elsewhere. Endangered species face imminent extirpation or extinction. Threatened species are likely to become endangered if factors which limit their numbers and/or range are not reversed. Species of special concern are sensitive to human activities or natural events, but not endangered or threatened.

A list of provincially and/or federally species at risk (SAR) identified as potentially present in the study area was developed using the information obtained from the British Columbia Species and Ecosystem Explorer database and other information sources identified in **Section 4.0**. This list of SAR was then further evaluated for likelihood of species presence at the site, and potential for effects from the Project (**Appendix B**).

4.4.1 Vegetation Species at Risk

A total of 13 vegetation SAR have the potential to occur in the general area of the Site (Canada, 2012; CDC, 2012; Keystone, 2006, 2008). Based on their habitat requirements and location of confirmed sightings, four of these species were identified as possibly present on the Site and potentially affected by the Project (**Appendix B**). These four species are: Blue Vervain (*Verbena hastata* var. *scabra)* (blue-listed), Green-fruited Sedge (*Carex interrupta)* (red-listed), Fox Sedge (*Carex vulpinoidea)* (blue-listed) and Vancouver Island Beggartick (*Bidens amplissima*) (blue-listed, Schedule 1 – Special Concern).

A vegetation SAR survey at the Mountain and Kent institutions (0.4 km northeast of 3024 Sutherland Road) conducted in 2007 confirmed the presence of water-pepper (*Persicaria hydropiperoides*), which was then a provincially blue-listed species (Keystone, 2008). However, in 2010 the CDC changed this species' listing to "yellow-listed" (i.e., not at risk), and it was therefore not included in the vegetation SAR list.

4.4.2 Wildlife Species at Risk

Twenty-nine wildlife SAR have the potential to occur within the general area of the Site (Canada, 2012; CDC, 2012; Keystone, 2006, 2007), including one reptile and one gastropod, three amphibians, four mammals, seven insects and thirteen birds. Four of these species are considered to be likely present at the Site and/or potentially affected by the Project, based on preferred habitat, behaviour and documented occurrences.

Barn Owl (blue-listed, SARA Schedule 1 – Special Concern) have been confirmed in Buildings 6 and 7, at Sutherland Yard.

Oregon Spotted Frog (red-listed, SARA Schedule 1 – Endangered) have been reported in Mountain Slough approximately 900 m downstream of Sutherland Road, and Mountain Slough west of Sutherland Road contains known breeding/oviposition sites for Oregon Spotted Frog (MoE, 2012b) The Site is located within proposed critical habitat for the Mountain Slough population of Oregon Spotted Frog (EC, 2012b), although final designation of the Site as critical habitat has not yet taken place.

Occurrences of Northern Red-Legged Frog (blue-listed; SARA Schedule 1 – Special Concern) are associated with both Mountain Slough and McCallum Ditch. The closest occurrence is 0.2 km west of the Site (CDC, 2012). Good connectivity exists between this location and watercourses on the Site.

4.4.3 Aquatic Species at Risk

Four aquatic SAR, all fish species, have the potential to occur within the general area of the Site (Canada, 2012; CDC, 2012; FISS, 2012; Keystone, 2006, 2007). Based on preferred habitat and location of documented occurrences, two of these species were considered likely to be present on or immediately downstream of the Site and/or potentially affected by project activities (**Appendix B**). These two species are Coastal Cutthroat Trout (blue-listed) and Salish Sucker (red-listed, SARA Schedule 1 – Endangered), both of which have been documented in Mountain Slough (FISS, 2012; Pearson Ecological, 2007; PWGSC, 1999).

4.5 SOCIO-ECONOMIC ENVIRONMENT

4.5.1 Land Use

The Site is located within the District of Kent, in the FVRD, approximately 6 km northwest of the community of Agassiz. Residential homes and agricultural land surround both properties, with the exception being the Armstrong Sand and Gravel quarry, which is located to the northwest of 3024 Sutherland Road. Two federal penitentiaries are situated in the vicinity of the Site: Mountain Institution, a medium-security facility, is 0.3 km to the north, and Kent Institution, a maximum-security facility, is 0.3 km to the east.

3024 Sutherland Road was previously agricultural land; 4469 Humphrey Road was an acreage. Both contained residences. Surrounding agricultural lands are used for dairy farming and crops such as blueberries and corn (PWGSC, 1999). The slopes of Mount Agassiz, to the north of the Site, appear to have been logged in the 1970s (PWGSC, 1999) but are currently undeveloped.

4.5.2 Traditional Use

The Site is within the traditional territory of the Stó:lō and the Sts'ailes (formerly Chehalis) Nations (BC Treaty Commission, 2009; Sts'ailes Band, 2010). The Stó:lō Nation traditional territory includes the Fraser Valley, much of the Lower Mainland, and the Harrison Lake watershed, and the Stó:lō Nation is currently involved in the treaty negotiation process (Stage 4). The Sts'ailes Nation traditional territory includes the Harrison Lake watershed. The Sts'ailes Nation is not involved with the treaty negotiation process. The Site does not overlap with any First Nations reserves (GeoBC, 2012).

Aboriginal consultations were not undertaken for the Project because the Project is not anticipated to have an impact on land claims or traditional ways of life. Therefore, Traditional Use will not be discussed further in this environmental effects evaluation.

4.5.3 Noise

Sources of noise include the quarry immediately northwest of the Site, a rifle range approximately 1 km to the northeast of the Site, and a car racing track, which is also located approximately 1 km to the northeast. Seasonal agricultural activities may also produce ambient noise. During the October 2012 site visit, noise was audible from both the quarry and rifle range.

4.5.4 Recreation

Recreational activities in the local area include hiking on Mount Agassiz (Vancouver Trails 2013) and self-guided agricultural tours (Circle Farm Tour 2013). Neither hiking trails nor farms advertising farm gate sales are located in the immediate vicinity of the Site, and no evidence of recreational use of the Site was visible during the October 2012 site visit.

4.5.5 Archaeology Resources

Provincial records indicate that there are no known archaeological sites at either 3024 Sutherland Road or 4469 Humphrey Road. Archaeological potential mapping for Sutherland Yard indicates that the property has high potential to contain unknown archaeological resources (*pers. Comm.*, D. Cooper 2012). Humphrey Yard contains both areas with a high potential to contain unknown archaeological resources, and areas with no potential to contain unknown archaeological resources. A record of the correspondence between Hemmera and the Archaeology Branch is included in **Appendix C**.

4.5.6 Navigation

None of the watercourses on the Site are considered navigable waters as defined by the *Navigable Waters Protection Act* (Transport Canada 1985).

4.5.7 Health and Safety

Both Sutherland Yard and Humphrey Yard are easily accessible by the public. Due to the age of the buildings on the Site, building components that are regulated in some circumstances, such as asbestos, lead paint and polychlorinated biphenyls (PCBs) may be present (PWGSC 1999). If regulated building materials are present, building owners have obligations to protect workers under the *Worker's Compensation Act* (Government of British Columbia 1997).

Due to the possibility of Hazardous Materials (HAZMAT) at the Site, project works may pose a potential health and safety risk to workers. CSC has retained Stantec Inc. (Stantec) to perform a HAZMAT audit of the buildings scheduled for demolition and the results of the study are currently being drafted.

5.0 EVALUATION OF ENVIRONMENTAL EFFECTS

5.1 SCOPE OF EVALUATION

Spatially, the scope of the EEE is limited to the combined 0.84 ha footprint of the proposed activities within Sutherland Yard and Humphrey Yard, as outlined in **Section 3.2**. Temporally, the Project is the decommissioning phase of prior works, and involves activities anticipated to take three weeks to complete. The project life cycle is considered to be the decommissioning period only.

This EEE Report considers changes to the biophysical environment caused by the Project, as well as any resultant effects on the socio-economic environment, and focuses on the Valued Ecosystem Components (VECs) and Valued Social Components (VSCs).

For this project, VECs were selected based on ecological importance and/or value to the existing environment, and the relative sensitivity of environmental components to project influences and their relative social, cultural, or economic importance. VSCs include components of the socio-economic environment that may be affected by a change in the bio-physical environment as a result of the Project. VECs and VSCs for this project were chosen using the interactions in **Table 3**. Consideration was given to all aspects of the project life cycle identified in the scope of Project (**Section 3.3**).

The following VECs/VSCs were therefore selected for further evaluation in this report:

- Soil and Sediment;
- Groundwater
- Surface Water;
- Air Quality;
- Vegetation;
- Wildlife;
- Fish and Fish Habitat;
- Species at Risk;
- Noise;
- Archaeology;
- Health and Safety.

Table 3 Potential Project / Environment Interactions Matrix

	Valued Components										
	Biophysical								Social		
	Soil	Groundwater	Surface Water	Air Quality	Vegetation	Wildlife	Fish/ Fish Habitat	Species at Risk	Noise	Archaeology Resources	Health and Safety
Construction (n/a)											
Operations and Maintenance (n/a)											
Decommissioning											
Deconstruction of Buildings 1-9 using both hand tools and large scale mechanical equipment.	P	P	P	P	P	P	P	P	P	P	P
Removal of manure pits 1 and 2, including concrete sub-structures and all contents.	P	P	P	P	P	P	P	P	P	P	P
Removal of site services, such as water wells, sewer systems, electrical and cable vision, etc.	P	P	P	P	-	P	-	P	P	P	P
Removal of asphalt and / or concrete driveway systems around the buildings.	P	P	P	P	-	P	-	P	P	P	P
Restoration of Site to surrounding conditions (as a minimum grassed with seed).	P	-	P	P	-	P	P	P	-	-	P

Note: P = Potential effect of Project on environment; ' - ' = No interaction

The interactions described in **Table 3** are addressed in **Tables 5 – 14**. These tables detail the physical works/activities and required mitigation measures to address potential Project/ environment interactions, and provide an estimate of the significance of residual (post-mitigation) effects.

The following ratings are based on:

- Information provided by the proponent;
- A review of project-related activities;
- An appraisal of the environmental setting, and identification of resources at risk;
- The identification of potential impacts within the temporal and spatial bounds;
- Personal knowledge and professional judgment of the assessor.

The significance of project-related impacts was determined in consideration of their frequency, the duration and geographical extent of the effects, magnitude relative to natural or background levels, and whether the effects are reversible or are positive or negative in nature. These criteria are indicated in **Table 4**.

Table 4 Assessment Criteria for Determination of Significance

Magnitude	Magnitude, in general terms, may vary among issues, but is a factor that accounts for size, intensity, concentration, importance, volume and social or monetary value. It is rated as compared with background conditions, protective standards or normal variability.	
	Small	Relative to natural or background levels
	Moderate	Relative to natural or background levels
	Large	Relative to natural or background levels
Reversibility	Reversible	Effect can be reversed
	Irreversible	Effects are permanent
Geographic Extent	Immediate	Confined to Project site
	Local	Effects beyond immediate Project site but not regional in scale
	Regional	Effects on a wide scale
Duration	Short-term	Between 0 and 6 months in duration
	Medium-term	Between 6 months and 2 years
	Long-term	Beyond 2 years
Frequency	Short	Intermittently during decommissioning
	Medium	Continuous during decommissioning
	Long	Continuous during decommissioning, and after decommissioning complete

Table 5 Potential Project / Valued Components Interactions and Mitigation Measures – Soil

Valued Component – Soil				
Potential Effect: Erosion and contamination of soil				
Potential Interaction	**Mitigation**			
Exposure/loosening/destruction of soils during equipment mobilization to the Site and during excavation. Contaminated soils may be discovered during Project activities. Contamination due to accidental spills of deleterious substances from machinery during Project activities Generation of waste during Project activities.	Cover any soils exposed as a result of project activities, and/or implement other erosion protection or sediment control measures until such time that vegetation can be re-established. Silt fencing or a similar barrier will be erected around the project areas to reduce the mobilization of sediment. Work and activities at the Site will be carried out in a manner to ensure that there is no discharge, either direct or indirect, of construction waste, excavation waste, oil, grease, or any substance deleterious to aquatic life to Tributary #2A, Sutherland Road Ditch East, McCallum Ditch or any other watercourse. Any machinery operating on-site will be inspected regularly by the contractor to ensure it is in good repair, clean and free of leaks and that deleterious substances such as fuel, oil or hydraulic fluid are not deposited on the Site. All generated waste will be appropriately collected, contained and transferred for recycling/disposal at appropriate locations and in accordance with applicable legislation, guidelines and best management practices. If contaminated soil is discovered during project activities, PWGSC Environmental Services should be contacted immediately to determine next steps. All reportable spills will be reported to the Provincial Emergency Program (PEP) 24-hour phone line at 1.800.663.3456.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Immediate	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place			
Monitoring:	None required			
Comments: Project activities could result in the mobilization of site soils, especially during precipitation events. Implementing the mitigation measures above will reduce the effect of soil mobilization to an insignificant level.				

Table 6 Potential Project / Valued Components Interactions and Mitigation Measures – Surface Water

Valued Component – Surface Water				
Potential Effect: Surface water contamination				
Potential Interaction	**Mitigation**			
Change to surface water quality in Tributary #2A, Sutherland Road Ditch East, McCallum Ditch and connected watercourses due to the release of deleterious substances (from erosion of exposed soil and spills during construction activities, or runoff.	Project activities will not include in-stream works. Cover any soils exposed as a result of project activities, until such time that re-vegetation can be implemented. Re-fuel and store fuels in secondary containment located a minimum of 30 m away from watercourses. Demolition of existing structures will be conducted so as to prevent the deposit or release of debris or deleterious substances into Tributary #2A, Sutherland Road Ditch East, or McCallum Ditch. Adequate erosion and sediment control materials will be available to isolate work areas and stop sediment or sediment-laden waters from entering Tributary #2A, Sutherland Road Ditch East, and McCallum Ditch. Ensure that manure pits are drained of any standing water before demolition begins. Project works will not occur outside the 2.5 m buffer around each building and/or manure pit.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Immediate	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place.			
Monitoring:	None required			
Comments: Project activities could result in the mobilization of site soils, especially during precipitation events. Implementing the mitigation measures above can reduce the effect of soil mobilization to an insignificant level.				

Table 7 Potential Project / Valued Components Interactions and Mitigation Measures – Groundwater

Valued Component – Groundwater				
Potential Effect: Groundwater contamination				
Potential Interaction	**Mitigation**			
Change to groundwater due to the release of deleterious substances (from mobility from potentially contaminated soils, from the release of contaminated water from the manure pits, and from spills during construction activities).	Re-fuel and store fuels in secondary containment located a minimum of 30 m away from watercourses. Soil or other materials excavated from the vicinity of the former heating oil AST (located underneath building 4) should be treated as potentially contaminated (i.e., stored on tarps) until testing proves otherwise. Ensure that manure pits are drained of any standing water before demolition begins.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Immediate	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place			
Monitoring:	None required			
Comments: Project activities could result in the movement of contaminants into groundwater, especially during precipitation events. Implementing the mitigation measures above can reduce the effect of soil mobilization to an insignificant level.				

Table 8 Potential Project / Valued Components Interactions and Mitigation Measures – Air Quality

Valued Component – Air Quality				
Potential Effect: Increase in air emissions during Project activities				
Potential Interaction	**Mitigation**			
Light and heavy equipment emissions during Project activities at the Site.	Maintain vehicles and equipment in good operating condition with exhaust emissions no greater than their design specifications. Operate equipment at optimum rated loads. Equipment and vehicles will be operated so as to minimize exhaust emissions by restricting idling of machinery when not in use. All equipment will be fitted with standard emission control devices in compliance with federal, provincial, regional district, and municipal regulations and standards.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Immediate	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place			
Monitoring:	None required			
Comments: Project related activities could impact existing air quality in the vicinity of the Site. The project-related effects on air quality are temporary and not measurable.				

Table 9 Potential Project / Valued Components Interactions and Mitigation Measures – Vegetation

Valued Component – Vegetation				
Potential Effect: Disturbance to vegetation				
Potential Interaction	**Mitigation**			
Potential disturbance to native vegetation at the Site. Introduction of invasive species through imported soil and/or equipment.	Limit vegetation and ground disturbance to areas required for the Project. Native trees will not be removed as a result of the Project. Restore all areas disturbed as a result of project works with a native seed mixture reflective of the plant community found in the area. Seeding must occur as soon as possible following disturbance in order to reduce the risk of invasive plants becoming established. Inspect and clean equipment to be free of invasive species, to avoid introducing invasive species to the Site.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Immediate	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place			
Monitoring:	None required			
Comments: Vegetation at the Site has been heavily impacted by anthropogenic activities. The majority of the Site contains buildings, pavement, manicured lawns, ornamental trees, and invasive species. The Project is viewed as having a positive effect on vegetation as native vegetation will be restored following demolition activities and a net gain of vegetation will occur.				

Table 10 Potential Project / Valued Components Interactions and Mitigation Measures – Wildlife

Valued Component – Wildlife					
Potential Effect: Disturbance to wildlife and nesting or feeding birds					
Potential Interaction	**Mitigation**				
Potential effects only if wildlife are present at the Site during the Project. Temporary disturbance of wildlife present above ground or in buildings during project activities. Disturbance, injury, or mortality to wildlife species nesting or roosting within the Site. Potential to overlap with bird or other wildlife breeding seasons in the event of project delays or timing changes. Potential impacts to wetland habitat via water quality impacts.	All works must comply with the requirements of the *Fisheries Act*, the *Species at Risk Act*, the *Migratory Birds Convention Act*, and all other applicable laws, legislation, and best management practices (BMPs) including ***Best Management Practices for Raptor Conservation During Urban and Rural Land Development in BC*** (Bentley et al. 2005), *Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia* (MWLAP 2004), and *Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia* (Cox and Cullington 2009). Conduct all project works within least risk timing windows for breeding birds (i.e., **August 1 to March 31**). Demolish Buildings 1 through 9 **between June and the end of February**, to avoid the Barn Owl breeding time period. Demolish manure pits and any other structures that may impact on OSF habitat **between mid-May and November**, to avoid the OSF breeding time period. Work areas must be kept clear of garbage. Food and food waste will be removed from the Site at the end of each day. Wildlife should not be approached, fed or harassed during project activities. Three months prior to the demolition of the buildings at Sutherland Yard, Barn Owl nest boxes will be installed. Nest boxes specifications and dimensions are detailed in **Appendix E**. A Qualified Environmental Professional (QEP) will be retained to monitor for Barn Owls during demolition works at Sutherland Yard. The QEP will survey the buildings and chase out any Barn Owl prior to the start of works. Should drainage of the manure pits be required, a Wildlife Sundry Permit, under the BC *Wildlife Act*, will be obtained from MoE in advance of any such works. A QEP will be on site during any draining of the two manure pits. If amphibians are observed during the draining, a permitted salvage will be performed by the QEP. Decommissioning of the manure pits must occur in a timely manner after the salvage and the pits must not be allowed to refill with water. Water should be removed slowly from the manure pits and fast drainage methods (i.e., via vactruck) are not recommended. Mitigation to protect downstream Northern Red-legged Frog habitat is described in **Table 6** – Surface Water and **Table 10** – Aquatic Species and Habitat				
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**	
Small	Reversible	Immediate	Short-term	Short	
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place.				
Monitoring:	Barn Owl during building demolition at Sutherland Yard; OSF during manure pit draining at Sutherland Yard.				
Comments: The potential exists for the disturbance of wildlife as a result of project activities. Implementing the mitigation measures and BMPs listed above can reduce the effects to an insignificant level.					

Table 11 Potential Project / Valued Components Interactions and Mitigation Measures – Fish and Fish Habitat

Valued Component – Aquatic Species and Habitat				
Potential Effect: Disturbance to fish habitat				
Potential Interaction	**Mitigation**			
Change to surface water quality in Tributary #2A, Sutherland Road Ditch East, and McCallum Ditch due to the release of deleterious substances (from erosion of exposed soil and spills during construction activities. Potential of disturbance to riparian vegetation along Tributary #2A, Sutherland Road Ditch East, and McCallum Ditch.	All work will comply with the requirements of the federal *Fisheries Act,* the provincial *Water Act* and all other applicable laws, legislation, and BMPs such as *Land Development Guidelines for the Protection of Aquatic Habitat* (Chillbeck *et al.*, 1993). *Water Act* and *Fisheries Act* notifications will be submitted prior to project activities. No instream works are required for the Project. Delineate a 2.5 m buffer around buildings/manure pits to be demolished with snow fencing or flagging, in order to protect riparian vegetation and reduce impacts outside of the project footprint (as identified in **Figure 2** and **3**). Silt fencing or a similar barrier will be erected around the project footprint to reduce the transport of sediment to nearby watercourses. Restore all areas disturbed as a result of project works with a native seed mixture reflective of the plant community found in the area. Limit the extent of vegetation clearing. All generated waste should be appropriately contained (to prevent erosion/run-off in the event of rain), collected, and recycled/disposed of at appropriate locations and in accordance with all applicable legislation, guidelines and best management practices.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Immediate	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place			
Monitoring:	None required.			
Comments: No instream works are required for the Project. Sediment and waste material has the potential to affect watercourses adjacent to the Sutherland Yard and Humphrey Yard. Implementing the mitigation measures and BMPs listed above can reduce the effects to an insignificant level.				

Table 12 Potential Project / Valued Components Interactions and Mitigation Measures – Species at Risk

Valued Component – Species at Risk				
Potential Effect: Disturbance to SAR				
Potential Interaction	**Mitigation**			
Disturbance to Barn Owl Injury or disturbance to OSF during demolition of the manure pits Downstream water quality impacts to Northern Red-legged Frog, Salish Sucker and/or Coastal Cutthroat Trout	Provide alternate Barn Owl roost site well in advance of demolition. Avoid breeding timing windows. See **"Wildlife" mitigations (Table 10).** Monitoring, salvage and relocation of OSF during manure pit drainage. Avoid breeding timing windows. See "Wildlife" mitigations (**Table 10**). See "Aquatic Species and Habitat" (**Table 11**) and "Surface Water" (**Table 6**) for mitigation.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Immediate	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place			
Monitoring:	Barn Owl, OSF (see "Wildlife")			
Comments: The potential exists for direct disturbance or habitat impacts to SAR as a result of project activities. With the application of mitigation measures listed in **Table 6** – Surface Water, **Table 10** – Wildlife and **Table 11** – Fish and Fish Habitat (including BMP documents), residual effects can be reduced to an insignificant level.				

Table 13 Potential Project / Valued Components Interactions and Mitigation Measures – Noise

Valued Component – Noise				
Potential Effect: Increase in noise during project activities				
Potential Interaction	**Mitigation**			
Project-related activities may cause elevated noise levels at the Site and in the immediate vicinity of the Site. Temporary disturbance to local residents as a result of project activities.	Contractors will be required to manage noise levels from construction equipment and vehicles through the use of standard noise reduction mufflers.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Local	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place			
Monitoring:	None required			
Comments: Project related activities could increase noise levels in the vicinity of the Site. The project-related effects on noise are will be small relative to background noise levels in the area, taking into account the quarry, rifle range, car racing track and agricultural activities that also produce ambient noise.				

Table 14 Potential Project / Valued Components Interactions and Mitigation Measures – Archaeology Resources

Valued Component – Archaeology Resources				
Potential Effect: Encounter unknown archaeological resources				
Potential Interaction	**Mitigation**			
The site has a high potential to contain unknown archaeological resources. No known archaeological resources are present at the Site. Archaeological potential mapping from the BC Ministry of Forests, Archaeology Branch indicates that Sutherland Yard has high potential to contain unknown archaeological resources. Humphrey Yard has areas of high and areas of no potential to contain unknown archaeological resources.	Ensure that employees and contractors involved in project construction are aware of and comply with, requirements regarding discovery of any archaeological resources / remains, including the following: • Archaeological resources / remains in the Province of BC are protected from disturbance, Intentional or accidental, by the *Heritage Conservation Act* (1996). In the event that archaeological resources / remains are encountered, all ground altering or other activities which threaten the archaeological site must be suspended at once and the area cordoned off; • It is an individual's responsibility to immediately advise the on-site Engineer or Proponent representative. In the case of human remains being encountered the site engineer or proponent representative will first notify the police. For archaeological resources / remains a qualified archaeologist will be promptly notified of the existence and location of the potential archaeological resource. Mitigation measures specified by the archaeologist, in consultation with affected First Nations, must be followed.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Irreversible	Immediate	Short-term	Short
Residual Effects:	Insignificant residual impacts expected with appropriate mitigation measures in place.			
Monitoring:	None required			
Comments: Limited ground excavation will occur with project decommissioning activities; however, project activities could result in the chance find of an archaeological resource. With the mitigation described above, project-related effects on archaeological resources will be small in magnitude.				

Table 15 Potential Project / Valued Components Interactions and Mitigation Measures – Health and Safety

Valued Component – Health and Safety				
Potential Effect:				
Potential Interaction	**Mitigation**			
For project workers potential interactions include: -Work around unsafe structures -Work around heavy machinery -Work on uneven surfaces -Work around hazardous materials in buildings -Work near contaminated soils Site access for non-authorized personnel	All health and safety measures as outlined in the project specifications should be adhered to. The use of personal protective equipment (PPE) and hygienic precautions to prevent exposure to hazardous material or other contaminants will be applied.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	Reversible	Immediate	Short-term	Short
Residual Effects:	No residual impacts are expected with appropriate mitigation measures in place			
Monitoring:	None required			
Comments: Project workers may be exposed to hazardous material at the Site; however, exposure can be limited with the appropriate PPE and hygienic precautions. Access to the Site will be restricted to authorized personnel only.				

6.0 CONSULTATIONS

6.1 PUBLIC CONSULTATION

The potential for public concern is minimal as a result of the project scope and location. Public consultation was not deemed necessary as part of this EEE.

6.2 ABORIGINAL CONSULTATION

Aboriginal consultation was not deemed necessary due to small spatial and temporal scale of the Project. CSC must continue to ensure the Crown's duty to consult with respect to crown conduct that may potentially have an adverse impact on established or potential Aboriginal or Treaty rights, as recognized and affirmed under section 35 of the *Constitution Act* (1982) is undertaken.

6.3 GOVERNMENT CONSULTATION

6.3.1 Federal

Federal and provincial authorities likely to have an interest in the Project were consulted by PWGSC Environmental Services during the course of this assessment. A project description was distributed to these federal and provincial authorities using the Federal Coordination Request (FCR) process. These authorities included:

- Environment Canada;
- DFO.

As a result of this consultation, DFO provided expert advice that was considered and incorporated in the environmental effects evaluation.

A summary of federal correspondence that has taken place can be found in **Table 16**, below.

Table 16 Federal Coordination Summary

Department/ Agency	Date of Correspondence	Content of Correspondence	Comments
Environment Canada	November 1, 2012	Project notification and description of project works	None to date
DFO	November 1, 2012	Project notification and description ofproject works	Re-seeding site with grass and proper erosion and sediment control measures until grass re-establishes will be sufficient for site restoration (Kahl 2013).

6.3.2 Provincial

A provincial *Water Act* Notification will be submitted to the Environmental Stewardship Division of the Ministry of Forests, Lands and Natural Resource Operations 45 days prior to the start of the Project. Hemmera consulted with the Archaeological Branch of the Ministry of Forest Resources and Natural Resource Operations concerning the potential for archaeological resources at the Site. The record of correspondence, dated November 15, 2012 can be viewed in **Appendix C**.

7.0 COMMENTS

7.1 EFFECTS

Potential effects of the Project are associated with decommissioning activities. With the recommended mitigation in place and good work practices, decommissioning effects will be of short duration and the potential zone of influence will be confined to the immediate vicinity of the work. No significant residual adverse effects are expected with the implementation of the mitigation measures described in **Tables 5** through **14**.

Any and all stipulations of federal, provincial, or municipal authorities and/or their officers must be strictly followed. As a best practice the most stringent standards must be used where applicable. Any discrepancies must be successfully resolved before the pertinent work may begin.

7.2 MITIGATION SUMMARY

7.2.1 Soil

- Cover any soils exposed as a result of project activities, and/or implement other erosion protection or sediment control measures until such time that vegetation can be re-established. Silt fencing or a similar barrier will be erected around the project areas to reduce the mobilization of sediment;
- Work and activities at the Site will be carried out in a manner to ensure that there is no discharge, either direct or indirect, of construction waste, excavation waste, oil, grease, or any substance deleterious to aquatic life to Tributary #2A, Sutherland Road Ditch East, McCallum Ditch or any other watercourse;
- Any machinery operating on-site will be inspected regularly by the contractor to ensure it is in good repair, clean and free of leaks and that deleterious substances such as fuel, oil or hydraulic fluid are not deposited on the Site;
- All generated waste will be appropriately collected, contained and transferred for recycling/disposal at appropriate locations and in accordance with applicable legislation, guidelines and best management practices;
- If any evidence of contamination (such as staining or odours) is detected underneath Building 4, or anywhere else on site during the demolition project, PWGSC will immediately be notified to determine next steps;
- All reportable spills will be reported to the Provincial Emergency Program (PEP) 24-hour phone line at 1.800.663.3456.

7.2.2 Surface Water

- Project activities will not include instream works;
- Cover any soils exposed as a result of project activities, until such time that re-vegetation can be implemented;

- Re-fuel and store fuels in secondary containment located a minimum of 30 m away from watercourses;
- Demolition of existing structures will be conducted so as to prevent the deposit or release of debris or deleterious substances into Tributary #2A, Sutherland Road Ditch East, or McCallum Ditch;
- Ensure that adequate erosion and sediment control materials are available to isolate work areas and stop sediment or sediment-laden waters from entering Tributary #2A, Sutherland Road Ditch East, and McCallum Ditch;
- Ensure that manure pits are drained of any standing water before demolition begins;
- Project works will not occur outside the 2.5 m buffer around each building and/or manure pit.

7.2.3 Groundwater

- Re-fuel and store fuels in secondary containment located a minimum of 30 m away from watercourses;
- Soil or other materials excavated from the vicinity of the former heating oil AST (located underneath Building 4) should be treated as potentially contaminated (i.e., stored on tarps) until testing proves otherwise;
- Ensure that manure pits are drained of any standing water before demolition begins.

7.2.4 Air Quality

- Maintain vehicles and equipment in good operating condition with exhaust emissions no greater than their design specifications;
- Operate equipment at optimum rated loads;
- Equipment and vehicles will be operated so as to minimize exhaust emissions by restricting idling of machinery when not in use;
- All equipment will be fitted with standard emission control devices in compliance with federal, provincial, regional district, and municipal regulations and standards.

7.2.5 Vegetation

- Limit vegetation and ground disturbance to areas required for the Project. Native trees will not be removed as a result of the Project;
- Restore all areas disturbed as a result of project works with a native seed mixture reflective of the plant community found in the area. Seeding must occur as soon as possible following disturbance in order to reduce the risk of invasive plants becoming established;
- Inspect and clean equipment to be free of invasive species, to avoid introducing invasive species to the Site.

7.2.6 Wildlife

- All works must comply with the requirements of the *Fisheries Act*, the *Species at Risk Act*, the *Migratory Birds Convention Act*, and all other applicable laws, legislation, and best management practices (BMPs) including *Best Management Practices for Raptor Conservation During Urban and Rural Land Development in BC* (Bentley et al., 2005), *Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia* (MWLAP, 2004), and *Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia* (Cox and Cullington 2009);
- Conduct all project works within least risk timing windows for breeding birds (i.e., August 1 to March 31);
- Demolish Buildings 1 through 9 between June and the end of February, to avoid the Barn Owl breeding time period;
- Demolish manure pits and any other structures that may impact on OSF habitat between mid-May and November, to avoid the OSF breeding time period;
- Work areas must be kept clear of garbage. Food and food waste will be removed from the Site at the end of each day;
- Wildlife should not be approached fed or harassed during project activities;
- Three months prior to the demolition of the buildings at Sutherland Yard, Barn Owl nest boxes will be installed. Nest boxes specifications and dimensions are detailed in **Appendix E**;
- A Qualified Environmental Professional (QEP) will be retained to monitor for Barn Owls during demolition works at Sutherland Yard. The QEP will survey the buildings and chase out any Barn Owl prior to the start of works;
- Should drainage of the manure pits be required, a Wildlife Sundry Permit, under the BC *Wildlife Act*, will be obtained from MoE in advance of any such works. A QEP will be on site during any draining of the two manure pits. If amphibians are observed during the draining, a permitted salvage will be performed by the QEP. Decommissioning of the manure pits must occur in a timely manner after the salvage and the pits must not be allowed to refill with water. Water should be removed slowly from the manure pits and fast drainage methods (i.e., via vactruck) are not recommended.

7.2.7 Aquatic Species and Habitat

- All work will comply with the requirements of the federal *Fisheries Act*, the provincial *Water Act* and all other applicable laws, legislation, and BMPs such as *Land Development Guidelines for the Protection of Aquatic Habitat* (Chilibeck et al. 1993);
- *Water Act* and *Fisheries Act* notifications will be submitted prior to project activities;
- No instream works are required for the Project;
- Delineate a 2.5 m buffer around buildings/manure pits to be demolished with snow fencing or flagging, in order to protect riparian vegetation and reduce impacts outside of the project footprint (as identified in **Figures 2** and **3**);
- Silt fencing or a similar barrier will be erected around the project footprint to reduce the transport of sediment to nearby watercourses;

- Restore all areas disturbed as a result of project works with a native seed mixture reflective of the plant community found in the area. Limit the extent of vegetation clearing;
- All generated waste should be appropriately contained (to prevent erosion/run-off in the event of rain), collected, and recycled/disposed of at appropriate locations and in accordance with all applicable legislation, guidelines and best management practices.

7.2.8 Species at Risk

- Barn Owl: Provide alternate roost site well in advance of demolition. Avoid breeding timing windows. See "Wildlife" mitigations (**Section 7.2.6**);
- OSF: Monitoring, salvage and relocation during manure pit drainage. Avoid breeding timing windows. See "Wildlife" mitigations (**Section 7.2.6**);
- Northern Red-Legged Frog, Salish Sucker and Coastal Cutthroat Trout: Avoid contamination of adjacent and downstream habitat. See "Fish and Fish Habitat" (**Section 7.2.7**) and "Surface Water" (**Section 7.2.2**) for mitigation.

7.2.9 Noise

- Contractors will be required to manage noise levels from construction equipment and vehicles through the use of standard noise reduction mufflers.

7.2.10 Archaeology Resources

- Ensure that employees and contractors involved in project construction are aware of and comply with, requirements regarding discovery of any archaeological resources / remains, including the following:
    - Archaeological resources / remains in the Province of BC are protected from disturbance, intentional or accidental, by the *Heritage Conservation Act* (1996). In the event that archaeological resources / remains are encountered, all ground altering or other activities which threaten the archaeological site must be suspended at once and the area cordoned off;
    - It is an individual's responsibility to immediately advise the on-site Engineer or Proponent representative.
- In the case of human remains being encountered the site engineer or proponent representative will first notify the police. For archaeological resources / remains a qualified archaeologist will be promptly notified of the existence and location of the potential archaeological resource. Mitigation measures specified by the archaeologist, in consultation with affected First Nations, must be followed.

7.2.11 Health and Safety

- All health and safety measures as outlined in the project specifications should be adhered to. The use of personal protective equipment (PPE) and hygienic precautions to prevent exposure to hazardous material or other contaminants will be applied;
- Accuracy and Compliance Monitoring

A follow-up program (as defined in S. 2(1) and as applicable to non-designated projects on federal lands) is a program for determining the effectiveness of any mitigation measures.

- ☒ Follow-up program is not likely required for this project. However, Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation measures were implemented. The proponent must provide Site access to Responsible Authority officials and/or its agents upon request.
- ☐ Follow-up program is required for this project. The proponent must provide Site access to Responsible Authority officials and/or its agents upon request.

8.0 DETERMINATION

The federal authority is required to provide a determination of the significance of environmental effects as a result of funding this project. The decision outlined below is based on the interpretation of environmental effects and mitigation measures described in Part D of this report.

Project Name: Environmental Effects Evaluation (EEE) – Correctional Service Canada, 3024 Sutherland Road and 4469 Humphrey Road, Agassiz, BC

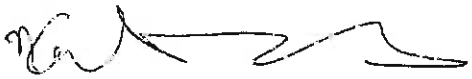
PWGSC Project #: R.060161.007

Location: Agassiz, BC

The Federal Authority has evaluated the project for significant adverse environmental effects as required under Section 67 of *Canadian Environmental Assessment Act* (CEAA), 2012. On the basis of this evaluation, the department has determined that the decision opposite the "X" applies to the proposed project.

- ☐ Project not likely to cause significant adverse environmental effects – proceed.
- ☒ Project not likely to cause significant adverse environmental effects with mitigation – proceed using mitigative measures as determined.
- ☐ Inadequate information available – further study and assessment is required.
- ☐ Project likely to cause significant adverse environmental effects that cannot be justified in the circumstances – project will not proceed.
- ☐ Project likely to cause significant adverse environmental effects that may be justified in the circumstances – refer to the Governor in Council for decision.

Prepared by:
Hemmera



Date: May 17, 2013

Kathy Chambers, Aquatic Biologist, M.Sc., R.P.Bio.
The above has completed this environmental effects evaluation (EEE) report to the best of their ability and knowledge.

Reviewed by:
Hemmera

Date: May 17, 2013

Ashleigh Ballevona, B.Sc., B.I.T., Environmental Specialist

Date: May 17, 2013

Paul McElligott, Ph.D., R.P.Bio., Project Director

The above have reviewed the environmental effects evaluation (EEE) report and agree that it meets the requirement of the Canadian Environmental Assessment Act, 2012.

APPENDIX B
Species at Risk

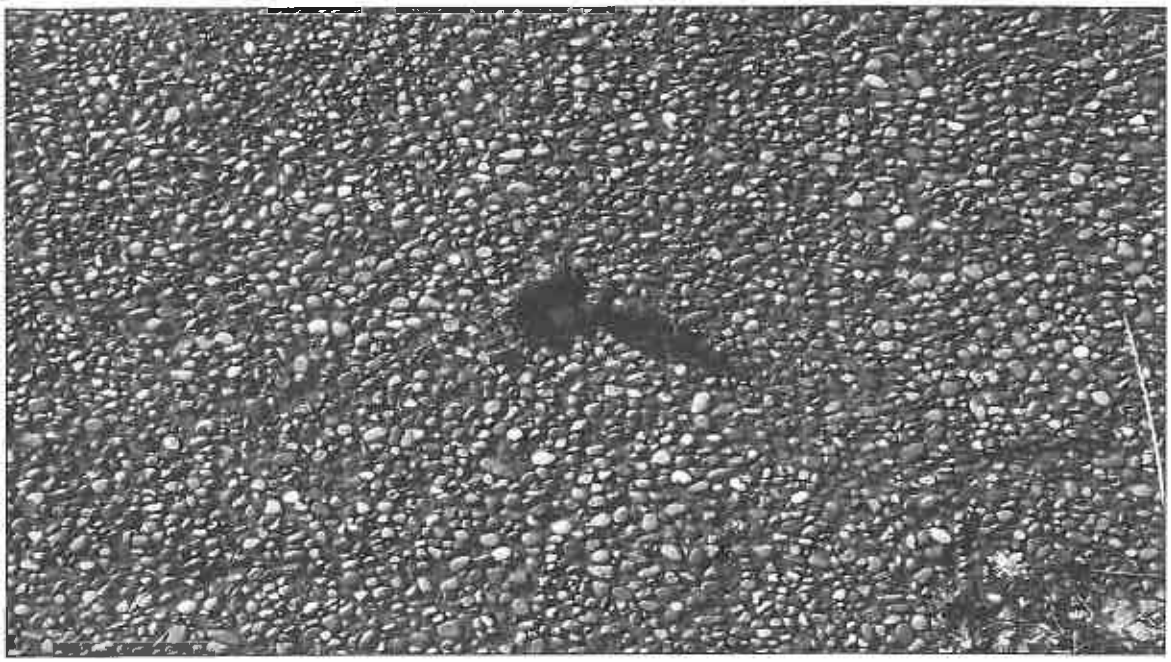


Photo 19: Coyote feces at Sutherland Yard. October 25, 2012.

Appendix B Species at Risk Potentially Located in the Project Area

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Vegetation						
Berula erecta	Cut-leaved Water Parsnip	Blue	-	Unlikely	No	Closest known mapped location is Smith Falls Creek at Cultus Lake, approximately 23 km southwest of the Site. Grows along moist streambanks, ditches, wetlands and open ditches.
Bidens amplissima	Vancouver Island Beggartick	Blue	Special Concern	Possible	Yes	The closest known mapped location is at Dunville Creek, approximately 10 km southeast of the Site. Habitat for this species includes moist-to-wet dtiches, lakeshores, marshes and meadows at low-to-mid elevations.
Carex comosa	Bearded Sedge	Red	-	Unlikely	No	Closest known mapped location is Kawkawa Creek near Hope, approximately 30 km northeast of the Site. Grows along marshes, lakeshores and wet meadows.
Carex interrupta	Green-fruited Sedge	Red	-	Possible	Yes	Closest known mapped location is Cultus Lake, approximately 23 kn southwest of the Site. Habitat for this species includes rich soils in low ground along streams and wet areas.
Carex scoparia	Pointed Broom Sedge	Blue	-	Unlikely	No	Closest known mapped location is at Fox Reach, more than 60 km northeast of the Site. Habitat for this species includes still and slow-moving water, in lakes, ponds and streams within low-to-mid elevations.
Carex vulpinoidea	Fox Sedge	Blue	-	Possible	Yes	Closest known mapped location is Chilliwack, approximately 12 km south of the Site. Habitat includes wet meadows, swamps, marshes and streambanks at low-mid elevations.
Ceratophyllum echinatum	Spring Hornwort	Blue	-	Unlikely	No	There are no mapped known locations of this species on the CDC. This species prefers to grow submerged in shallow waters along muddy margins of lakes, estuaries and riverbanks.
Helenium autumnale var. grandiflorum	Mountain Sneezeweed	Blue	-	Unlikely	No	Closest known mapped location is in Langley, more than 50 km southwest of the Site. This species prefers moist to mesic streambanks, meadows and forest openings in the lowland, steppe and montane zones.

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Hypericum scouleri ssp. nortoniae	Western St. John's Wort	Blue	-	Unlikely	No	There are no mapped known locations of this species in the Lower Mainland. Habitat for this species includes ponds, lakes and slow-moving streams in lowland and montane zones.
Juncus oxymeris	Pointed Rush	Blue	-	Unlikely	No	Closest known mapped location is at Sturgeon Slough, more than 55 km northeast of the Site. Habitat for this species includes marshes, wet meadows and forested areas.
Myriophyllum hippuroides	Western Water-milfoil	Blue	-	Unlikely	No	There are no mapped known locations of this species on the CDC. This species grows at low elevations in wet meadows and river banks.
Potamogeton nodosus	Long-leaved Pondweed	Red	-	Unlikely	No	Closest known mapped location is Hatzic Lake in Chilliwack, approximately 33 km east of the Site. This species grows in lakes, sloughs and wetlands at low elevations.
Verbena hastata var. *scabra*	Blue Vervain	Blue	-	Possible	Yes	Closest known mapped location is Cheam Lake, approximately 10 km southeast of the Site. Grows in wet ditches, meadows and wetlands.
Mammals						
Lepus americanus washingtonii	Snowshoe Hare, *washingtonii* subspecies	Red	-	Unlikely	No	This species is generally found in forested habitats where dense shrubs are present (CDC, 2013a). The project site does not contain suitable habitat for Snowshoe Hare.
Corynorhinus townsendii	Townsend's Big-eared Bat	Blue	-	Unlikely	No	Wintering locations used by this species are not present on site (caves and mine tunnels) nor are daytime roosting locations (caves and bridges). There is potential for this species to use the site for foraging and/or nighttime roosting (CDC, 2012a). The limited duration and size of project works are unlikely to result in project-related effects to foraging behaviour; project works are timed for daylight hours when bats would not be using buildings for roosting.

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Myotis keenii	Keen's Myotis	Red	-	Unlikely	No	This species is strongly associated with karst caves and cool, wet coastal montane areas for roosting and hibernating. Keen's Myotis forages in a range of open areas, including estuaries, riparian habitats, upland forest clearings and wetlands (COSEWIC, 2003). There is the potential for this species to use the site for foraging. The limited duration and size of project works are unlikely to result in project-related effects to foraging behaviour.
Sorex bendirii	Pacific Water Shrew	Red	Endangered	Unlikely	No	Habitat for this species (coniferous or mixed forests with downed logs) (Craig & Wilson, 2004; Craig, 2004) is not present at the project site.
Birds						
Ardea herodias fannini	Great Blue Heron, *fannini* subspecies	Blue	Special Concern	Yes	No	Great Blue Herons forage in tidal mudflats, marshes, ponds, sloughs, slow moving rivers, and wetlands. Nesting sites are typically situated in forests near to suitable foraging areas (COSEWIC, 2008a; Gebauer & Moul, 2001). Areas immediately adjacent to the project site could contain suitable foraging habitat; however no project-related effects are anticipated as the limited scale and duration of works are unlikely to affect foraging behaviour. Breeding habitat is not anticipated at the project site.
Butorides virescens	Green Heron	Blue	-	Possible	No	Green Heron forages in swamps, marshes and margins of ponds, rivers, lakes and lagoons, and nests in trees, thickets, and bushes over water (CDC, 2013b). Areas immediately adjacent to the project site could contain suitable foraging habitat; however no project-related effects are anticipated as the limited scale and duration of works are unlikely to affect foraging behaviour. Breeding habitat is not anticipated at the project site.

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Botaurus lentiginosus	American Bittern	Blue	-	Possible	No	American Bittern nests and forages in large open wetlands, including lake and pond edges where cattails, sedges or bulrushes are plentiful. This species also forages in other areas with dense herbaceous cover, such as shrubby marshes and wet meadows (CDC, 2013c). Areas immediately adjacent to the project site could contain suitable foraging habitat; however no project-related effects are anticipated as the limited scale and duration of works are unlikely to affect foraging behaviour. Breeding habitat is not anticipated at the project site.
Falco peregrinus anatum	Peregrine Falcon, *anatum* subspecies	Red	Threatened	Possible	No	Peregrine Falcon in the Lower Mainland nest on rock cliffs or bridges above the Fraser River, or on cliffs above large lakes or near estuaries (Cooper & Beauchesne, 2004a). Areas immediately adjacent to the project site could contain suitable foraging habitat; however no project-related effects are anticipated as the limited scale and duration of works are unlikely to affect foraging behaviour.
Accipiter gentilis laingi	Northern Goshawk, *laingi* subspecies	Red	Threatened	Unlikely	No	Northern Goshawk in western North America breed in areas with mature to old-growth forest. Foraging occurs in all layers of a forest, and use of edges and open areas are uncommon in coastal British Columbia (Cooper & Stevens, 2000). The project site does not contain suitable habitat for this species.
Megascops kennicottii kennicottii	Western Screech-owl, *kennicottii* subspecies	Blue	Special Concern	Possible	No	Western Screech-Owl, kennicottii subspecies is found in wooded habitats, generally those dominated by deciduous trees, in open woodlands and near agricultural areas (COSEWIC, 2002). The project site could contain suitable breeding/roosting habitat; however no project-related effects are anticipated on large trees that might be used for roosting/nesting.

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Asio flammeus	Short-eared Owl	Blue	Special Concern	Possible	No	Short-eared Owl breed and forage in large open areas with low vegetation (e.g., agricultural fields, open woodland, marshes and river valleys) Short-eared Owl nest on the ground (Bentley, Sopuck, & Demarchi, 2005; COSEWIC, 2008b). Areas immediately adjacent to the project site could contain suitable foraging and nesting habitat. The limited scale and duration of works are unlikely to affect foraging behaviour, and project activities are scheduled to occur outside of the typical breeding period for for Barn Owl in British Columbia (i.e., between early March and May (Cooper & Beauchesne, 2004b).
Tyto alba	Barn Owl	Blue	Special Concern	Yes	Yes	Primary foraging habitat for Barn Owl includes old agricultural fields, pasture, grassy roadside and marshes. Barn Owl nest in tree cavities, chimneys, abandoned buildings, bridges and nest boxes (COSEWIC, 2010). Areas immediately adjacent to the project site contain suitable foraging habitat and Barn Owl are known to nest in buildings at the Sutherland Yard. The limited scale and duration of works are unlikely to affect foraging behaviour, and project activities are scheduled to occur outside of the typical breeding period for Barn Owl in British Columbia (i.e., between early March and May (Bentley et al., 2005; COSEWIC, 2010)). Mitigation will be required for nest displacement impacts.
Hirundo rustica	Barn Swallow	Blue	-	Yes	No	Barn Swallow nests in barns or other buildings, under bridges and in caves. Forages on a wide variety of flying insects, generally flying very close to the ground (CDC, 2013d). Project activities are scheduled to occur within the least risk window for breeding birds (i.e., between August 1 and March 31 (Canada, 1994; MoE, 2012a)) and so are not expected to affect nests of this species. Areas immediately adjacent to the project site could contain suitable foraging habitat; however no project-related effects are anticipated as the limited scale and duration of works are unlikely to affect foraging behaviour.

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Chordeiles minor	Common Nighthawk	Yellow	Threatened	Possible	No	Common Nighthawk nests and forages in a variety of open spaces, including meadows, agricultural fields and flat building rooftops in urban areas (COSEWIC, 2007a). Project activities are scheduled to occur within the least risk window for breeding birds (i.e., between August 1 and March 31 (Canada, 1994; MoE, 2012a)) and so are not expected to affect nests of this species. Areas immediately adjacent to the project site could contain suitable foraging habitat; however no project-related effects are anticipated as the limited scale and duration of works are unlikely to affect foraging behaviour.
Icteria virens	Yellow-breasted Chat	Red	Endangered	Unlikely	No	Yellow-breasted Chat forage in the foliage and lower branches of low shrubs and herb layers of thickets, and breed in dense thickets around woodland edges, riparian areas and overgrown clearings or clearcuts (Gebauer, 2004). The project site does not contain suitable habitat for this species.
Contopus cooperi	Olive-sided Flycatcher	Blue	Threatened	Unlikely	No	Olive-sided Flycatcher is associated with open forest habitat containing tall trees or snags for perching (COSEWIC, 2007b). The project site does not contain suitable habitat for this species.
Patagioenas fasciata	Band-tailed Pigeon	Blue	Special Concern	Possible	No	Band-tailed Pigeon generally nests in forested habitat but will also forage in cultivated areas, suburban gardens and parks (CDC, 2013e). Areas immediately adjacent to the project site could contain suitable foraging habitat; however no project-related effects are anticipated as the limited scale and duration of works are unlikely to affect foraging behaviour.

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Amphibians						
Rana aurora	Northern Red-legged Frog	Blue	Special Concern	Possible	Yes	Northern Red-legged Frog occupy a variety of wetland habitat, but prefer slow moving water and plentiful emergent vegetation (Maxcy, 2004). This species has been documented in the vicinity of the Site (Keystone, 2006, 2007). Watercourses adjacent to the project site could contain suitable habitat, and have connectivity to areas where this species has been observed. Project works will not include instream works, but mitigation will be required to avoid indirect effects to this species due to water quality concerns associated with surface water runoff.
Rana pretiosa	Oregon Spotted Frog	Red	Endangered	Possible	Yes	The Site is located within proposed critical habitat for Oregon Spotted Frog (EC, 2012), and may contain breeding, hibernating and foraging habitat for this species. Project works will be timed to avoid the breeding window for Oregon Spotted Frog (i.e., between February and April (MoE, 2012b; MWLAP, 2004)), but mitigation will be required to avoid effects to this species.
Anaxyrus boreas	Western Toad	Blue	Special Concern	Possible	No	Western Toads occupy a variety of habitat including shallow, littoral zones of lakes, wetlands, and roadside ditches (CDC, 2012b). This species has been documented in the vicinity of the Site (Keystone, 2006, 2007). The project site could contain suitable migration / hibernation habitat; however no project-related effects are anticipated as work will be completed outside of migrating periods and will not impede toad migration from terrestrial to breeding habitat. Western toad hibernation is poorly known and unable to be predicted.

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Reptiles						
Charina bottae	Northern Rubber Boa	Yellow	Special Concern	Possible	No	Habitat for this species includes woodlands, forest clearings, and meadows, generally not far from water (CDC, 2012c). The project site may contain some suitable habitat; however no project-related effects are anticipated given the mobility of this species, and small scale and limited duration of works.
Gastropod						
Allogona townsendiana	Oregon Forestsnail	Red	Endangered	Unlikely	No	Oregon Forestsnail inhabits moist deciduous or mixed forests, often found in areas containing a mixture of Bigleaf Maple and Stinging Nettle (MoE, 2012b). The project site does not contain suitable habitat for this species.
Insects						
Danaus plexippus	Monarch	Blue	Special Concern	Unlikely	No	Monarchs migrate to low-elevation areas of southern BC each summer. Monarchs eat and lay eggs on milkweed (CDC, 2012d). The project site does not contain suitable habitat and plant species (i.e. milkweed).
Euphyes vestris	Dun Skipper	Blue	Threatened	Unlikely	No	Habitat for Dun Skipper includes both wetlands and low moist spots in field, meadows and similar locations that would not qualify as palustrine (CDC, 2013f). The project site may contain suitable habitat for the Dun Skipper; however no project-related effects are anticipated given the mobility of this species, and small scale and limited duration of works.
Argia emma	Emma's Dancer	Blue	-	Unlikely	No	In BC, Emma's Dancer is found along rivers, creeks and sometimes wave-washed beaches (CDC, 2012e). The project site may contain suitable habitat for the Emma's Dancer; however no project-related effects are anticipated given the mobility of this species, and small scale and limited duration of works.
Sympetrum vicinum	Autumn Meadowhawk	Blue	-	Possible	No	In BC, Autumn Meadowhawk can be found in ponds, slow streams and lakes with dense, emergent vegetation (CDC, 2012f). The project site may contain suitable habitat for the Autumn Meadowhawk; however no project-related effects are anticipated given the mobility of this species, and small scale and limited duration of works

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Epitheca canis	Beaverpond Baskettail	Blue	-	Possible	No	Beaverpond Baskettail prefers boggy ponds and backwaters of slow-moving streams (CDC, 2013g). The project site may contain suitable habitat for this species; however no project-related effects are anticipated given the mobility of this species, and small scale and limited duration of works.
Erythemis collocata	Western Pondhawk	Blue	-	Unlikely	No	Preferred habitat of Western Pondhawk includes ponds and marshy lakes, especially with floating plants (CDC, 2013h). The project site does not contain suitable habitat for this species.
Erynnis propertius	Propertius Duskywing	Blue	-	Possible	No	Propertius Duskywing is typically associated with open Garry Oak stands; however a Fraser Lowland population exists which has adapted to an unknown larval host plant. This species utilizes meadows, forest edges and hillsides (Zevit, 2011). The project site may contain suitable habitat for this species; however no project-related effects are anticipated given the mobility of this species, and small scale and limited duration of works.
Fish						
Catostomus platyrhynchus	Mountain Sucker	Blue	-	Unlikely	No	Mountain Sucker are found in side channels associated with mid-river gravel bars of the Fraser River between Hope and Chilliwack (McPhail, 2007) but have not been documented in McCallum Ditch or Mountain Slough (FISS, 2012).
Catostomus catostomus	Salish Sucker	Red	Endangered	Yes	Yes	Salish Sucker have been confirmed within McCallum Ditch (DFO & Canada, 2010; FISS, 2012). Project works will not include instream works, but mitigation will be required to avoid indirect effects to this species due to water quality concerns associated with surface water runoff.

Scientific Name	English Name	CDC Ranking*	SARA Schedule 1**	Present (Yes/ Possible/ Unlikely/No)	Potentially Affected (Yes/No)	Rationale
Oncorhynchus clarkii clarkii	Coastal Cutthroat Trout	Blue	-	Possible	Yes	Historical occurrences of Coastal Cutthroat Trout have been reported in Mountain Slough along the southern boundary of Kent Institution (FISS, 2012; Keystone, 2007). Project works will not include instream works, but mitigation will be required to avoid indirect effects to this species due to water quality concerns associated with surface water runoff.
Salvelinus confluentus	Bull Trout	Blue	-	Unlikely	No	Bull Trout are a cold-water species and are rarely encountered in environments where the temperature exceeds 15°C for prolonged periods (McPhail, 2007). They are typically found in headwater streams, the bottom of deep pools in cold rivers and in coldwater lakes. This species prefers watercourses with moderate to fast currents and low levels of fine substrate sediments (CDC, 2013i). Watercourses adjacent to and immediately downstream of the project site do not fit these criteria.

Notes: * The BC Conservation Data Centre (CDC) ranks species as red-listed (extirpated, endangered or threatened), blue-listed (of special concern), or yellow –listed (all other species not of special concern).

** Schedule 1 of the *Species at Risk Act* (SARA) is a federal inventory of wildlife species at risk. COSEWIC (Committee on the Status of Endangered Wildlife in Canada) assesses and designates which wildlife species are in some danger of disappearing from Canada.