PRE-CONSTRUCTION DESIGNATED SUBSTANCES

AND

HAZARDOUS BUILDING MATERIALS ASSESSMENT

Sewage Processing Plant Control Upgrades

and

Third Treatment Train Installation

at the

Sewage Processing Plant (B18)

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Project No: 39673

November 6, 2020

Report # - COS-08963-6NOV2020

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1.0 EXECUTIVE SUMMARY

Center of Site Industrial Safety was requested to conduct a pre-construction designated substances and hazardous building materials assessment of select areas at the Bruce Nuclear Generating Station located at 177 Tie Road in Tiverton, Ontario.

The areas assessed (subject area) in the assessment include the following:

- Sewage Processing Plant(SPP) (B18) – Main Building – Ultraviolet (UV) Treatment and Magnesium Addition Treatment Building, Process Tanks and surrounding infrastructure (firewater systems etc.)



The scope of the work will involve upgrading the SPP's control systems and to optimize the current overall control strategy. This will include the SPP's monitoring systems required per Bruce Power's Environmental Compliance Approval (ECA) and the Municipal Industrial Strategy for Abatement (MISA) program requirements. This scope of work includes the following for the Control Upgrades:

- Electrical/Control Preparation - Installation of electrical duct bank, routing of new cable/conduit for power/control wiring throughout SPP
- SPP UV System Upgrades
- MISA System Upgrades
- Raw Sewage Pump Variable Frequency Drive (VFD) Updates
- Return Activated Sludge (RAS) / Waste Activated Sludge (WAS) Valve Upgrades
- Effluent Flow Measurement Upgrades
- Master SPP Control System
- Supervisory Control and Data Acquisition (SCADA) Integration

The scope of work includes the following for the Third Treatment Train installation:

- Construction of near identical third treatment train built north of the current trains
    - plug flow conventional activated sludge aeration tank
    - rectangular final settling tank

    - two stage aerobic digester
    - Return Activated Sludge (RAS) / Waste Activated Sludge (WAS) pumps
    - Four positive displacement (PD) lobe type blowers, 2 x190 L/s, 2 x 120 L/s
- Third train will receive raw wastewater from the SPP EQ tank
- Discharge treated secondary effluent to the existing SPP UV disinfection system
- Master SPP control system similar to upgrades to existing trains

The SPP has a series of concrete basins and tanks that hold the wastewater during the biological treatment process, and contain the mechanical equipment required for the treatment process. Sewage processing is done in two basic steps: primary treatment and secondary treatment.

The purpose of the assessment was to identify potential designated substances and hazardous building materials that may require special attention prior to the planned Project: 39673. The work was carried out in accordance with the requirements of the Ontario Occupational Health and Safety Act (OHSA). The designated substances assessment list includes those substances designated under the OHSA and included (but were not limited to) asbestos, lead, mercury and silica as the most likely to be present. In addition to designated substances, the hazardous building materials considered in this assessment included: polychlorinated biphenyls (PCBs); ozone-depleting substances (ODSs); urea-formaldehyde foam insulation (UFFI); and mould.

Based on the visual assessment and laboratory analysis, designated substances and hazardous building materials were identified to be present. Table 1 below provides a summary of the materials identified and recommendations on their management.

Complete commentary on each of the designated substances in the project area can be found in the body of this report. The executive summary is not intended to substitute for the complex report, nor does it discuss certain specific issues documented within the report.

Table 1 Summary of Findings

Building Materials	Comments
Asbestos	Friable Asbestos Containing Material: 3 materials were found to be ACM. Non-Friable Asbestos Containing Material: 14 materials were found to be ACM. In addition, drawing NK37-DDE-10200-0101-00, "Site Plan", Sewage Treatment Plant, indicates the presence of asbestos on the cement drain with a 2" diameter domestic water pipe tapped from a 12" diameter asbestos cement drain (transite piping). As these pieces of equipment and components are sub-grade all similar equipment and components have the potential to be ACM. Note: All similar materials as noted above shall be treated as positive ACM throughout the building and assessed areas. Presumed Asbestos Containing Materials (PACM): • Underground piping, associated elbows and joint connections and associated materials (caulking, mastic etc.). • Fire rated doors • Materials submerged in water/sewage processes (e.g., pipes, fittings, connectors) As these materials are known to have been manufactured with asbestos, they should be presumed to be asbestos-containing unless proven otherwise by laboratory analysis.
Lead	Samples of 178 paint applications were analyzed for lead content concentration >1000ppm bulk or >0.1% or >1ug/cm^2 XRF. Fifty five (55) of the paint applications were found to be considered "lead-containing material. Lead may also be present in the following materials: • Other coating applications not tested • Older electrical wiring materials and sheathing • Solder used on domestic water lines • Solder used in bell fittings for cast iron pipes • Solder used in electrical equipment • Vent and pipe flashings • Plastic materials
Mercury	Mercury vapour is likely to be present in lighting indoors and outdoors with

	both fluorescent and mercury vapour light bulbs. Mercury may also be present in some switches on relay panels, thermostats, paints and adhesives as noted on documentation within.
Silica	The presence of silica in building materials such as concrete foundations, floors, walls, columns, masonry, stone, cement, sand, mortar and drywall etc. is presumed to be present throughout the subject location at the SPP. These types of materials were prevalent throughout the building structures and require consideration in advance of their disturbance.
Polychlorinated Biphenyls (PCBs)	PCBs may be present in the fluorescent light ballasts throughout the SPP. PCBs may also be present in dielectric fluid filled electrical equipment such as switch gears, motors or pumps, capacitors, plastics, molded rubber parts, applied dried paints, coatings or sealants, caulking, adhesives, paper, sound-deadening materials, insulation, or felt and fabric products such as gaskets. Bruce Power COS Engineering (Responsible System Engineer (RSE)) has confirmed that there are no transformers inside or outside the facility at the SPP that contain PCBs.
Ozone-Depleting Substance (ODS)	The HVAC unit attached to the exterior west wall of the main building was found to contain R22 as indicated on the manufacturers placard on the unit. R22 is a hydrochlorofluorocarbon or (HCFC) and oxygen depleting substance.
Mould	At the time of the field inspection, there was no obvious evidence of mould, moisture or water damage. However, previous water ingress was observed in the basement of the main SPP building in addition to there is significant rusting around the double exterior door in the Main Floor Electrical Room. All equipment that may have previously had leaks could also have the potential upon removal to have some possible presence of mould growth that is hidden on the equipment or on surfaces, cavities, penetrations, supports and/or surfaces etc.
Urea Formaldehyde Foam Insulation (UFFI)	Evidence of the application of UFFI was not observed.
Other Designated Substances	Acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxides, isocyanates, and vinyl chloride are not typically a concern in building materials, and therefore these substances were not investigated.

The statements made in this Executive Summary text are subject to the same limitations included in this report and are to be read in conjunction with the remainder of this report.

2.0 INTRODUCTION

The Site Services Industrial Safety workgroup was requested to conduct a pre-construction designated substances and hazardous building materials assessment of select areas. Section 30 of the Ontario OHSA R.S.O. 1990 states the following (1): *"Before beginning a project, the Owner shall determine whether any designated substances are present at the project site."* Section 30 (2) of OHSA further requires: *"If any work on a project is tendered, the person issuing the tenders shall include, as part of the tendering information, a copy of the list referred to in subsection (1)."* Lastly, Section 30 (3) of the OHSA requires: *"An owner shall ensure that a prospective constructor of a project on the owner's property has received a copy of the list referred to in subsection (1) before entering into a binding contract with the constructor."* This report also fulfills the requirements of Section 10 of O. Reg. 278/05, Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations. There are eleven designated substances subject to special regulation under the Occupational Health and Safety Act. Of these eleven, asbestos, lead, mercury, and silica are commonly found in buildings and can impact construction, demolition, and renovation projects.

The areas assessed (subject area) in the assessment include the following:

- Sewage Processing Plant (B18) – Main Building – UV Treatment and Magnesium Addition Treatment Building, Process Tanks and surrounding infrastructure (firewater systems etc.)

This scope of work includes the following:

- Electrical/Control Preparation - Installation of electrical duct bank, routing of new cable/conduit for power/control wiring throughout SPP
- SPP UV System Upgrades
- MISA System Upgrades
- Raw Sewage Pump VFD Updates
- RAS/WAS Valve Upgrades
- Effluent Flow Measurement Upgrades
- Master SPP Control System
- SCADA Integration

The scope of work includes the following for the Third Treatment Train installation:

- Construction of near identical third treatment train built north of the current trains
    - plug flow conventional activated sludge aeration tank

- rectangular final settling tank
- two stage aerobic digester
- Return Activated Sludge (RAS) / Waste Activated Sludge (WAS) pumps
- Four positive displacement (PD) lobe type blowers, 2 x190 L/s, 2 x 120 L/s

- Third train will receive raw wastewater from the SPP EQ tank
- Discharge treated secondary effluent to the existing SPP UV disinfection system
- Master SPP control system similar to upgrades to existing trains

The Sewage Processing Plant (SPP) was designed by Gore and Storrie Limited and constructed at the Bruce site in 1976. A series of concrete basins and tanks hold the wastewater during the biological treatment process, and contain the mechanical equipment required for the treatment process. Sewage processing is done in two basic steps: primary treatment and secondary treatment. Operating conditions of the SPP are indicated in the SPP Control Building. The purpose of the assessment was to identify potential designated substances and hazardous building materials that may require special attention prior to the planned Project: 39673. The work was carried out in accordance with the requirements of the Ontario *Occupational Health and Safety Act* (OHSA). The designated substances assessment list includes those substances designated under the OHSA and included (but were not limited to) asbestos, lead, mercury and silica as the most likely to be present. In addition to designated substances, the hazardous building materials considered in this assessment included: polychlorinated biphenyls (PCBs); ozone-depleting substances (ODSs); urea-formaldehyde foam insulation (UFFI); and mould.

The site work was conducted by Safety Specialist, Laura Wolfe and Safety Technician, Matt Willis between November 27, 2019 and December 4, 2019.

The following individuals accompanied Site Services Industrial Safety on February 13, 2020:

Kevin Attenborough (Bruce Power Civil Maintainer, Insulator)
Mark Osborne (Bruce Power Civil Maintainer, Insulator)

2.1 Understanding of the Project

This assessment was completed as a measure of diligence in maintaining compliance with provincial regulations pertaining to the identification of designated substances and hazardous materials prior to the planned Project: 39673. Designated substances and hazardous building materials may be present including, but not limited to asbestos, lead, mercury, silica, PCBs, ODSs and mould.

3.0 SCOPE

The scope of the work for this assessment involved the following:

- A review of the existing information, including site drawings, previous assessments and/or abatement documentation and discussions with site personnel, where available

- A visual assessment of readily accessible areas for the presence of designated substances and hazardous building materials
- The collection of representative bulk samples from the building materials suspected of containing asbestos fibres by Bruce Power Civil Maintainer, Insulator
- Direct reading measurements with the Thermo Fisher Scientific Niton Analyzer XL2 for the determination of lead content for all painted surfaces, Bruce Power Safety Technician
- Submission of samples collected for laboratory analysis
- Evaluation and interpretation of the field findings and analytical results to develop conclusions and recommendations pertaining to designated substances and hazardous building materials identified to be present

3.1 Limitations

This report reflects the observations made within accessed areas and the results of analyses performed on specific materials sampled, as indicated herein. Analytical results reflect the sampled materials at the specific sampling locations.

3.1.1 Physical and Sampling Limitations

Sampling was conducted pertaining to suspected ACMs and suspected lead-containing paints (LCPs) only. The assessment for the presence of other designated substances and hazardous building materials was visual in nature and was conducted pertaining to readily visible surfaces within accessible spaces only. Concealed spaces were assessed via existing access panels, where present. Interior and exterior finishes, solid ceilings, walls, flooring and structural elements were not removed to access concealed areas. Materials submerged in water/sewage processes were not accessible.

Due to limitations on the agreed to scope of work for this project as well as physical limitations in accessing concealed areas and limitations associated with working in occupied/operational spaces, there are specific limitations to the information that can be provided to each hazardous building material considered in this assessment, as outlined below the presence and the asbestos content of some building materials could neither be confirmed or denied.

Building materials that may contain asbestos but were not accessible for sampling include, but are not limited to the following:

- Sub-grade materials (e.g., asbestos cement drainage pipe)
- Insulation material present inside walls (e.g., suspected asbestos-containing vermiculite insulation inside concrete block and/or brick walls)
- Woven tape inside duct connection joints
- Mechanical (e.g., piping and ducting) insulation within wall cavities, crawlspaces tunnels or other concealed or confined spaces

- Penetrations including grouted sleeves, joint sealant, glazing
- Insulation materials inside building materials, including fire doors and window frames
- Heating, ventilation and air conditioning (HVAC) units mechanical inner linings and/or inner ducting insulation
- Heat protection and insulting materials inside mechanical and electrical installations and tight fixtures
- Materials submerged in water/sewage processes (e.g., pipes, fittings, connectors)
- Materials exposed after removal of equipment from walls, cavities, penetrations, supports or surfaces

Samples of paint applications suspected to contain lead were collected 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. NK27-EDE-60000-0103-00, Instrument Panel Wiring Diagram-1, Sewage Treatment Plant indicates battery charger cab, which was not accessible during the walk down inspection, which may contain lead.

The presence of mercury or mercury-containing equipment in inaccessible areas or as internal parts of HVAC mechanisms or other equipment was not assessed.

Due to height restrictions and the risk of electrical shock in handling operational light fixtures, the ballasts present in the fixtures observed, were not inspected for PCB labels or other PCB identifiers. Conclusions and recommendations regarding the presence of PCBs are based on limited observations and information provided regarding lighting renovations and is presented to provide guidance regarding the likelihood that PCB-containing equipment is or is not present. The exact extent and/or number of fluorescent lamp ballasts containing PCBs, if any, will not be commented on.

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. The conclusions made in this report provide description(s) of the potential source(s) of moisture that may have led to suitable conditions for mould growth, only in those cases where potential source(s) of moisture were identified. The visual assessment did not include an intrusive assessment. These conclusions will not necessarily identify all sources of moisture leading to suitable conditions for mould growth 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. Previous water ingress was observed in the basement of the main SPP building in addition to there is significant rusting around the double exterior door in the Main Floor Electrical Room. Maintenance was performed on the areas in the basement; however it is likely that should these areas be impacted with construction, mould is likely to be discovered. All equipment that may have previously had leaks could also have the potential upon removal to have some possible presence of mould growth that is hidden on the equipment or on surfaces, cavities, penetrations, supports and/or surfaces etc.

In general, the assessment for the presence of other designated substances and hazardous building materials was visual in nature and was conducted pertaining to readily visible surfaces within accessible accessed spaces only. The potential presence of hazardous building materials in inaccessible areas not assessed includes, but is not limited to: ceiling spaces, wall cavities, crawlspaces, buried materials and submerged materials.

3.1.2 Project-Specific Limitations

The areas included in this assessment were limited to the following:

- Sewage Processing Plant (B18) – Main Building – UV Treatment and Magnesium Addition Treatment Building, Process Tanks and surrounding infrastructure (firewater systems etc.)

The following areas were not accessed, for the reasons indicated:

- Destructive testing was not conducted as part of this assessment
- Concealed locations such as wall cavities, enclosed mechanical/pipe shafts etc.
- Roof sections of the Sewage Processing Plant and UV Building (not impacted by project activities)
- Subgrade areas and submerged areas within the SPP, for accessibility reasons.
- Possible contaminants in the soil and groundwater of the site, underground storage tanks, buried piping and vessels.
- Paint samples were not collected from live electrical equipment (health and safety reasons).
- Motors, blowers, electrical panels etc. were not de-energized or disassembled to examine concealed conditions

Building materials that are not detailed within this survey due to inaccessibility and/or uncovered during remediation activities should be assessed by a qualified person prior to their disturbance.

The materials on the exterior of the roof were not assessed as a part of this assessment due to project activities not impacting the roof. The potential presence of ACM cannot be ruled out without destructive testing to the roof. Materials that may be present in the assessment area that were not tested intrusively should be considered asbestos-containing until proven otherwise. This would also include materials such as fire door cores, roofing materials, materials submerged in water/sewage processes and underground services or piping. These materials shall be sampled immediately prior to renovation/demolition work if they are to be removed or have a potential to be disturbed.

3.1.3 Information from Previous Reports

The following report(s) outlined were reviewed for information purposes only. Although the information provided in the documentation outlined in Section 4.2 was reviewed and considered in developing the sampling plan, the documentation was not relied on this documentation for sample locations.

4.0 DESIGNATED SUBSTANCES AND HAZARDOUS BUILDING MATERIALS ASSESSMENT

The results of the assessment for each of the considered designated substances and hazardous materials are provided in the following sub-sections. Refer to Appendix A for regulatory framework and relevant legislation with respect to designated substances and hazardous building materials. Selected site photographs of sample locations are provided in Appendix C, E, H and I.

4.1 FACILITY DESCRIPTION

Bruce Nuclear Generating Station is located at 177 Tie Road in Tiverton, Ontario. The Sewage Processing Plant (SPP) receives and treats sanitary sewage. The SPP consists of two equally sized treatment trains. The SPP receives wastewater influent from a site wide collection system composed of 3 kilometers of gravity sewers, 7 km of force mains and 25 individual pumping stations. The majority of the control systems are original to the construction of the SPP. The typical structural components and finishes associated with the building accessed consist of precast wall panels, Portland cement, concrete block walls, insulated metal siding and concrete exterior/interior walls, with various types of flooring including cement, metal grating and metal sheeting. Metal flashing is located around the perimeter of the roof (refer to drawing 0124-DEE-26000-6106). The original roof had 3 different areas, area #1 had a bitumen roofing system which included 4-ply membrane, ¾" fiberglass insulation, and two ply modified bitumen membranes and a concrete deck. Area #2 consisted of a 4 ply built up roofing system on top of a metal deck. This system included gypsum board, 4 ply membrane and pea gravel. Area #3 is comprised of a concrete roof. The new roof (current roof) is comprised of a 2 ply modified bituminous membrane roof system complete with, thermal barrier, vapour retarder, thermal insulation, tapered insulation, recovery board, base sheet membrane, cap sheet membrane flashings. With new pre-finished metal counter-flashings and metal cap flashing on the exterior parapet wall. See drawing with detailed information of new roof, Appendix J. The building is approximately 3200sq ft. and was built in ~1977. The foundations of the tanks were made of Class "A" concrete.

The building era is known to include the use of asbestos-containing materials and other designated substances.

4.2 DOCUMENT REVIEW

The following documents were reviewed:

NK37-DDE-79600-0102-00, "Tanks – Plans & Details" Sewage Treatment Plant
NK37-DDE-10200-0101-00, "Site Plan"- Sewage Treatment Plant
NK37-DDE-56000-0101-00, "Power, Lighting & Public Address System Layout", Sewage Treatment Plant
NK37-DDE-57000-0101-00, "Control Building Basement Details", Sewage Treatment Plant
NK37-DDE-53000-0102-00, "Control Building Power", Sewage Treatment Plant
NK37-DDE-53000-0103-00, "Power & Lighting Tanks" Sewage Treatment Plant
NK37-DDE-27640-0104-00, "Control Building Plans", Sewage Treatment Plant
NK37-DDE-27640-0105-00, "Control Building Sections" – Sewage Treatment Plant
NK37-EDE-60000-0103-00, "Instrument Panel Wiring Diagram – 1", Sewage Treatment Plant
NK37-EDE-60000-0107-00, "Control Schematics – 2", Sewage Treatment Plant
NK37-DDE-10200-0101-00, "Site Plan", Sewage Treatment Plant

Bruce Power (BP) SPP Controls Upgrade – 90% Design Submission Ref. No. 11185554 - GHD
NK37-SOW-67170-00001, Project # 39485 – Sewage Processing Plant Controls Upgrade
Bruce Power Designated Substance Assessment for Asbestos, B-REP-08963.211-00001, Rev 002, dated January 2016
Bruce Power Designated Substance Assessment for Silica, B-REP-08963-00001, Rev 004, dated April 6, 2016
Bruce Power Designated Substance Assessment for Lead, B-REP-08963-00002, Rev 004, dated June 23, 2015
Bruce Power Designated Substance Assessment for Mercury, B-REP-08963-00010, Rev 003, dated June 11, 2015
Bruce Power Asbestos Master Database – B18 - Sewage Processing Plant B18
Bruce Power COS Lead in Paint Inventory
Ontario Occupational Health and Safety Act and applicable Regulations including;
Designated Substances – Ontario Regulation 490/09; and
Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations – Ontario Regulation 278/05.
Ministry of Labour Guideline, "*Lead on Construction Projects*", dated April 2011,
Ministry of Labour Guideline, "Silica on Construction Projects", dated April 2011.
Environment Canada Document, "*PCB Identification of Lamp Ballasts Containing PCBs*" dated August 1991.
Environmental Abatement Council of Ontario, *"EACO Mould Abatement Guidelines Edition 3",* dated 2015.

4.3 ASBESTOS

Floor plans showing the locations of bulk samples are provided in Appendix E. The Bulk Analysis for the Determination of Asbestos Containing Material - Photos are provided in Appendix C. Detailed information regarding the bulk sampling for the determination of ACM is provided in Appendix B which includes:

- Room component that was sampled
- Location of the sample within the room space
- ACM description
- Estimated quantity
- Original sample number or representative sample number
- Friability
- Condition

A copy of the laboratory Certificate of Analysis is provided in Appendix D. The evaluation criterion for assessing ACMs is provided in Appendix F.

4.3.1 Methodology

It is Site Services Industrial Safety Department's understanding that the facility was constructed prior to 1974. This construction time period is consistent with those dates when designated substances and hazardous building materials were commonly used.

A visual assessment of accessible areas was undertaken in order to check for the presence of materials suspected of containing asbestos. Locations to collect discrete bulk asbestos samples of suspect building materials were identified. Samples of representative materials were then collected at these locations.

A visual assessment of the condition and accessibility was completed for each occurrence of an ACM. BP-SM-00045, Bruce Power Asbestos Control Program was used for the criterion that was applied in evaluating the presence of ACMs (condition), where applicable.

Samples of suspect ACMs from various building materials were collected by Bruce Power Civil Maintainers (Insulators) and previous sampling was conducted by qualified workers as stated on the Bruce Power Asbestos Inventory COS Sewage Processing Plant – B18. Bulk samples were analyzed at the Site Services Chemistry laboratory for analysis using Polarized Light Microscopy (PLM) with dispersion staining. The Bruce Power Laboratory follows NK37-CLP-78200-00005 which refers to both the National Institute for Occupational Health and Safety (NIOSH) 9002 Method and U.S. EPA/600/R-93/116 Method. The Bruce Power Laboratory Technicians participate in the American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT) program. ACMs in Ontario are defined as a material that contains 0.5% or more asbestos by dry weight. The asbestos analysis was completed using a stop positive approach. Only one result of greater that 0.5% asbestos content is required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos (O. Reg. 278/05). The laboratory stopped analyzing samples from a homogenous material once greater than 0.5% asbestos was detected in any of the samples of that material. All samples of a homogenous material were analyzed if no asbestos was detected.

4.3.2 Findings

4.3.2.1 Friable Asbestos-Containing Materials

Based on the lab analysis for materials that were friable, 3 materials were found to be positive for Asbestos Containing Material as defined by Ontario Regulation 278/05 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations (O. Reg. 278/05), as amended, made under the OHSA defines an ACM as a material that contains 0.5% per cent or more asbestos by dry weight. See Appendix B for results.

4.3.2.2 Non-Friable Asbestos-Containing Materials

Drawing NK37-DDE-10200-0101-00, “Site Plan”, Sewage Treatment Plant, indicates the presence of asbestos on the cement drain with a 2” diameter domestic water pipe tapped from a 12” diameter asbestos cement drain (transite piping). As these pieces of equipment and components are sub-grade all similar equipment and components have the potential to be ACM.

Based on the lab analysis for materials that were friable, 6 materials were found to be positive for Asbestos Containing Material as defined by Ontario Regulation 278/05 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations (O. Reg. 278/05), as amended, made under the OHSA defines an ACM as a material that contains 0.5% per cent or more asbestos by dry weight. See Appendix B for results.

4.3.2.3 Presumed Asbestos-Containing Materials (PACM)

The following building materials were observed to be present but not sampled:

- Underground piping, associated elbows and joint connections and associated materials (caulking, mastic etc.).
- Fire rated doors
- Materials submerged in water/sewage processes (e.g., pipes, fittings, connectors)

Fire rated doors were not sampled to preserve their integrity. As these materials are known to have been manufactured with asbestos, they should be presumed to be asbestos-containing unless proven otherwise by laboratory analysis (intrusive or destructive sampling).

The roofing materials below the new roof installation were not sampled to preserve the integrity of the roof. Roofing materials are known to have been manufactured with asbestos, they should be presumed to be asbestos-containing unless proven otherwise by laboratory analysis (intrusive or destructive sampling).

Subgrade and submerged materials were not sampled due to accessibility, they should be presumed to be asbestos-containing unless proven otherwise by laboratory analysis (intrusive or destructive sampling).

4.3.2.4 Non-Asbestos-Containing Materials

The lab analysis for the bulk samples collected during this assessment and confirmed to be non-ACMs by laboratory analysis is provided in Appendix D and previously sampled materials are available upon request.

4.3.3 Recommendations

Based on the visual assessment and laboratory analysis, Bruce Power Site Services Industrial Safety recommends the following with regards to meeting the requirements of O. Reg. 278/05:

- Prior to activities that would disturb PACMs, undertake testing of PACMs that may be impacted to determine their asbestos content. Confirmed asbestos materials should be handled accordingly with the appropriate level of asbestos safety precautions by a qualified worker.

- Should a material suspected to contain asbestos fibres become uncovered during renovation or demolition activities, all work in the areas that may disturb the material should be stopped. Samples of the suspect material are to be submitted for laboratory analysis to determine if asbestos fibres are present. Confirmed asbestos materials are to be handled accordingly with the appropriate level of asbestos safety precautions by a qualified worker.

Note: All similar materials as noted above shall be treated as positive ACM throughout the building.

4.4 LEAD

4.4.1 Methodology

A visual assessment of accessible areas was undertaken in order to check for the presence of materials that may contain lead. These materials included paint applications, wiring and plumbing etc. The condition of the painted surfaces from which samples were taken was also visually assessed for signs of deterioration such as cracking, chipping, flaking, bubbling and deterioration. The condition of these surfaces was assessed as good, fair or poor based on the degree and extent of deterioration.

Representative paint surfaces were sampled using two methods:

- The direct reading instrument Thermo Scientific Niton Analyzer XL2. Measurements with the use of the Thermo Scientific Niton Analyzer XL2 were obtained by a licensed Non-Destructive Testing worker with a Level 1 certification. This method uses X-Ray Fluorescence (XRF) spectrum to analyze the painted materials. Calibration of the analyzer was completed using a performance characteristic sheet, which stipulates calibration check limits. The set points of instrument were as follows: Threshold Action Level 6.0µg/cm^2, Concentration 1000ppm, Density 0.6mg/cm^3, Paint Thickness 100µm. This device provides real time readings of the concentrations of lead in painted surfaces and is able to detect lead on surfaces that have been painted numerous times. To perform an analysis, the XRF analyzer is positioned against a painted surface, where the device is activated and low-level radiation is absorbed by the painted surface, which then emits energy back to the device as fluorescence. The emissions from the lead within the paint are then converted by the analyzer into an electrical signal and the concentration of lead in the surface is presented on the analyzer's display screen.

A list of the samples collected including a description of the samples, sampling locations and results is provided in Appendix G and H with photos. The sampling locations are indicated on the floor plans provided in Appendix I.

4.4.2 Findings

Samples of 178 major paint applications were analyzed for lead content and 55 paint applications were determined to be positive for "lead containing material". A copy of the lead in paint testing is included in Appendix G and a map of the locations of testing is provided in Appendix I.

NK37-EDE-60000-0103-00, Instrument Panel Wiring Diagram-1, Sewage Treatment Plant indicates battery charger cab, which was not accessible during the walk down inspection, which may contain lead.

Lead may also be present in the following materials:

• Other coating applications not tested
• Older electrical wiring materials and sheathing
• Solder used on domestic water lines
• Solder used in bell fittings for cast iron pipes
• Solder used in electrical equipment
• Vent and pipe flashings

• Plastic materials

4.4.3 Recommendations

Work that may disturb any lead-containing materials should follow the recommendations provided in the document entitled:

• *EACO Lead Guideline for Construction, Maintenance or Repair,* dated October 2014

This document outlines the following with respect to lead: Legal Requirements, Health Effects, Controlling the Lead Hazard, Classification on Work and Measures and Procedures for Working with Lead.

4.5 MERCURY

4.5.1 Methodology

An assessment for equipment, which is likely to contain mercury, was completed. Information on the type of equipment (i.e., thermostats, fluorescent light bulbs, gauges, switches, recording devices, batteries, thermometers, etc.), model and serial numbers and quantities was recorded, where available. Sampling for mercury-containing building materials and dismantling of suspect mercury-containing equipment was not performed.

4.5.2 Findings

NK37-DDE-53000-0102-00 provides indication of possible equipment/devices that may contain mercury (thermostats etc.). NK37-DDE-53000-0103-00 and NK37-DDE-56000-0101-00 provides indication of possible equipment/devices that may contain mercury (mercury vapour lighting fixture etc) outdoors and NK37-DDE-56000-0101-00 provides indication of possible equipment/devices that may contain mercury (mercury vapour lighting and fluorescent light bulbs) indoors.

Mercury may also be present in some switches on relay panels, thermostats and similar equipment, paints and adhesives (NK37-EDE-60000-0107-00, “Control Schematics – 2”, Sewage Treatment Plant) provides information on equipment likely to contain mercury (low temperature thermostat Honeywell etc).

4.5.3 Recommendations

Mercury vapour within light fixtures or other mercury-containing equipment poses no risk to workers or occupants provided the mercury containers remain intact and undisturbed. Complete removal of mercury containing equipment is required prior to demolition activities that may disturb the equipment. Prior to demolition work or renovation, the light tubes and other mercury containing equipment must be removed and stored in a safe, secure location or disposed of following the requirements of *R.R.O. 1990, Regulation 347 General - Waste Management,* as amended (R.R.O. 1990, Reg. 347) under the EPA.

Should possible mercury-containing equipment be required to be removed, it should be done so carefully to avoid spillage and stored/packaged in a manner that will prevent breakage or spillage. Any mercury-containing equipment that is to be removed is recommended to be recycled rather than disposed of in landfill. Although no mercury was visibly identified in other equipment, dismantling of equipment was not conducted to verify the presence/absence of mercury. It is cautioned that thermometers, barometers and other measuring devices (pressure gauges/sensors, vacuum gauges, manometers, etc.), thermostats and a variety of other electrical switches (temperature sensitive, tilt switches, float switches, etc.) may contain mercury that may not be visible without dismantling the equipment. Such devices should be assumed to contain mercury until proven otherwise and similar precautions to those outlined above should be taken in any of these items are to be disturbed or taken out of service in the future.

4.6 SILICA

4.6.1 Methodology

An assessment for the presence of silica was determined through visual inspection of the building materials only, based on knowledge of the historic use of silica-containing materials in certain building materials. The presence of silica in building materials such as concrete foundations, floors, walls, columns, masonry, stone, cement, sand, mortar and drywall etc. was noted. Sampling to verify the presence/absence of silica in building materials was not performed.

4.6.2 Findings

The presence of silica in building materials such as concrete foundations, floors, walls, columns, masonry, stone, cement, sand, mortar and drywall etc. is presumed to be present throughout the subject location at the SPP. These types of materials were prevalent throughout the building structures and require consideration in advance of their disturbance.

4.6.3 Recommendations

The classification of work determines the appropriate respirators, measures and procedures that should be followed to protect workers from silica exposure. Precautions should be taken as required during renovation and demolition projects on concrete (i.e., coring through concrete slabs, demolition of masonry or concrete units, etc.) where dust may be generated.

Work that may disturb silica-containing materials should follow the recommendations provided in the document entitled:

• *Guideline: Silica on Construction Projects,* issued by the MOL, dated April 2011 The Guideline outlines: legal requirements, health effects, controlling the silica hazard, classification on work and measures, and procedures for working with silica.

4.7 POLYCHLORINATED BIPHENYLS

4.7.1 Methodology

A visual review and knowledge of the timeline of historical use of PCB-containing electrical equipment was completed to determine the presence of PCBs. Equipment that is generally suspected of containing PCBs includes lamp ballasts, transformers, hydraulic systems, compressors, switchgear and capacitors. No sampling of materials or fluids within equipment was conducted to verify the presence/absence of PCBs.

4.7.2 Findings

PCBs may be present in the fluorescent light ballasts observed in the Sewage Processing Plant (SPP), this includes the main building, UV Treatment and Magnesium Treatment Building and exterior lighting.

Polychlorinated Biphenyls may also be present in dielectric fluid filled electrical equipment such as switch gears, motors or pumps, capacitors, plastics, molded rubber parts, applied dried paints, coatings or sealants, caulking, adhesives, paper, sound-deadening materials, insulation, or felt and fabric products such as gaskets. Bruce Power COS Engineering (Responsible System Engineer (RSE)) has confirmed that there are no transformers inside or outside the facility at the SPP (B18) that contain PCBs.

4.7.3 Recommendations

Fluorescent lamp ballasts that may contain PCBs can be managed in place, where these items are operating and in good condition. No further action is currently required until such time that renovation or demolition activities are to be conducted, or until 2025, when PCB-containing ballasts will require removal and disposal.

The ballasts in the light fixtures could not be inspected as the electrical system was live at the time of the survey. If the specified work will result in the removal and disposal of the light ballasts, the ballasts shall be inspected for the presence of PCBs once removed and before disposal.

When decommissioned, verify the PCB content of fluorescent lamp ballasts as per the Environment Canada publication *Identification of Lamp Ballasts Containing PCBs*, 1991. Handle, store and dispose of PCB-containing ballasts in accordance with Federal Regulation SOR/2008-273, under CEPA and R.R.O. 1990, Reg. 362.

Should a material suspected to contain PCBs become uncovered during renovation activities (i.e., dielectric fluids, hydraulic fluids), all work in the areas that may disturb the material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if PCBs are present. Confirmed PCBs should be handled in accordance with Federal Regulation SOR/2008-273 and R.R.O. 1990, Reg. 362, under the EPA.

4.8 OZONE DEPLETING SUBSTANCES

4.8.1 Methodology

An assessment for fixed equipment likely to contain ODSs was completed through visual inspection and knowledge of the timeline of historical use. This included equipment such as chillers, air-conditioners, walk-in refrigeration and freezer units, where chemicals such as hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs) or halons may be present. Information on the type of equipment, manufacturer and type and quantity of refrigerants was recorded, where available. The assessment was limited to fixed equipment within the assessment area(s) and did not include portable equipment such as stand-alone refrigerators, freezers, water coolers, air-conditioners and fire extinguishers, etc.

4.8.2 Findings

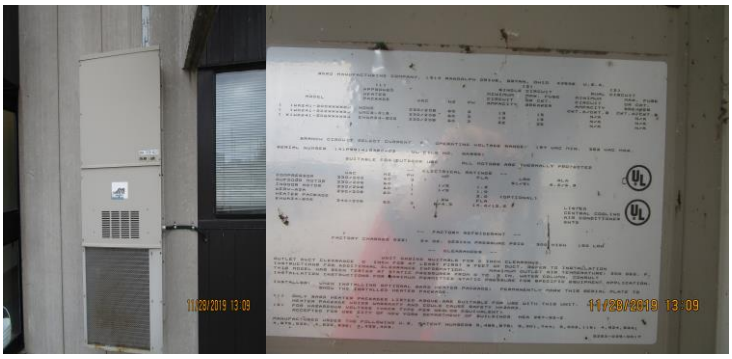
The HVAC unit at the Sewage Processing Plant attached to the exterior west wall of the main building, was found to contain R22 as indicated on the manufacturers placard attached to the unit. R22 is a hydrochlorofluorocarbon or (HCFC) and oxygen depleting substance.

Unit	System	Equipment Tag	Description
WW	73000S	WW-73000-ACU1	SPP OFFICE AIR CONDITIONER - BARD

4.8.3 Recommendations

When refrigeration equipment that is confirmed or suspected to be ODS-containing is decommissioned, it should be inspected by a refrigeration mechanic certified under Section 34 of O. Reg. 463/10 of the EPA.

Additional requirements apply if any of the refrigerants present are or contain Class 1 ODS.



4.9 MOULD

4.9.1 Methodology

Mould micro-organisms are rapidly growing fungi present throughout the natural world. Mould spores are always present in buildings, whether they are tracked in with dirt, or blown in through ducts and windows. Proliferation can occur when susceptible building materials are wet long enough for spores to grow and multiply. Common growth sites include wood and paper based products including drywall, ceiling tiles and carpet. Once the spores become airborne, they represent a health hazard.
An assessment for the potential presence of mould was completed through visual inspection. The mould assessment of the project was conducted in accordance with the EACO Mould Abatement Guidelines Edition 3 (2015). This involved a visual assessment of accessible surfaces for obvious evidence of mould growth and water damage (moisture, water damage, staining, material deterioration or efflorescence, etc.), which may be an indicator of hidden mould growth. No moisture content readings of building materials were taken to determine their current condition. Additionally, destructive testing to confirm the presence/absence of hidden mould growth and material sampling to verify the presence/absence of mould on suspect surfaces was not conducted as part of the assessment. Bulk and tape samples for mould were not collected as part of the assessment.

4.9.2 Findings

At the time of the field inspection, there was no obvious evidence of mould, moisture or water damage. However, previous water ingress was observed in the basement of the main SPP building in addition to there is significant rusting around the double exterior door in the Main Floor Electrical Room. Maintenance was performed on the areas in the basement, however it is likely that should these areas be impacted with construction, mould is likely to be discovered. All equipment that may have previously had leaks could also have the potential upon removal to have some possible presence of mould growth that is hidden on the equipment or on surfaces, cavities, penetrations, supports and/or surfaces etc.

4.9.3 Recommendations

Should suspect mould be observed or uncovered, mould and mould impacted building materials should be remediated in accordance with the documents entitled:

- *CCA Mould Guidelines for the Canadian Construction Industry,* dated 2004
- *EACO Mould Abatement Guidelines,* dated 2010

Remediation should be done by a competent person, who is knowledgeable of potential hazards of mould exposure, following remediation precautions.

4.10 UREA FORMALDEHYDE FOAM INSULATION

4.10.1 Methodology

An assessment for the potential presence of UFFI was determined through visual inspection. This involved the assessment of exterior and interior walls for evidence of repaired openings (i.e., nozzle holes) made to facilitate the installation of the insulation. Wherever possible, an assessment of wall

cavities through existing openings was made. No destructive testing or material sampling was conducted as part of the assessment.

4.10.2 Findings

Evidence of the application of UFFI was not observed to be present.

4.10.3 Recommendations

As evidence of the application of UFFI was not observed, no recommendations have been provided.

4.11 OTHER DESIGNATED SUBSTANCES: ACRYLONITRILE, ARSENIC, BENZENE,

COKE OVEN EMISSIONS, ETHYLENE OXIDES, ISOCYANATE, VINYL CHLORIDE

4.11.1 Methodology

Designated substances including acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxides, isocyanates, and vinyl chloride are not typically a concern in building materials, and therefore these substances were not investigated. However, some common sources are shown below.

Acrylonitrile may be present in stable form in paints and adhesives.

Arsenic or arsenic compounds may be present in paints and adhesives.

Benzene as a constituent of hydrocarbon-based mixtures and is present in a stable form in roofing materials, paints and adhesives. Benzene in these forms is not expected to be of a worker exposure concern.

Uncured Isocyanate may be present in paint finishes, varnishes, polyurethane plastics, synthetic rubbers, foams and adhesives.

Vinyl chloride (monomer) is generally likely to be present in stable form within the PVC piping and conduits, where applicable.

5.0 CLOSURE

The information and conclusions contained in this report are based upon work undertaken by trained professionals and technical staff in accordance with generally accepted engineering and scientific practices current at the time the work was performed. Conclusions presented in this report should not be construed as legal advice.

The conclusions presented in this report represent the best technical judgment of Bruce Power L.P. based on the data obtained during the assessment.

The conclusions are based on the site conditions encountered by Bruce Power L.P. at the time the assessment was performed at the specific assessment and/or sampling locations and can only be extrapolated to an undefined limited area around these locations. The extent of the limited area

depends on building construction and conditions, weather, building usage and other factors. Due to the nature of the investigation and the limited data available, Bruce Power L.P. cannot warrant against undiscovered environmental liabilities.

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.

Should you have any questions or concerns, or require additional information, please do not hesitate to contact Bruce Power L.P. at your convenience.

This report was prepared by Laura Wolfe and reviewed by Rob Harrison.

Regards,

Bruce Power L.P.

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APPENDIX A: DESIGNATED SUBSTANCES AND HAZARDOUS BUILDING MATERIALS BACKGROUND INFORMATION AND REGULATORY FRAMEWORK

DESIGNATED SUBSTANCES AND HAZARDOUS BUILDING MATERIALS BACKGROUND INFORMATION AND REGULATORY FRAMEWORK

DESIGNATED SUBSTANCES

Asbestos

Asbestos is typically found in plaster, mechanical insulation, gaskets, thermal insulation on pipes, refractory material, roofing felts, floor tiles, ceiling tiles and parging, heat resistant panels, incandescent light fixture reflector plates, and any other material requiring a high degree of durability or thermal resistance. The common use of potential (breakable by hand) asbestos-containing materials (ACMs) in construction ceased voluntarily in the mid-1970s; however, the spray application of asbestos-containing fireproofing was not prohibited until 1986 (see below for all dates).

Asbestos-containing materials are grouped into two classifications, friable and non-friable materials. Friable ACMs are those that can easily be crumbled or broken apart by mere hand pressure. When these materials break apart asbestos fibres are then released into the atmosphere. Non-friable ACMs or "manufactured products" are materials that by the nature of their manufacturing/construction do not readily allow the release of asbestos fibres. These materials should not be cut or shaped with power tools, since this procedure may allow for the release of the asbestos fibres. Some materials or "manufactured products", such as plaster, drywall and ceiling tiles that are considered to be non-friable in an undisturbed state can become friable when damaged or disturbed. These are often referred to as "potentially" friable materials.

Ontario Regulation 490/09 Designated Substances (O. Reg. 490/09), as amended, under the Ontario Occupational Health and Safety Act (OHSA) primarily regulates worker exposure to asbestos during manufacturing of asbestos-containing products, but also includes requirements related to respiratory equipment, measurement of airborne fibres, and medical surveillance of exposed workers.

Ontario Regulation R.R.O 1990, Regulation 833, Control of Exposure to Biological or Chemical Agents, as amended (R.R.O. 1990, Reg. 833) made under the OHSA, sets the same time weighted average limit (TWA) value based on 8-hour work days.

Ontario Regulation 278/05 Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations (O. Reg. 278/05), as amended, made under the OHSA defines an ACM as a material that contains 0.5% per cent or more asbestos by dry weight. Ontario Regulation 278/05 requires that an Asbestos Management Program (AMP) be implemented in buildings that have been identified to contain asbestos.

The general waste management regulation for the province of Ontario *R.R.O. 1990, Regulation 347 General - Waste Management,* as amended (R.R.O. 1990, Reg. 347) sets out the requirements for the proper disposal of asbestos waste in Ontario. The waste must be placed in a double sealed container, properly labelled, free of cuts, tears or punctures and disposed of at a licensed waste station which has been properly notified of the shipment(s) of asbestos waste. Asbestos waste must be hauled in a vehicle operating under a Certificate of Approval (CofA) from the Ontario Ministry of the Environment and Climate Change (MOECC). The vehicle must have a trained operator as well as an asbestos spill kit. The asbestos waste must be immediately buried at the licensed landfill operation operating under a CofA from the MOECC.

The transport of asbestos waste to the disposal site is covered by the federal *Transportation of Dangerous Goods Act.* Asbestos waste is to be transported in a proper vehicle with appropriate placards and transportation numbering.

Bulk Sampling Cut-off Dates for Common Asbestos-Containing Materials were obtained from Pinchin Ltd. 2470 Milltower Court, Mississauga, ON L5N 7W5 on July 3, 2018 (see below).

Bulk Sampling Cut-Off Dates for Common Asbestos-Containing Materials

Pinchin Ltd. (Pinchin) has prepared this document for Bruce Power to be used for guidance on safe cutoff dates for bulk sampling of various common types of asbestos-containing materials (ACM). The dates (years) listed below are based on Pinchin's extensive information from years of experience and industry knowledge on end-of-uses of various ACM, and we have factored in "cushion" time to err on the side of caution.

RECOMMENDED BULK SAMPLING CUT-OFF DATES

Please Note:

- Although the years below are quite safe as cut-offs, one may always sample suspect materials beyond these years.
- Keep in mind that these reflect year of installation of the material, not necessarily the original age of construction of a building, in case the material has been installed/replaced since then.
- This is not an exhaustive list of all possible ACM; only many of the most common types of ACM.

Material Description	**Sample Until**
Sprayed Fireproofing or Sprayed Thermal Insulation	1986
Pipe and Mechanical Equipment Insulations (such as parging cement, Aircell, magnesia block, sweat wrap, and Caposite)	1986
Texture Finish	1986
Acoustic Ceiling Tiles	1986
Plaster	1986
Vermiculite	2000
Vinyl Sheet Flooring – with paper backing	1980
Vinyl Sheet Flooring – no paper backing	1992
Vinyl Floor Tiles	1986
Mastic	1992
Transite Products (board, pipes)	Present Day
Drywall Compound	1986
Caulking	1992
Gaskets (if packaging label information doesn't confirm non-asbestos)	Present Day
Roofing	1986
Tar Paper	1986

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.

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

Inorganic lead compounds (or lead salts) result when lead is combined with an element other than carbon. Examples are lead oxide, lead chromate, lead carbonate and lead nitrate. Inorganic lead compounds may occur as solids or in solutions, and are used in insecticides, pigments, paints, frits, glasses, plastics, and rubber compounds.

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

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

O. Reg. 490/09 (which does not apply to construction projects) and R.R.O. 1990 Reg. 833, an occupational exposure limit (OEL) for airborne lead dust or fumes has been set at the TWA value of 0.05 milligram per cubic metre of air (mg/m^3) for workers. The TWA represents the time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse health effects.

The EACO document entitled *Lead Guideline for Construction, Renovation* Maintenance or Repair, issued October 2014 sets out guidelines for operations involving the handling, application, removal, disturbance of clean-up of lead-containing materials. The guideline is intended for the environmental abatement industry, construction industry and painting industry in general and is based on industry standard best-practices for lead abatement and dust control measures.

The Ontario Ministry of Labour (MOL) document entitled *Guideline: Lead on Construction Projects,* issued by the MOL in April 2011, states that the removal of lead paint is not required unless work on these materials are likely to produce airborne lead dust or fumes, for example during welding, torch cutting, sanding and sand blasting. If these operations are likely to occur during building renovations or demolition, it is recommended that the removal of lead paint be carried out in accordance with procedures outlined in the proposed regulation.

Although the TWA and some other requirements under O. Reg. 490/09 and R.R.O. 1990 Reg. 833 do not apply to construction projects, procedures that provide the equivalent level of protection should be implemented on such projects where exposure to lead is possible.

Mercury

Mercury is commonly found in buildings, as it is contained in mercury vapour lighting, thermostats, thermometers, and electrical mercury switches. If mercury is exposed to the air, odourless vapours are formed. The regulated occupational exposure limit for airborne mercury is 0.025 mg/ m^3 (8-hour TWA) as prescribed in (O. Reg. 490/09) and R.R.O. 1990 Reg. 833.

In Canada, the Surface Coating Materials Regulations (SOR/2005-109) under the Federal Hazardous Products Act provides a concentration of mercury that must not be exceeded in surface coatings that are presently sold in this country. This value was set at 10 ppm in 2005. However, it is important to note that there is not a direct correlation between the concentration of mercury in a material to the potential occupational exposure if the material is disturbed.

Mercury is hazardous if it is inhaled or absorbed through the skin, therefore exposure controls (including both respiratory protection and skin protection) are important to consider.

Mercury disposal should be through a scrap dealer (elemental mercury), recycling firm for mercury vapour and returned to the manufacturer for light tubes and fixtures.

Mercury is included in O. Reg. 490/09 and applies to every employer and worker at a workplace where mercury is present, produced, processed, used, handled, or stored and at which the worker is likely to inhale, ingest, or absorb mercury (the maximum TWA for airborne mercury is 0.025 mg/ m^3).

Requirements related to exposure to mercury are detailed, including those relating to worker safety and the use of personal protective equipment.

Ontario's Waste Management (R.R.O. 1990, Reg. 347) under the *Environmental Protection Act* (EPA) provides directives for the disposal of hazardous materials such as mercury.

Silica

Silica (silicon dioxide) is the name of a group of minerals that contain silicon and oxygen in a chemical combination and have the general formula SiO_2. It is one of the most common minerals in the earth's crust. Silica can be present as crystalline silica (free silica) or amorphous silica (combined silica), and exists in many forms. The three most common crystalline forms of silica encountered in the workplace environment are quartz, tridymite, and cristobalite. Quartz is by far the most common crystalline silica found in nature, being abundant in most rock types, notably granites, sandstones, quartzites and in sands and soils. Cristobalite and tridymite are found in volcanic rocks. Amorphous silica is found in nature as biogenic silica and as silica glass of volcanic origin. One form of biogenic silica, diatomaceous earth, originates from the skeletons of diatoms deposited on sea floors. From a health perspective it is the crystalline silica forms that raise the biggest concerns. Silica, also referred to as free crystalline silica, is found in concrete, cement, mortar, ceramic wall and floor tiles, stucco finishes, acoustic ceiling

tiles, plaster, drywall, drywall joint compound and adhesives. Exposure to silica also occurs during many different construction and maintenance activities. The most severe exposures to crystalline silica result from abrasive blasting activities using silica sand. Other activities that may produce crystalline silica dust include jack hammering, rock/well drilling, concrete mixing, concrete drilling, tuck pointing, and brick and concrete block cutting and sawing. Additionally, crystalline silica exposures occur in the maintenance, repair and replacement of refractory brick furnace linings. Prolonged exposure to, and inhalation of free crystalline silica, may result in respiratory disease known as silicosis, which is characterized by progressive fibrosis of the inner lung tissue and marked shortness of breath or impaired lung function.

Silica is included in O. Reg. 490/09 and the regulation provides information on the application of the regulation as well as allowable exposure levels, where the maximum TWA for airborne Silica dust is 0.05 mg/ m^3. The assessment and control program and medical surveillance requirements are for non-construction projects as defined in O. Reg. 490/09. Refer to the document entitled *Guideline: Silica on Construction Projects,* issued by the MOL in April 2011 for safe silica work practices and personal protective equipment (PPE).

Acrylonitrile

Acrylonitrile is a clear liquid that may be colourless or yellow and that readily reacts with other chemicals to produce long, chain-like molecules (polymers). Acrylonitrile-based polymers are used to produce nitrile rubbers, plastics, acrylic fibres, coatings and adhesives. Workers are typically exposed to acrylonitrile at manufacturing facilities that produce the aforementioned products through inhaling its vapour, direct skin contact, or through ingestion. Although acrylonitrile may be present in some of the building materials, including adhesives and coatings, the chemical will likely be bonded in the polymer form. Therefore, it is not expected that an adverse exposure to acrylonitrile will occur unless the building materials are heated to extreme temperatures. Acrylonitrile vapours may become released from the acrylonitrile-based polymers during a process where high temperatures are applied.

The TWA for a worker with respect to Acrylonitrile is 2 ppm as prescribed in O. Reg. 490/09 and R.R.O. 1990 Reg. 833. The Short term Exposure Limit (STEL) for Acrylonitrile is 10 ppm for any 15-minute exposure period.

Arsenic

Arsenic is a naturally occurring mineral, widely distributed in the earth's crust. Elemental arsenic (sometimes referred to as metallic arsenic) is a silver-gray or white brittle metal. However, arsenic is usually found in the environment combined with other elements such as oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic has no odor and is almost tasteless.

Arsenic and its compounds have a variety of commercial uses. Inorganic arsenic compounds are mainly used as a wood preservative. Copper chromated arsenic (CCA) is used to make "pressure-treated" lumber. CCA-treated wood is no longer used for residential applications but may still be used in industrial applications. Arsenic is also used in metallurgy for hardening copper, lead and certain metal alloys, in pigment production, in the manufacture of certain types of glass, and in semiconductors and light emitting diodes. Inorganic arsenic compounds are no longer used as pesticides in agriculture;

however, organic arsenic compounds, namely cacodylic acid, disodium methylarsenate (DSMA), and monosodium methylarsenate (MSMA), are used, as yet, as pesticides – principally on cotton.

The presence of arsenic in the paint coating on interior and exterior finishes is possible. As the painted surfaces will be handled as per the proposed lead regulation, it is not expected that arsenic concentrations in the air will exceed the TWA for a worker to arsenic (10 $\mu g/m^3$) as prescribed by O. Reg. 490/09 and R.R.O. 1990, Reg. 833. The STEL for arsenic is 50 $\mu g/m^3$ for any 15-minute exposure period.

Benzene

Historically, benzene has been produced as a by-product of coal gasification and metallurgical coke production in steel making. The light oil product from such processes contains benzene, toluene, ethyl benzene and xylene, and these components are separated by distillation. Today, most benzene is produced from the refining of petroleum.

Benzene has applications as a solvent in synthetic rubber manufacturing and processing, and in paints, varnishes, stains, adhesives, roofing materials and sealants. The use of benzene in tire and other rubber goods manufacturing and as a solvent and component of paints and adhesives has declined considerably as a result of concerns about workplace exposure. Nevertheless, it is often present in trace quantities in petroleum and aromatic solvents, some of which have replaced benzene in many uses. Benzene is also a minor component of gasoline mixtures sold in Canada. Benzene is a clear, colourless liquid with a characteristic, sweet or aromatic hydrocarbon odour. It is a liquid at room temperature but evaporates into the air very quickly, making it a highly flammable vapour as well as an extremely flammable liquid.

The TWA for a worker to benzene is 0.5 ppm as prescribed by O. Reg. 490/09 and R.R.O. 1990, Reg. 833. It is possible that benzene was present in the paints, adhesives and roofing materials used during the original construction of many buildings. However, over time, the benzene component typically volatilizes out of the paints, solvents and roofing bitumen's and is released into the ambient air. Therefore, it is likely that only trace levels of benzene presently exist in these building materials. It is not expected that benzene emissions from any existing building materials on site will exceed the allowable TWA. The STEL for benzene is 2.5 ppm for any 15-minute exposure period.

Coke Oven Emissions

Coke oven emissions are found in the exhaust from the burning process of coke, and are typically not a concern in buildings.

Coke oven emissions refer to the soluble fraction of total particulate matter emitted during the destructive distillation or carbonization of coal for the production of coke (pure carbon). These emissions are a mixture of coal tar, coal tar pitch, volatiles (including benzene, toluene and xylene), creosote, polycyclic aromatic hydrocarbons (PAHs – including benzo(a)pyrene, benzanthracene, chrysene and phenanthrene), and metals (including cadmium, arsenic, beryllium and chromium). Condensed coke oven emissions are a brownish, thick or semisolid with a naphthalene-like odor, while uncondensed coke oven emissions are vapours that escape when the ovens are changed and emptied and are a component of fugitive emissions. The TWA for a worker with respect to coke oven emissions is 150 $\mu g/m^3$ as prescribed by O. Reg. 490/09 and R.R.O. 1990, Reg. 833.

Ethylene Oxides

Ethylene oxide is a colourless gas with a somewhat sweet odour. It is extremely flammable and also dangerously reactive. Ethylene oxide exists as a compressed gas that has been produced since the early 1900s. It is used primarily as a chemical intermediate in the production of ethylene glycol, glycol ethers, nonionic surfactants and other industrial chemicals. Much smaller amounts are used as a non-explosive mixture with nitrogen or carbon dioxide for sterilizing medical instruments and supplies in hospitals and industrially for fumigation.

Most people are not likely to be exposed to ethylene oxide because it is not commonly found in the environment. Exposure to ethylene oxide is generally limited to those facilities where it is made or used. Therefore, ethylene oxide is not a contaminant of concern during routine hazardous building materials assessments. TWA for a worker with respect to ethylene oxides is 1 ppm as prescribed in O. Reg. 490/09 and R.R.O. 1990, Reg. 833. The STEL for ethylene oxides is 10 ppm for any 15-minute exposure period.

Isocyanates

The isocyanate (-CNO) group reacts very readily with certain other types of molecules, a property responsible for the usefulness of isocyanates in industry. Due to the high reactivity of the isocyanate group, exposure to isocyanates can result in primary irritation, sensitization and hypersensitivity reactions. The respiratory system, the eyes and the skin are the main areas affected by exposure. Isocyanates in their initial form are found as a vapour, a mist, or a dust which become airborne and then taken into the body. Isocyanates are a class of chemicals used in the manufacture of certain types of plastics, foams and roof insulation. When isocyanates are combined with other compounds that contain free hydroxyl functional groups (i.e. –OH) they react and begin to form polyurethane polymers. These polyurethanes find significant application in the manufacture of rigid and flexible foams. Flexible foam is primarily used for cushioning, while rigid foam is used mainly for insulation. Polyurethanes are also used in the production of adhesives, elastomers, and coatings and are increasingly used in the automobile industry, auto body repair, and building insulation materials. Work that may involve exposure to isocyanates include painting, foam-blowing and the manufacture of many polyurethane products. Exposure to isocyanates within buildings where it is not produced or used as part of manufacturing is unlikely, as products such as rigid foam insulation that may be used in buildings has already undergone the curing process. Meaning, once the isocyanates are chemically bonded to other chemicals during manufacturing processes, the isocyanates are not readily available to become airborne unless heated. Completely cured products are fully reacted. The most commonly used diisocyanates include methylene diphenyl diisocyanate (MDI), toluene diisocyanate (TDI), and hexamethylene diisocyanate (HDI).

Isocyanate exposure is not expected to be a concern as long as the burning of plastics, foams, and insulation is not carried out.

The TWA for a worker with respect to isocyanates, organic compounds is 5 parts per billion (ppb) as prescribed in O. Reg. 490/09 and R.R.O. 1990, Reg. 833. The STEL for isocyanates, organic compounds is 20 ppb for any 15-minute exposure period.

Vinyl Chloride

Vinyl chloride is a manufactured substance that does not occur naturally. It is used as a chemical intermediate and not an end product. Vinyl chloride exists in liquid form if kept under high pressure or at low temperatures. At room temperature, it is a colourless gas. It burns easily and is not stable at high temperatures. Most of the vinyl chloride produced is used to make a polymer called polyvinyl chloride (PVC). PVC is used to make a variety of plastic products including pipes, wire and cable coatings, vinyl flooring, vinyl wallpaper and window frames. It is also used to make furniture, upholstery and packaging materials. One of the concerns regarding PVC is that upon burning it will emit toxic fumes. Contaminants emitted when PVC is burned include hydrochloric acid, carbon monoxide and carbon dioxide, along with lesser amounts of dioxin and furan.

Vinyl chloride is found in many applications in building such as plumbing pipes, protective coatings on insulated pipes and interior finishes (i.e., vinyl baseboard trim). Vinyl chlorides in the above materials are bound in a solid matrix and are unlikely to become airborne such that it would exceed the maximum allowable TWA of 1 ppm, as prescribed in O. Reg. 490/09 and R.R.O. 1990, Reg. 833.

HAZARDOUS BUILDING MATERIALS

Polychlorinated Biphenyls (PCBs)

The use of PCBs in electrical equipment such as transformers and capacitors, including capacitors found in fluorescent lamp ballasts, was common up to 1980. R.R.O 1990 Regulation 362 Waste Management – PCB's (R.R.O. 1990, Reg. 362) under the EPA, prohibits the use of PCBs in electrical equipment installed after July 1, 1980.

The TWA for a worker with respect to PCBs is 0.05 mg/m^3 as prescribed in R.R.O. 1990, Reg. 833.

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

Ozone-Depleting Substances

Ozone-depleting substances (ODSs) are chemical agents known as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) used in various refrigeration equipment including air-conditioning, heat pump, refrigeration or freezer units. They have also been used in solvents, as aerosol additives in the production of foam insulation and in fire extinguishing equipment. The use of refrigerants (including those that are ODSs or contain ODSs) is regulated by Ontario Regulation 463/10, *Ozone Depleting Substances and Other Halocarbons* (O. Reg. 463/10), under the EPA. The regulation imposes restrictions

on the purchasing of refrigerants and on the servicing, dismantling, disposing of or decommissioning of equipment containing refrigerants or halon fire extinguishing agents.

On federal land, aboriginal land and federal works, buildings and undertakings, *Federal Halocarbon Regulation 2003* (SOR/2003-289) applies. All other buildings and uses of refrigerants and other agents are under the *Ozone-Depleting Substances Regulations 1998* (SOR/99-7), under CEPA. The regulations prohibit the release of halocarbons contained in refrigeration systems, air conditioning systems, fire extinguishers (except to fight a fire that is not a fire caused for training purposes) or containers or equipment used in the re-use, recycling, reclamation or storage of a halocarbon.

The regulations also imposes restrictions on the servicing and dismantling, disposing of or decommissioning of any system containing halocarbons and requires the recovery of halocarbons into an appropriate container by a certified individual. The regulation also details an owner's record-keeping obligations.

Mould

Mould can be found everywhere in the outside environment, on plants, in soil and on dead and decaying matter (i.e., dead leaves). Mould requires two main conditions in order to grow - a source of food (a substrate typically comprised of cellulose) and water. Sources of food for mould are plentiful in outdoor and indoor environments; however it is the presence of water in an indoor environment that will determine mould growth. The source of water can be a result of a water pipe leak or even excess condensation. Thus, the key to controlling mould indoors is to control the presence of water.

At present, there are no specific laws or regulations governing acceptable levels of mould in buildings. The lack of specific regulatory standards is due in part to an inability to establish exposure-response relationships. Variation in individual susceptibility, limitations in sampling and analytical techniques, and the vast number of fungal agents and their products make it difficult to establish safe levels of exposure for all individuals. With a lack of defined exposure criteria, current Health Canada and other agency guidelines on the assessment and control of mould contamination in public buildings are largely based on prudent avoidance (i.e., remove any indoor growth or amplification site of mould, regardless of the concentration of moulds or their products in the indoor environment).

Although there are currently no regulations in Canada pertaining specifically to mould in buildings, based on an Ontario MOL alert, employers are required by Section 25(2)(h) of the Occupational Health and Safety Act to take every precaution reasonable in the circumstances for the protection of workers.

The OHSA places a responsibility on constructors (Section 23), employers (Section 25), and supervisors (Section 27) to ensure the health and safety of workers. This includes protecting workers from mould in workplace buildings. Various sections of the Industrial, Construction, Mining or Health Care regulations may also apply to maintenance and remediation activities.

The Ontario MOL has published an Alert (MOL, 2000) indicating that sustained and/or extensive growth of visible mould on interior surfaces of a building is unacceptable and stating that mould growth on the interior surfaces of buildings is a risk factor for health problems.

Several guidelines and other resources describe procedures for the investigation and remediation of mould. The following documents indicate that mould observed in occupied building should be remediated in accordance with these procedures:

• *Environmental Abatement Council of Ontario's (EACO) Mould Abatement Guidelines,* 2015 – Edition 3;
• *Mould Guidelines for The Canadian Construction Industry,* Canadian Construction Association – 82, 2004;
• *Guidelines on Assessment and Remediation of Fungi in Indoor Environment,* New York City Department of Health and Mental Hygiene, November 2008;
• *Bioaerosols: Assessment and Control,* American Conference of Governmental Industrial Hygienists (ACGIH), 1999;
• *Fungal Contamination in Public Buildings: Health Effects and Investigation Methods,* Federal- Provincial Committee on Environmental and Occupational Health, 2004;
• *Field Guide for the Determination of Biological Contaminants in Environmental Samples,* American Industrial Hygiene Association (AIHA), 1996; and,
• *Clean-Up Procedures for Mould in Houses,* Canada Mortgage and Housing Corporation (CMHC), 2004.

Urea Formaldehyde Foam Insulation

Urea-formaldehyde foam insulation (UFFI) was developed in Europe in the 1950s as an improved means of insulating difficult-to-reach cavities in building walls. It is typically made at a construction site from a mixture of urea-formaldehyde resin, a foaming agent and compressed air. When the mixture is injected into the wall, urea and formaldehyde unite and "cure" into an insulating foam plastic.

UFFI installation has been banned in Canada under the Hazardous Products Act (HPA) since December, 1980 due to concerns regarding the health effects of exposure to formaldehyde. Formaldehyde is a colourless, pungent-smelling gas. Health effects include eye, nose, and throat irritation; wheezing and coughing; fatigue; skin rash; nausea; headache; dizziness; and severe allergic reactions. Sometimes, a slight excess of formaldehyde was often added to ensure complete "curing" with the urea to produce the urea-formaldehyde foam. The excess formaldehyde was given off after installation during the initial curing process, which typically took a few days to a week to complete. UFFI was sometimes improperly installed or used in locations where it should not have been, resulting in continued off-gassing of formaldehyde past the initial curing stage. Since UFFI was last installed in 1980, it should have little effect on indoor formaldehyde levels today. However, if UFFI comes in contact with water or moisture, it could begin to break down. Due to the age of the insulation UFFI may also begin to degrade and crumble into a fine powder. Under these conditions UFFI may release more formaldehyde and consideration should be given to removing the material using properly trained remediation personnel. During the 1970s, when concerns about energy efficiency led to efforts to improve home insulation in Canada, UFFI became an important insulation product for existing houses. Most installations occurred between 1977 and its ban in Canada in 1980.

The Short Term exposure Limit (STEL) for a worker with respect to Formaldehyde is 1ppm and the Ceiling (C) is 1.5ppm as prescribed in R.R.O. 1990, Reg. 833.

APPENDIX B: POSITIVE ASBESTOS CONTAINING MATERIAL DATABASE B18

B18 POSITIVE ASBESTOS CONTAINING MATERIAL DATABASE RESULTS

Sample Date	Lab Sample #	Facility Sample #	Elevation	USI & Equip Code	Sample Location Description	Asbestos (Yes/No)	Type	Friable (Yes/No)	% Conc	Sample Comments/Description
11/27/2002	HW02-284		Gnd		SPP-B18- Blower room acoustic wall tiles.	N/D		Yes		Light brown, bonded cellulose fibre. Very large fibres in white crystalliine adhesive/ binder. Has appearance of shredded wheat.
			GRADE		NV 1 BLOWER ROOM WO#1677064-02	YES		No		
					Blower Room, LABELLED WO# 1677064 V-8 TO V1 PIPING	YES		Yes		
					LABELLED WO# 1677064V-21 TO V-23 &V-27	YES		Yes		
				79360	GREY PAINTED COVERING NORTH WALL	YES		No		
NA	NA		Basement		Air line elbows assumed to be ACM, Labelling to be confirmed	YES		Yes		
30-Nov-2015	15-0147	COS(B18)-1123A		Roof Drain	Waste water sewage treatment comminutor room roof drain.	Yes	Chrysotile	No	25-50	Yellow loosely packed mineral wool. Grey, soft pressed fibre mass with chrysotile throughout.
30-Nov-2015	15-0148	COS(B18)-1123B		Roof Drain	Waste water sewage treatment comminutor room roof drain.	Yes	Chrysotile	No	25-50	Yellow loosely packed mineral wool. Grey, soft pressed fibre mass with chrysotile throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0147.

30-Nov-2015	15-0149	COS(B18)-1123C		Roof Drain	Waste water sewage treatment comminutor room roof drain.	Yes	Chrysotile	No	25-50	Yellow loosely packed mineral wool. Grey, soft pressed fibre mass with chrysotile throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0147.
30-Nov-2015	15-0150	COS(B18)-1124A		WW-71500-V24	Waste water sewage treatment comminutor room v24.	Yes	Chrysotile	No	25-50	White, woven cellulose with yellow paint. White pressed cellulose. White, woven glass fibres with metallic foil. Grey, pressed fibre material with chrysotile bundles throughout.
30-Nov-2015	15-0151	COS(B18)-1124B		WW-71500-V24	Waste water sewage treatment comminutor room v24.	Yes	Chrysotile	No	25-50	Yellow loosely packed mineral wool. White, woven cellulose with yellow paint. White pressed cellulose. White, woven glass fibres with metallic foil. Grey, pressed fibre material with chrysotile bundles throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0150.
30-Nov-2015	15-0152	COS(B18)-1124C		WW-71500-V24	Waste water sewage treatment comminutor room v24.	Yes	Chrysotile	No	25-50	Yellow loosely packed mineral wool. White, woven cellulose with yellow paint. White pressed cellulose. White, woven glass fibres with metallic foil. Grey, pressed fibre material with chrysotile bundles throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0150.
30-Nov-2015	15-0156	COS(B18)-1126A		WW-71500-V24	Waste water sewage treatment comminutor room v24.	Yes	Chrysotile	No	25-50	White, woven cellulose with grey paint. Black tar paper containing cellulose and mineral wool fibres. Loosely pressed brown mineral wool. Grey, pressed fibre material with chrysotile bundles throughout.
30-Nov-2015	15-0157	COS(B18)-1126B		WW-71500-V24	Waste water sewage treatment comminutor room v24.	Yes	Chrysotile	No	25-50	White, woven cellulose with grey paint. Black tar paper containing cellulose and mineral wool fibres. Loosely pressed brown mineral wool. Grey, pressed fibre material with chrysotile bundles throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0150.
30-Nov-2015	15-0158	COS(B18)-1126C		WW-71500-V24	Waste water sewage treatment comminutor room v24.	Yes	Chrysotile	No	25-50	White, woven cellulose with grey paint. Black tar paper containing cellulose and mineral wool fibres. Loosely pressed brown mineral wool. Grey, pressed fibre material with chrysotile bundles throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0150.

30-Nov-2015	15-0159	COS(B18)-1127A		WW-79630-RV1	Waste water sewage treatment plant blower room.	Yes	Chrysotile	No	25-50	Grey paint over white woven cellulose. Grey, pressed fibre material with chrysotile bundles throughout.
30-Nov-2015	15-0160	COS(B18)-1127B		WW-79630-RV1	Waste water sewage treatment plant blower room.	Yes	Chrysotile	No	25-50	Grey paint over white woven cellulose. Grey, pressed fibre material with chrysotile bundles throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0159.
30-Nov-2015	15-0161	COS(B18)-1127C		WW-79630-RV1	Waste water sewage treatment plant blower room.	Yes	Chrysotile	No	25-50	Grey paint over white woven cellulose. Grey, pressed fibre material with chrysotile bundles throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0159.
30-Nov-2015	15-0165	COS(B18)-1129A		Roof Drain	Waste water sewage treatment plant blower room hallway.	Yes	Chrysotile	No	25-50	Brittle white mastic over white woven cellulose. Yellow loosely packed mineral wool. Grey, pressed fibre material with chrysotile bundles throughout.
30-Nov-2015	15-0166	COS(B18)-1129B		Roof Drain	Waste water sewage treatment plant blower room hallway.	Yes	Chrysotile	No	25-50	Brittle white mastic over white woven cellulose. Yellow loosely packed mineral wool. Grey, pressed fibre material with chrysotile bundles throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0165.
30-Nov-2015	15-0167	COS(B18)-1129C		Roof Drain	Waste water sewage treatment plant blower room hallway.	Yes	Chrysotile	No	25-50	Brittle white mastic over white woven cellulose. Yellow loosely packed mineral wool. Grey, pressed fibre material with chrysotile bundles throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0165.
30-Nov-2015	15-0168	COS(B18)-1130A		WW-71500-V1	Waste water sewage treatment plant south side basement. Parging cement on domestic water piping.	Yes	Chrysotile	No	10-25	White mastic over white woven cellulose. Metallic foil over white woven glass fibres and brown pressed cellulose. Grey, pressed fibre material with chrysotile bundles (25-50%) throughout.
30-Nov-2015	15-0169	COS(B18)-1130B		WW-71500-V1	Waste water sewage treatment plant south side basement. Parging cement on domestic water	Yes	Chrysotile	No	10-25	White mastic over white woven cellulose. Metallic foil over white woven glass fibres and brown pressed cellulose. Grey, pressed fibre material with chrysotile bundles (25-50%) throughout. NOT ANALYZED AS PER

					piping.					BP-SM-00045. SEE SAMPLE 15-0168.
30-Nov-2015	15-0170	COS(B18)-1130C		WW-71500-V1	Waste water sewage treatment plant south side basement. Parging cement on domestic water piping.	Yes	Chrysotile	No	10-25	White mastic over white woven cellulose. Metallic foil over white woven glass fibres and brown pressed cellulose. Grey, pressed fibre material with chrysotile bundles (25-50%) throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0168.
30-Nov-2015	15-0171	COS(B18)-1131A		WW-71500-V10, V15	Waste water sewage treatment plant north side basement.	Yes	Chrysotile	No	10-25	Beige paint on white mastic over white woven cellulose. Metallic foil over white woven glass fibres and yellow loosely packed mineral wool. Grey, pressed fibre material with chrysotile bundles (25-50%) throughout.
30-Nov-2015	15-0172	COS(B18)-1131B		WW-71500-V10, V15	Waste water sewage treatment plant north side basement.	Yes	Chrysotile	No	10-25	Beige paint on white mastic over white woven cellulose. Metallic foil over white woven glass fibres and yellow loosely packed mineral wool. Grey, pressed fibre material with chrysotile bundles (25-50%) throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0171.
30-Nov-2015	15-0173	COS(B18)-1131C		WW-71500-V10, V15	Waste water sewage treatment plant north side basement.	Yes	Chrysotile	No	10-25	Beige paint on white mastic over white woven cellulose. Metallic foil over white woven glass fibres and yellow loosely packed mineral wool. Grey, pressed fibre material with chrysotile bundles (25-50%) throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0171.
30-Nov-2015	15-0174	COS(B18)-1132A		WW-79630-CV7	Waste water sewage treatment north side basement. CV7.	Yes	Chrysotile	No	25-50	Metallic foil over white, woven glass fibres and white, pressed cellulose. Yellow loosely packed mineral wool. Grey paint over white woven cellulose. Grey, moderately soft pressed fibre mass with chrysotile fibres throughout.

30-Nov-2015	15-0175	COS(B18)-1132B		WW-79630-CV7	Waste water sewage treatment north side basement. CV7.	Yes	Chrysotile	No	25-50	Metallic foil over white, woven glass fibres and white, pressed cellulose. Yellow loosely packed mineral wool. Grey paint over white woven cellulose. Grey, moderately soft pressed fibre mass with chrysotile fibres throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0174.
30-Nov-2015	15-0176	COS(B18)-1132C		WW-79630-CV7	Waste water sewage treatment north side basement. CV7.	Yes	Chrysotile	No	25-50	Metallic foil over white, woven glass fibres and white, pressed cellulose. Yellow loosely packed mineral wool. Grey paint over white woven cellulose. Grey, moderately soft pressed fibre mass with chrysotile fibres throughout. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0174.
30-Nov-2015	15-0177	COS(B18)-1133A		WW-79630-V8, V9	Waste water sewage treatment north side basement.	Yes	Chrysotile	No	10-25	Yellow loosely packed mineral wool. Grey paint over white woven cellulose. Grey, moderately soft pressed fibre mass with chrysotile fibres throughout (25-50%).
30-Nov-2015	15-0178	COS(B18)-1133B		WW-79630-V8, V9	Waste water sewage treatment north side basement.	Yes	Chrysotile	No	10-25	Yellow loosely packed mineral wool. Grey paint over white woven cellulose. Grey, moderately soft pressed fibre mass with chrysotile fibres throughout (25-50%). NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0177.
30-Nov-2015	15-0179	COS(B18)-1133C		WW-79630-V8, V9	Waste water sewage treatment north side basement.	Yes	Chrysotile	No	10-25	Yellow loosely packed mineral wool. Grey paint over white woven cellulose. Grey, moderately soft pressed fibre mass with chrysotile fibres throughout (25-50%). NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 15-0177.
13-Feb-20	20-0271, 20-0272, 20-0273	COS(B18)-1147ABC		Cement Baseboard	Cement baseboard main entrance	Yes	Chrysotile	No	5 to 10%	1. Grey, hard packed, cementitious with chrysotile bundles throughout 2. Yellow, translucent, non fibrous adhesive 3. Grey/White, packed aggregate and adhesive
13-Feb-20	20-0298, 20-0299, 20-0300	COS(B18)-1156ABC		caulking	white wall caulking from north door in control room	Yes	Chrysotile	No	0.5-5%	1. grey, hard, cementitious with short cut chrysotile bundles 2. grey/white, soft, non fibrous caulking
13-Feb-	20-0301, 20-0302,	COS(B18)		window	west window glazing from	Yes	Chrysotile	No	5-10%	1. grey, soft caulking with chrysotile bundles

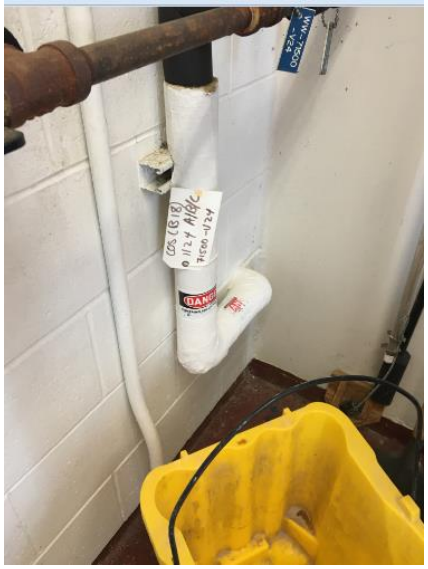
20	20-0303	-1157ABC		glazing	control room					2. white/grey, non fibrous paint

APPENDIX C: BULK ANALYSIS FOR THE DETERMINATION OF ASBESTOS CONTAINING MATERIAL – PHOTO

Sample # COS(B18)-1123
Roof Drain on system throughout– Comminutor Room



Sample # COS(B18)-1124
WW-71500-V24 – Comminutor Room



Sample # COS(B18)- 1126
WW-71500-V4 & V5 – Comminutor Room



Sample # COS(B18)-1127
WW-79630-RV1 – Blower Room



Sample # COS(B18)-1129
Roof Drain on system through – Blower Room



Sample # COS(B18)-1130
WW-71500-V1 – Basement South side
Parging cement on system throughout



Sample # COS(B18)-1131
WW-71500-V10 & V15
Basement North side



Sample # COS(B18)-1132
WW-79630-CV7
Basement North Side



Sample # COS(B18)-1133
WW-79630-V8 & V9 North side basement
On system throughout



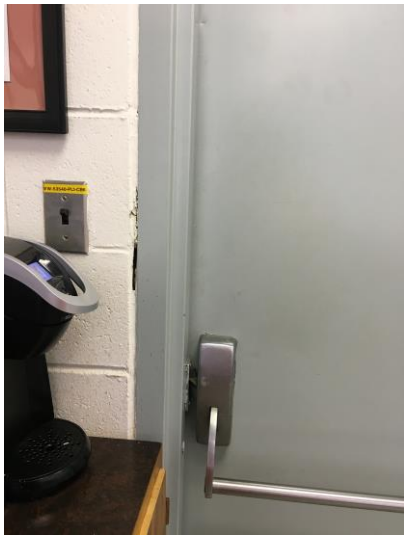
Sample # COS(B18)-1133
WW-79630-V8 & V9 Blower Room
On system throughout



Sample # COS(B18)-1147
Cement Baseboard at Main Entrance



Sample # COS(B18)-1156
White Caulking from north door in control room



Sample # COS(B18)-1157
Window glazing west window from Control Room



APPENDIX D: BULK MATERIAL ANALYSIS RESULTS

B18 Bulk Material Analysis Results

Bulk Material Analysis Results

13/02/2020

Brandie Bernard; Judith Byles; BNPD-ACM Sample Results;Kevin Attenborough;Brad Dietrich

Asbestos Material Analysis

Please find attached the results from the examination of recent bulk material sample(s).
1.0 Methodology

Asbestos is detected and identified in bulk samples by an optical microscopic procedure known as dispersion staining. The parameters examined are morphology, colour and pleochrism, birefringence, extinction characteristics, sign of elongation and refractive index.

2.0 Results

The presence or absence of asbestiform fibers is reported in the attached form. If asbestos is present, the type and estimated concentration of asbestiform fibres within the sample is also given. If the sample contains no asbestos it will be shown as having a concentration of < 0.5%. If there is a trace of asbestos i.e. single fibre bundle or equivalent, this will be noted in the sample comments. Suspected contamination will also be identified.

3.0 Comments
Floor deposits, debris or similar samples submitted as bulk samples for analysis of asbestos content are non-uniform collections of many materials. A measure of uncertainty is attached to results obtained from such samples.
Should you require any further information or need assistance with the interpretation of the data please do not hesitate to contact us.

NOTE: Results less than 0.5% are provided for information purposes only. Materials having less than 0.5% asbestos content are not considered asbestos containing materials. Work involving materials with concentrations of 0.5% asbestos or more must be managed in compliance with the Bruce Power Asbestos Control Program BP-SM-00045 and the Ontario Reg. 278/05.

D. Creces, Chemical Technologist
ext. 15881

May-07-20 Page 1 of 18

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0235	B18 Sewage Plant			Concrete foundation structures, west side of B18.	No		< 0.5	COS(B18)-1135ABC
B18	COS(B18)-1135A					Grey, hard, coarse, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0236	B18 Sewage Plant			Concrete foundation structures, west side of B18.	No		< 0.5	COS(B18)-1135ABC
B18	COS(B18)-1135B					Grey, hard, coarse, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0237	B18 Sewage Plant			Concrete foundation structures, west side of B18.	No		< 0.5	COS(B18)-1135ABC
B18	COS(B18)-1135C					Grey, hard, coarse, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0238	B18 Sewage Plant			Railing caulking - grey. West side of B18.	No		< 0.5	COS(B18)-1136ABC
B18	COS(B18)-1136A					Grey, soft packed, non fibrous caulking.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0239	B18 Sewage Plant			Railing caulking - grey. West side of B18.	No		< 0.5	COS(B18)-1136ABC
B18	COS(B18)-1136B					Grey, soft packed, non fibrous caulking.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0240	B18 Sewage Plant			Railing caulking - grey. West side of B18.	No		< 0.5	COS(B18)-1136ABC
B18	COS(B18)-1136C					Grey, soft packed, non fibrous caulking.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0241	B18 Sewage Plant			Red caulking from pipe - W79630-ER4.	No		< 0.5	COS(B18)-1137ABC
B18	COS(B18)-1137A					Red, moderately soft, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0242	B18 Sewage Plant			Red caulking from pipe - W79630-ER4.	No		< 0.5	COS(B18)-1137ABC
B18	COS(B18)-1137B					Red, moderately soft, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0243	B18 Sewage Plant			Red caulking from pipe - W79630-ER4.	No		< 0.5	COS(B18)-1137ABC
B18	COS(B18)-1137C					Red, moderately soft, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0244	B18 Sewage Plant			North concrete wall expansion joint - grey caulking.	No		< 0.5	COS(B18)-1138ABC
B18	COS(B18)-1138A					Black / grey, soft, non fibrous caulking.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0245	B18 Sewage Plant			North concrete wall expansion joint - grey caulking.	No		< 0.5	COS(B18)-1138ABC
B18	COS(B18)-1138B					Grey, soft, non fibrous caulking.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0246	B18 Sewage Plant			North concrete wall expansion joint - grey caulking.	No		< 0.5	COS(B18)-1138ABC
B18	COS(B18)-1138C					Grey, soft, non fibrous caulking.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0247	B18 Sewage Plant			Grey\Black caulking outside north door.	No		< 0.5	COS(B18)-1139ABC
B18	COS(B18)-1139A					Black / grey, soft, non fibrous caulking.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0248	B18 Sewage Plant			Grey\Black caulking outside north door.	No		< 0.5	COS(B18)-1139ABC
B18	COS(B18)-1139B					Black / grey, soft, non fibrous caulking.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0249	B18 Sewage Plant			Grey\Black caulking outside north door.	No		< 0.5	COS(B18)-1139ABC
B18	COS(B18)-1139C					Black / grey, soft, non fibrous caulking.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0250	B18 Sewage Plant			Door glazing (black) - North door, inside.	No		< 0.5	COS(B18)-1140ABC
B18	COS(B18)-1140A					Black, moderately soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0251	B18 Sewage Plant			Door glazing (black) - North door, inside.	No		< 0.5	COS(B18)-1140ABC
B18	COS(B18)-1140B					Black, moderately soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0252	B18 Sewage Plant			Door glazing (black) - North door, inside.	No		< 0.5	COS(B18)-1140ABC
B18	COS(B18)-1140C					Black, moderately, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0253	B18 Sewage Plant			Asphalt west side of building.	No		< 0.5	COS(B18)-1141ABC
B18	COS(B18)-1141A					Black, hard, non fibrous tar and course aggregate.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0254	B18 Sewage Plant			Asphalt west side of building.	No		< 0.5	COS(B18)-1141ABC
B18	COS(B18)-1141B					Black, hard, non fibrous tar and course aggregate.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0255	B18 Sewage Plant			Asphalt west side of building.	No		< 0.5	COS(B18)-1141ABC
B18	COS(B18)-1141C					Black, hard, non fibrous tar and course aggregate.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0256	B18 Sewage Plant			ACU1 West side of B18- caulking.	No		< 0.5	COS(B18)-1142ABC
B18	COS(B18)-1142A					Grey, moderately soft, non fibrous, rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0257	B18 Sewage Plant			ACU1 West side of B18- caulking.	No		< 0.5	COS(B18)-1142ABC
B18	COS(B18)-1142B					Grey, moderately soft, non fibrous, rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0258	B18 Sewage Plant			ACU1 West side of B18- caulking.	No		< 0.5	COS(B18)-1142ABC
B18	COS(B18)-1142C					Grey, moderately soft, non fibrous, rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0259	B18 Sewage Plant			Black tar on west wall above ACU1.	No		< 0.5	COS(B18)-1143ABC
B18	COS(B18)-1143A					Black, soft tar with some glass fibres.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☐ A	☑ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0260	B18 Sewage Plant			Black tar on west wall above ACU1.	No		< 0.5	COS(B18)-1143ABC
B18	COS(B18)-1143B					1. Black, soft tar with some glass fibres. 2. Grey, non fibrous paint.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☐ A	☑ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0261	B18 Sewage Plant			Black tar on west wall above ACU1.	No		< 0.5	COS(B18)-1143ABC
B18	COS(B18)-1143C					1. Black, soft tar with some glass fibres. 2. Grey, non fibrous paint.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☐ A	☑ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0262	B18 Sewage Plant			West outside wall of electrical room vent - grey caulking.	No		< 0.5	COS(B18)-1144ABC
B18	COS(B18)-1144A					Grey, soft, non fibrous caulking.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☐ A	☑ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0263	B18 Sewage Plant			West outside wall of electrical room vent - grey caulking.	No		< 0.5	COS(B18)-1144ABC
B18	COS(B18)-1144B					Grey, soft, non fibous caulking.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☐ A	☑ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0264	B18 Sewage Plant			West outside wall of electrical room vent - grey caulking.	No		< 0.5	COS(B18)-1144ABC
B18	COS(B18)-1144C					Grey, soft, non fibous caulking.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☐ A	☑ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0265	B18 Sewage Plant			Grey caulking Southside escape hatch	No		< 0.5	COS(B18)-1145ABC
B18	COS(B18)-1145A					Grey, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0266	B18 Sewage Plant			Grey caulking Southside escape hatch	No		< 0.5	COS(B18)-1145ABC
B18	COS(B18)-1145B					Grey, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0267	B18 Sewage Plant			Grey caulking Southside escape hatch	No		< 0.5	COS(B18)-1145ABC
B18	COS(B18)-1145C					Grey, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0268	B18 Sewage Plant			Foundation tar Eastside of B18.	No		< 0.5	COS(B18)-1146ABC
B18	COS(B18)-1146A					Black, soft, non fibrous tar. Small sample size.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0269	B18 Sewage Plant			Foundation tar Eastside of B18.	No		< 0.5	COS(B18)-1146ABC
B18	COS(B18)-1146B					Black, soft, non fibrous tar. Small sample size.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0270	B18 Sewage Plant			Foundation tar Eastside of B18.	No		< 0.5	COS(B18)-1146ABC
B18	COS(B18)-1146C					Black, soft, non fibrous tar. Small sample size.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0271	B18 Sewage Plant			Cement baseboard main entrance.	Yes	Chrysotile	5-10	COS(B18)-1147ABC
B18	COS(B18)-1147A					1. Grey, hard packed, cementitious with chrysotile bundles throughout. 2. Yellow, translucent, non fibrous adhesive. 3. Grey / white, packed aggregate and adhesive.			
Kevin Attenborough	☐					☑ A ☐ B ☐ C Vis ☐ C NOT Vis ☐ D			
☑ Good ☐ Fair ☐ Poor ☐ Debris									
13/02/2020	20-0272	B18 Sewage Plant			Cement baseboard main entrance.	Yes	Chrysotile	5-10	COS(B18)-1147ABC
B18	COS(B18)-1147B					1. Grey, hard packed, cementitious with chrysotile bundles throughout. 2. Yellow, translucent, non fibrous adhesive. NOT ANALYZED AS PER BP-SM-00045. 3. Grey / white, packed aggregate and adhesive. SEE SAMPLE 20-0271			
Kevin Attenborough	☐					☑ A ☐ B ☐ C Vis ☐ C NOT Vis ☐ D			
☑ Good ☐ Fair ☐ Poor ☐ Debris									
13/02/2020	20-0273	B18 Sewage Plant			Cement baseboard main entrance.	Yes	Chrysotile	5-10	COS(B18)-1147ABC
B18	COS(B18)-1147C					1. Grey, hard packed, cementitious with chrysotile bundles throughout. 2. Yellow, translucent, non fibrous adhesive. NOT ANALYZED AS PER BP-SM-00045. 3. Grey / white, packed aggregate and adhesive. SEE SAMPLE 20-0271			
Kevin Attenborough	☐					☑ A ☐ B ☐ C Vis ☐ C NOT Vis ☐ D			
☑ Good ☐ Fair ☐ Poor ☐ Debris									
13/02/2020	20-0274	B18 Sewage Plant			Ceiling tile by main entrance.	No		< 0.5	COS(B18)-1148ABC
B18	COS(B18)-1148A					Grey, soft packed, cellulose, mineral wool and perlite.			
Kevin Attenborough	☑					☑ A ☐ B ☐ C Vis ☐ C NOT Vis ☐ D			
☑ Good ☐ Fair ☐ Poor ☐ Debris									
13/02/2020	20-0275	B18 Sewage Plant			Ceiling tile by main entrance.	No		< 0.5	COS(B18)-1148ABC
B18	COS(B18)-1148B					1. White, soft packed, cementitious, non fibrous coating. 2. Grey, soft packed, cellulose, mineral wool and perlite.			
Kevin Attenborough	☑					☑ A ☐ B ☐ C Vis ☐ C NOT Vis ☐ D			
☑ Good ☐ Fair ☐ Poor ☐ Debris									
13/02/2020	20-0276	B18 Sewage Plant			Ceiling tile by main entrance.	No		< 0.5	COS(B18)-1148ABC
B18	COS(B18)-1148C					1. White, soft packed, cementitious, non fibrous coating. 2. Grey, soft packed, cellulose, mineral wool and perlite.			
Kevin Attenborough	☑					☑ A ☐ B ☐ C Vis ☐ C NOT Vis ☐ D			
☑ Good ☐ Fair ☐ Poor ☐ Debris									

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0277	B18 Sewage Plant			Concrete slab in electrical room.	No		< 0.5	COS(B18)-1149ABC
B18	COS(B18)-1149A					Yellow / white, hard, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0278	B18 Sewage Plant			Concrete slab in electrical room.	No		< 0.5	COS(B18)-1149ABC
B18	COS(B18)-1149B					Yellow / white, hard, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0279	B18 Sewage Plant			Concrete slab in electrical room.	No		< 0.5	COS(B18)-1149ABC
B18	COS(B18)-1149C					Yellow / white, hard, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0280	B18 Sewage Plant			Ceiling tile in electrical room by speaker.	No		< 0.5	COS(B18)-1150ABC
B18	COS(B18)-1150A					1. White, soft pressed, mineral wool. 2. White, non fibrous coating.			
Kevin Attenborough	☑								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0281	B18 Sewage Plant			Ceiling tile in electrical room by speaker.	No		< 0.5	COS(B18)-1150ABC
B18	COS(B18)-1150B					1. White, soft pressed, mineral wool. 2. White, non fibrous coating.			
Kevin Attenborough	☑								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0282	B18 Sewage Plant			Ceiling tile in electrical room by speaker.	No		< 0.5	COS(B18)-1150ABC
B18	COS(B18)-1150C					1. White, soft pressed, mineral wool. 2. White, non fibrous coating.			
Kevin Attenborough	☑								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0283	B18 Sewage Plant			Taken from the bottom door of fumehood in lab.	No		< 0.5	COS(B18)-1151ABC
B18	COS(B18)-1151A					White, hard packed, cementitious, cellulose and wollastonite present.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0284	B18 Sewage Plant			Taken from the bottom door of fumehood in lab.	No		< 0.5	COS(B18)-1151ABC
B18	COS(B18)-1151B					White, hard packed, cementitious, cellulose and wollastonite present.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0285	B18 Sewage Plant			Taken from the bottom door of fumehood in lab.	No		< 0.5	COS(B18)-1151ABC
B18	COS(B18)-1151C					White, hard packed, cementitious, cellulose and wollastonite present.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0286	B18 Sewage Plant			Taken from inside main fumehood in lab.	No		< 0.5	COS(B18)-1152ABC
B18	COS(B18)-1152A					White, hard packed, cementitious, cellulose and wollastonite present.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0287	B18 Sewage Plant			Taken from inside main fumehood in lab.	No		< 0.5	COS(B18)-1152ABC
B18	COS(B18)-1152B					White, hard packed, cementitious, cellulose and wollastonite present.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0288	B18 Sewage Plant			Taken from inside main fumehood in lab.	No		< 0.5	COS(B18)-1152ABC
B18	COS(B18)-1152C					White, hard packed, cementitious, cellulose and wollastonite present.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0289	B18 Sewage Plant			Mastic from baseboard in lab.	No		< 0.5	COS(B18)-1153ABC
B18	COS(B18)-1153A					Brown, sticky adhesive with cellulose and mineral wool fibres.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0290	B18 Sewage Plant			Mastic from baseboard in lab.	No		< 0.5	COS(B18)-1153ABC
B18	COS(B18)-1153B					Brown, sticky adhesive with cellulose and mineral wool fibres.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0291	B18 Sewage Plant			Mastic from baseboard in lab.	No		< 0.5	COS(B18)-1153ABC
B18	COS(B18)-1153C					Brown, sticky adhesive with cellulose and mineral wool fibres.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0292	B18 Sewage Plant			Washroom wall tile.	No		< 0.5	COS(B18)-1154ABC
B18	COS(B18)-1154A					Red, hard, non fibrous, ceramic tile.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0293	B18 Sewage Plant			Washroom wall tile.	No		< 0.5	COS(B18)-1154ABC
B18	COS(B18)-1154B					Red, hard, non fibrous, ceramic tile.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0294	B18 Sewage Plant			Washroom wall tile.	No		< 0.5	COS(B18)-1154ABC
B18	COS(B18)-1154C					Red, hard, non fibrous, ceramic tile.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0295	B18 Sewage Plant			Washroom wall grout.	No		< 0.5	COS(B18)-1155ABC
B18	COS(B18)-1155A					White, hard, non fibrous, cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0296	B18 Sewage Plant			Washroom wall grout.	No		< 0.5	COS(B18)-1155ABC
B18	COS(B18)-1155B					White, hard, non fibrous, cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0297	B18 Sewage Plant			Washroom wall grout.	No		< 0.5	COS(B18)-1155ABC
B18	COS(B18)-1155C					White, hard, non fibrous, cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0298	B18 Sewage Plant			White caulking from North door in control room.	Yes	Chrysotile	0.5-5	COS(B18)-1156ABC
B18	COS(B18)-1156A					1. Grey, hard, cementitious with short cut chrysotile bundles. 2. Grey / white, soft, non fibrous caulking.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0299	B18 Sewage Plant			White caulking from North door in control room.	Yes	Chrysotile	0.5-5	COS(B18)-1156ABC
B18	COS(B18)-1156B					1. Grey, hard, cementitious with short cut chrysotile bundles. 2. Grey / white, soft, non fibrous caulking. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 20-0298.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0300	B18 Sewage Plant			White caulking from North door in control room.	Yes	Chrysotile	0.5-5	COS(B18)-1156ABC
B18	COS(B18)-1156C					1. Grey, hard, cementitious with short cut chrysotile bundles. 2. Grey / white, soft, non fibrous caulking. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 20-0298.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0301	B18 Sewage Plant			West window glazing from Control room.	Yes	Chrysotile	5-10	COS(B18)-1157ABC
B18	COS(B18)-1157A					1. Grey, soft caulking with chrysotile bundles. 2. White / grey, non fibrous paint.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0302	B18 Sewage Plant			West window glazing from Control room.	Yes	Chrysotile	5-10	COS(B18)-1157ABC
B18	COS(B18)-1157B					1. Grey, soft caulking with chrysotile bundles. 2. White / grey, non fibrous paint. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 20-0301.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0303	B18 Sewage Plant			West window glazing from Control room.	Yes	Chrysotile	5-10	COS(B18)-1157ABC
B18	COS(B18)-1157C					1. Grey, soft caulking with chrysotile bundles. 2. White / grey, non fibrous paint. NOT ANALYZED AS PER BP-SM-00045. SEE SAMPLE 20-0301.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0304	B18 Sewage Plant			Cinder block mortar from Control room.	No		< 0.5	COS(B18)-1158ABC
B18	COS(B18)-1158A					1. Grey, powdered, non fibrous cement. 2. Yellow/ white, soft mastic with few cellulose fibres.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0305	B18 Sewage Plant			Cinder block mortar from Control room.	No		< 0.5	COS(B18)-1158ABC
B18	COS(B18)-1158B					1. Grey, powdered, non fibrous cement.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0306	B18 Sewage Plant			Cinder block mortar from Control room.	No		< 0.5	COS(B18)-1158ABC
B18	COS(B18)-1158C					Grey, powdered, non fibrous cement.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0307	B18 Sewage Plant			Window glazing West window from Control room.	No		< 0.5	COS(B18)-1159ABC
B18	COS(B18)-1159A					Black, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0308	B18 Sewage Plant			Window glazing West window from Control room.	No		< 0.5	COS(B18)-1159ABC
B18	COS(B18)-1159B					Black, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0309	B18 Sewage Plant			Window glazing West window from Control room.	No		< 0.5	COS(B18)-1159ABC
B18	COS(B18)-1159C					Black, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0310	B18 Sewage Plant			Comminutor room West door caulking.	No		< 0.5	COS(B18)-1160ABC
B18	COS(B18)-1160A					Black, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0311	B18 Sewage Plant			Comminutor room West door caulking.	No		< 0.5	COS(B18)-1160ABC
B18	COS(B18)-1160B					Black, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0312	B18 Sewage Plant			Comminutor room West door caulking.	No		< 0.5	COS(B18)-1160ABC
B18	COS(B18)-1160C					Black, soft, non fibrous rubber.			
Kevin Attanborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0313	B18 Sewage Plant			Red gasket from CPM1.	No		< 0.5	COS(B18)-1161ABC
B18	COS(B18)-1161A					Red, hard, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0314	B18 Sewage Plant			Red gasket from CPM1.	No		< 0.5	COS(B18)-1161ABC
B18	COS(B18)-1161B					Red, hard, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0315	B18 Sewage Plant			Red gasket from CPM1.	No		< 0.5	COS(B18)-1161ABC
B18	COS(B18)-1161C					Red, hard, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0316	B18 Sewage Plant			Fire proofing (white) in Compressor room.	No		< 0.5	COS(B18)-1162ABC
B18	COS(B18)-1162A					White, soft packed, cementitious, mineral wool.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0317	B18 Sewage Plant			Fire proofing (white) in Compressor room.	No		< 0.5	COS(B18)-1162ABC
B18	COS(B18)-1162B					White, soft packed, cementitious, mineral wool.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0318	B18 Sewage Plant			Fire proofing (white) in Compressor room.	No		< 0.5	COS(B18)-1162ABC
B18	COS(B18)-1162C					White, soft packed, cementitious, mineral wool and some cellulose fibres.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

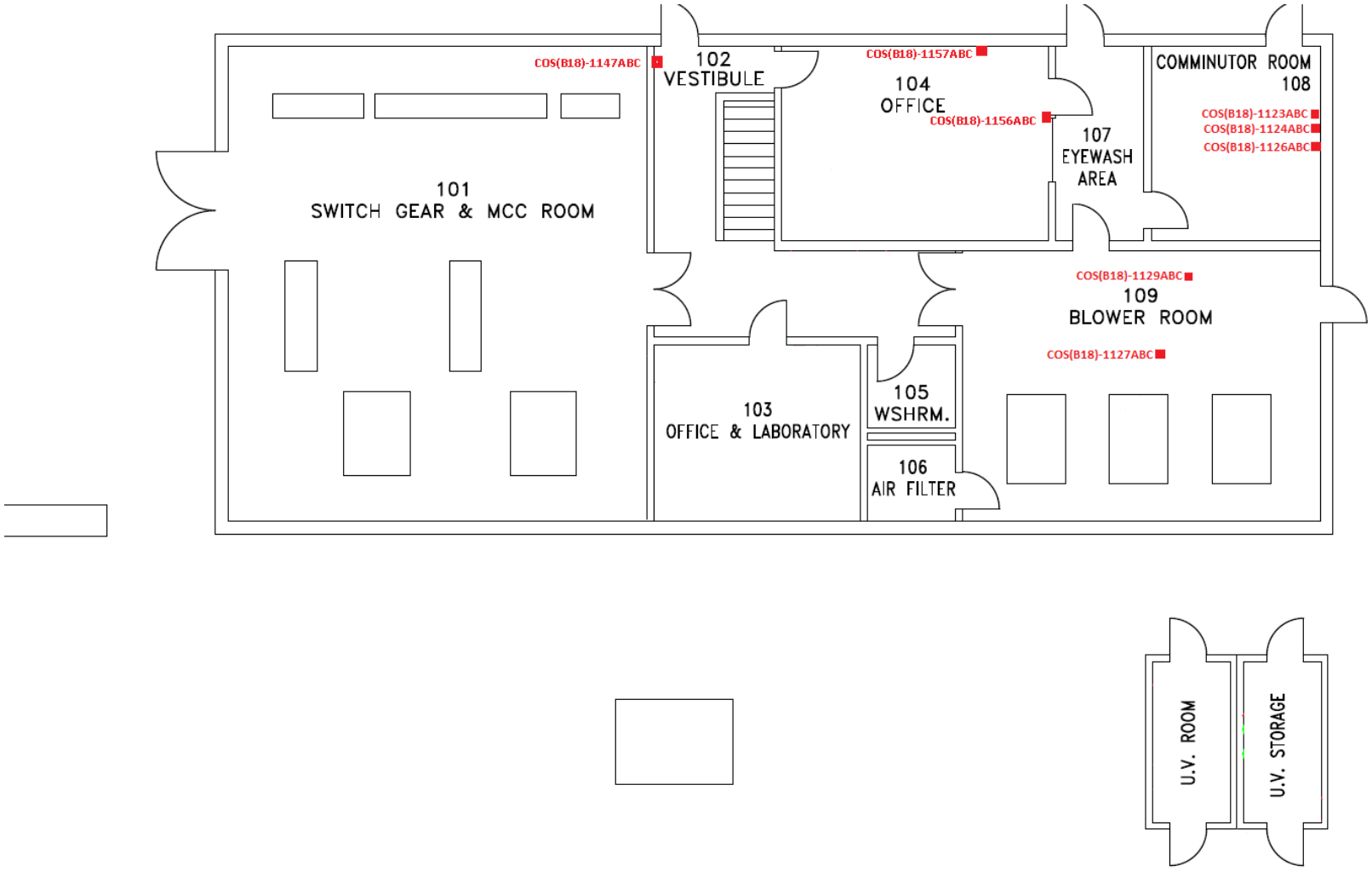
Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0319	B18 Sewage Plant			Mortar downstairs bathroom.	No		< 0.5	COS(B18)-1163ABC
B18	COS(B18)-1163A					Grey, hard, cementitious with few cellulose fibres present.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0320	B18 Sewage Plant			Mortar downstairs bathroom.	No		< 0.5	COS(B18)-1163ABC
B18	COS(B18)-1163B					Grey, hard, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0321	B18 Sewage Plant			Mortar downstairs bathroom.	No		< 0.5	COS(B18)-1163ABC
B18	COS(B18)-1163C					Grey, hard, non fibrous cement. Few cellulose fibres on surface.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0322	B18 Sewage Plant			Tile from downstairs bathroom.	No		< 0.5	COS(B18)-1164ABC
B18	COS(B18)-1164A					Red, hard, non fibrous ceramic tile.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0323	B18 Sewage Plant			Tile from downstairs bathroom.	No		< 0.5	COS(B18)-1164ABC
B18	COS(B18)-1164B					Red, hard, non fibrous ceramic tile.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0324	B18 Sewage Plant			Tile from downstairs bathroom.	No		< 0.5	COS(B18)-1164ABC
B18	COS(B18)-1164C					Red, hard, non fibrous ceramic tile.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0325	B18 Sewage Plant			Grey caulking East of V34 - wall penetration.	No		< 0.5	COS(B18)-1165ABC
B18	COS(B18)-1165A					1. White, non fibrous paint. 2. Grey, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0326	B18 Sewage Plant			Grey caulking East of V34 - wall penetration.	No		< 0.5	COS(B18)-1165ABC
B18	COS(B18)-1165B					1. White, non fibrous paint. 2. Grey, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0327	B18 Sewage Plant			Grey caulking East of V34 - wall penetration.	No		< 0.5	COS(B18)-1165ABC
B18	COS(B18)-1165C					1. White, non fibrous paint. 2. Grey, non fibrous rubber.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0328	B18 Sewage Plant			Drywall compound basement bathroom wall.	No		< 0.5	COS(B18)-1166ABC
B18	COS(B18)-1166A					1. White, soft, non fibrous paint. 2. White, soft packed, cementitious, few cellulose fibres present.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0329	B18 Sewage Plant			Drywall compound basement bathroom wall.	No		< 0.5	COS(B18)-1166ABC
B18	COS(B18)-1166B					1. White, soft, non fibrous paint. 2. White, soft packed, cementitious, few cellulose fibres present.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0330	B18 Sewage Plant			Drywall compound basement bathroom wall.	No		< 0.5	COS(B18)-1166ABC
B18	COS(B18)-1166C					1. White, soft, non fibrous paint. 2. White, soft packed, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

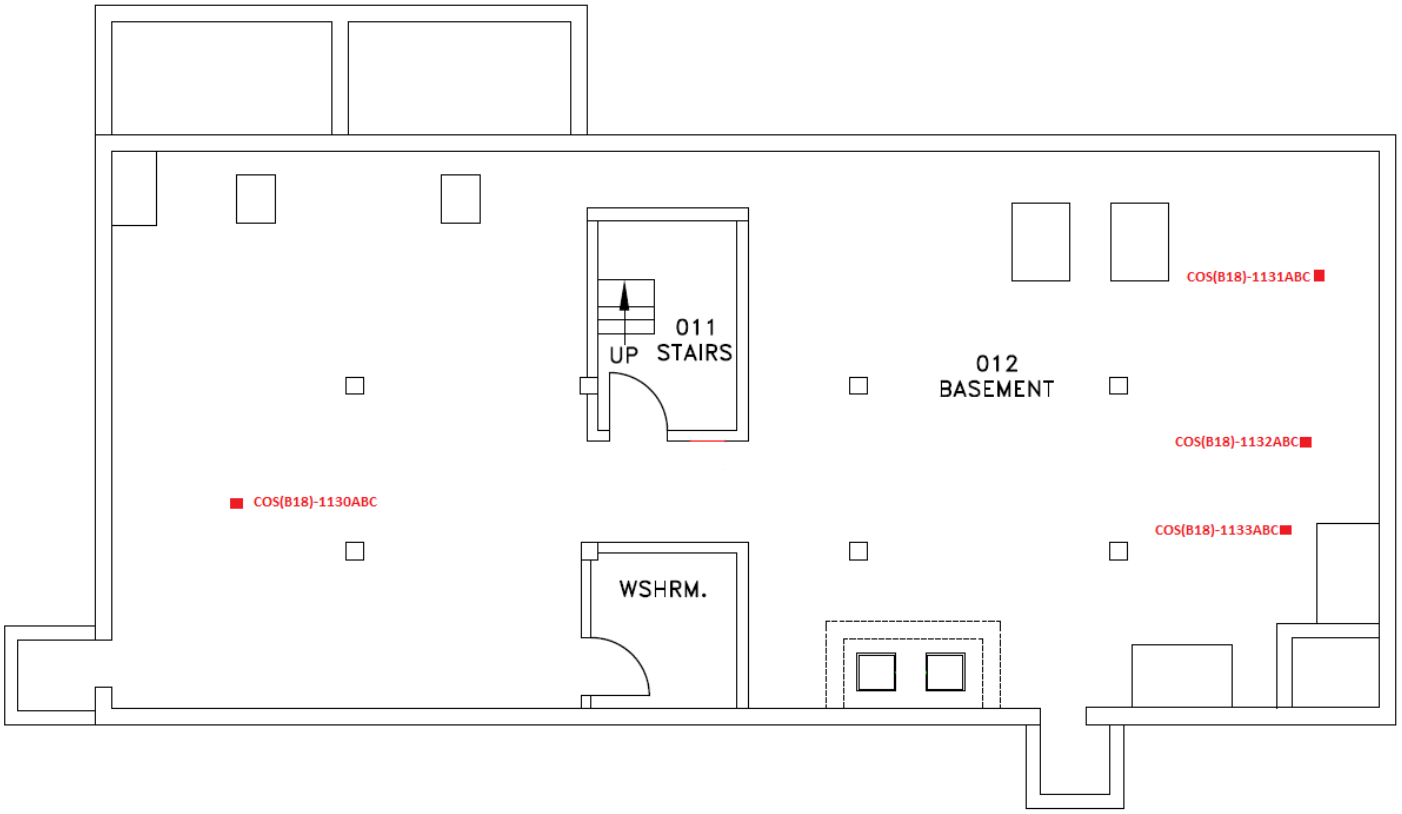
Sample Date	Lab Sample Number	Facility	Unit	Elevation	Location Description	Asbestos	Type	Concentration %	omogenous Group I
Building	Facility Sample Number	Room	Column Number			Sample Comments			
Sampled By	Friable?	USI/ Equipment Code							
Condition						Accessibility			
13/02/2020	20-0331	B18 Sewage Plant			Southside of basement - East wall grey hydraulic cement (penetration)	No		< 0.5	COS(B18)-1167ABC
B18	COS(B18)-1167A					Grey, hard, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0332	B18 Sewage Plant			Southside of basement - East wall grey hydraulic cement (penetration)	No		< 0.5	COS(B18)-1167ABC
B18	COS(B18)-1167B					Grey, hard, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0333	B18 Sewage Plant			Southside of basement - East wall grey hydraulic cement (penetration)	No		< 0.5	COS(B18)-1167ABC
B18	COS(B18)-1167C					Grey, hard, non fibrous cement.			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0334	B18 Sewage Plant			Southside of basement - South wall - grey caulking (penetration)	No		< 0.5	COS(B18)-1168ABC
B18	COS(B18)-1168A					Grey, non fibrous rubber			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0335	B18 Sewage Plant			Southside of basement - South wall - grey caulking (penetration)	No		< 0.5	COS(B18)-1168ABC
B18	COS(B18)-1168B					Grey, non fibrous rubber			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D
13/02/2020	20-0336	B18 Sewage Plant			Southside of basement - South wall - grey caulking (penetration)	No		< 0.5	COS(B18)-1168ABC
B18	COS(B18)-1168C					Grey, non fibrous rubber			
Kevin Attenborough	☐								
☑ Good	☐ Fair	☐ Poor	☐ Debris			☑ A	☐ B	☐ C Vis	☐ C NOT Vis ☐ D

APPENDIX E: AREA MAPS OF POSITIVE ASBESTOS CONTAINING MATERIAL

B18 Map of Positive Asbestos Containing Material Locations – Main Floor



B18 Map of Positive Asbestos Containing Material Locations - Basement



APPENDIX F: EVALUATION CRITERIA FOR ASSESSING ASBESTOS-CONTAINING MATERIALS

EVALUATION CRITERIA FOR ASSESSING ASBESTOS-CONTAINING MATERIALS

PART 1 - EVALUATION OF CONDITION

A. Friable Spray Applied Fireproofing, Insulation and Texture Finishes (Surfacing Materials)

To evaluate the condition of ACM sprayed or troweled fireproofing, sprayed or troweled thermal insulation (non-mechanical), or texture, decorative or acoustic finishes, the following criteria are applied:

Good	Surface of material shows no significant signs of damage, deterioration or delamination. Good condition includes unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, or encapsulated fireproofing or texture finishes where the encapsulant or paint has been applied after the damage or fallout occurred.
Poor	A sprayed material that shows signs of significant damage or is significantly delaminating or deteriorating. This may be limited to surface delamination or some portion of the substrate may be exposed.

In observation areas where damage exists in isolated locations, both good and poor condition may be applicable. The extent or percentage of each condition will be recorded. Fair condition is not utilized in the evaluation of ACM sprayed or troweled fireproofing, sprayed or troweled thermal insulation (non-mechanical), or texture, decorative or acoustic finishes.

The evaluation of sprayed or troweled fireproofing, sprayed or troweled thermal insulation (non-mechanical insulation), or texture, decorative or acoustic finishes which are present above ceilings, may be limited by the number of observations made, and by building components such as ducts or full height walls that obstruct the above ceiling observations.

B. Friable Mechanical Insulation

To evaluate the condition of friable ACM mechanical insulation or thermal system insulation (on vessels, boilers, breeching, ducts, pipes, fan units, equipment etc.) the following criteria are applied:

Good	Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor damage (i.e., scuffs or stains), but the jacketing is not penetrated.
Fair	Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that had never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges from minor to none. Damage can be repaired.
Poor	Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired. Includes components where insulation may have been removed incompletely.

The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. It is often not possible to observe each foot of mechanical insulation from all angles.

C. Potentially Friable Materials

Potentially friable ACM are products that are basically non-friable while in place, but have the potential to generate friable dust upon removal or if significantly disturbed without appropriate procedures. These products may become friable, but are not used as Spray Applied Fireproofing, Insulation or Texture Finishes or Mechanical Insulation. Potentially Friable Materials include materials such as acoustic ceiling tiles, plaster and drywall joint compound. The use of the description Fair with regard to a potentially friable ACM may reflect their physical condition and not their tendency to release fibers to the air under normal use. To evaluate the condition of Potentially Friable Materials, the following criteria are applied:

Good	No significant damage or deterioration. Condition is at or near to the condition when it was installed. Still serving its intended use as a building material or finish.
Fair	Showing signs of some cracking or breakage, but is not deteriorating (e.g., cracked plaster, broken but in place ceiling tile, etc.). The condition is such that it is still serving its intended use as a building material or finish but may require repair for mainly cosmetic purposes.
Poor	Significant deterioration or breaking apart of the material. Material has deteriorated to the point it is not serving its intended use as building material or finish. Material has deteriorated to a point it has become friable. Normally potentially friable ACM in Poor condition is not repairable and requires at least localized removal and replacement.

D. Non-friable Materials

Non-friable ACM covers a wide range of products with a wide variation in their tendency to release dust or asbestos fibers to the air. Many of these materials, (particularly where the matrix is an unweathered bitumen, asphalt or tar material) do not release fibers except in very unusual circumstances or during significant disturbance (e.g., use of power tools). Others with a cementitious matrix (asbestos-cement products) can more readily release dust due to abrasion, demolition, weathering, etc. The potential for asbestos release from non-friable ACM is always lower than from friable ACM. Therefore the use of the descriptions Fair or Poor in regard to a non-friable ACM reflects only their physical condition and not their tendency to release fibers to the air under normal use or when disturbed. To evaluate the condition of non-friable Materials, the following criteria are applied:

Good	No significant damage or deterioration. Condition is at or near to the condition when it was installed. Still serving its intended use as a building material or finish.
Fair	Showing signs of some cracking or damage but has not deteriorated. Such change in condition may be repairable. The condition is such that it is still serving its intended use as a building material or finish and does not require repair or removal from an asbestos hazard perspective.
Poor	Significant deterioration or breaking apart of the material to the point at which it cannot be repaired and it will require at least local removal. Material has deteriorated to the point it is not serving its intended use as building material or finish. Material may have deteriorated to a point where traffic or disturbance may cause it to become friable. Non-friable ACM in poor condition may, but does not necessarily, indicate the material is friable, or pose a risk of fiber release if disturbed.

APPENDIX G: LEAD PAINT RESULTS – XRF

Lead Paint Results – XRF – B18 SPP – Sewage Processing Plant

Sample Date	Floor	Room	Equipment Code	Sample Location Description	Condition	Colour of Paint	Sample Number	Positive/ Negative	Lead Conc (ug/cm2)
02-Aug-18	Basement	Basement 012		Exit Door, Door Frame	G	Dark Grey	SPP-00008-A	P	3.05
02-Aug-18	Basement	Basement 012		Exit Door, Door Frame		Dark Grey	SPP-00008-B	P	4.56
02-Aug-18	Basement	Basement 012		Exit Door		Dark Grey	SPP-00008-C	P	3.4
02-Aug-18	Basement	Basement 012		Unwatering Well Pump 5 Piping	G	Brown	SPP-00011-A	P	4.23
02-Aug-18	Basement	Basement 012		Unwatering Well Pump 5 Piping		Brown	SPP-00011-B	P	4.44
02-Aug-18	Basement	Basement 012		Unwatering Well Pump 5 Piping		Brown	SPP-00011-C	P	4.07
02-Aug-18	Basement	Basement 012		Unwatering Well Pump 5 Motor	G	Yellow	SPP-00012-A	P	5.57
02-Aug-18	Basement	Basement 012		Unwatering Well Pump 5 Motor		Yellow	SPP-00012-B	P	5.55
02-Aug-18	Basement	Basement 012		Unwatering Well Pump 5 Motor		Yellow	SPP-00012-C	P	5.87
02-Aug-18	Basement	Basement 012	WW-71700-NV1	Pipe	F-P	Black	SPP-00013-A	P	3.67
02-Aug-18	Basement	Basement 012	WW-71700-NV1	Pipe		Black	SPP-00013-B	P	3.44
02-Aug-18	Basement	Basement 012	WW-71700-NV1	Pipe		Black	SPP-00013-C	P	3.51
02-Aug-18	Basement	Basement 012	WW-79600-V26	Valve Handle	G	Red	SPP-00014-A	P	10.87
02-Aug-18	Basement	Basement 012	WW-79600-V26	Valve Handle		Red	SPP-00014-B	P	10.44
02-Aug-18	Basement	Basement 012	WW-79600-V26	Valve Handle		Red	SPP-00014-C	P	10.65
02-Aug-18	Basement	Basement 012		Insulated Horizontal Duct Work	G	Beige	SPP-00017-A	P	1.76
02-Aug-18	Basement	Basement 012		Insulated Horizontal Duct Work		Beige	SPP-00017-B	P	1.55
02-Aug-18	Basement	Basement 012		Insulated Horizontal Duct Work		Beige	SPP-00017-C	P	1.63
02-Aug-18	Basement	Basement 012		Vertical Pipe	P	Beige	SPP-00018-A	P	2.09
02-Aug-18	Basement	Basement 012		Vertical Pipe		Beige	SPP-00018-B	P	2.22
02-Aug-18	Basement	Basement 012		Vertical Pipe		Beige	SPP-00018-C	P	2.02
02-Aug-18	Basement	Basement 012		Bracket/ Hinge	G	Dark Grey	SPP-00019-A	P	5.92
02-Aug-18	Basement	Basement 012		Bracket/ Hinge		Dark Grey	SPP-00019-B	P	5.67

02-Aug-18	Basement	Basement 012		Bracket/ Hinge		Dark Grey	SPP-00019-C	P	5.83
27-Nov-19	Main Floor	Electrical Room		Double Door/Frame	G	Grey	SPP-00021-A	P	3.63
27-Nov-19	Main Floor	Electrical Room		Double Door/Frame		Grey	SPP-00021-B	P	1.72
27-Nov-19	Main Floor	Electrical Room		Double Door/Frame		Grey	SPP-00021-C	P	4.15
27-Nov-19	Main Floor	Electrical Room	5510PL4	Electrical Panel	G	Grey	SPP-00023-A	P	4.57
27-Nov-19	Main Floor	Electrical Room	5510PL4	Electrical Panel		Grey	SPP-00023-B	P	4.38
27-Nov-19	Main Floor	Electrical Room	5510PL4	Electrical Panel		Grey	SPP-00023-C	P	4.89
27-Nov-19	Main Floor	Electrical Room	WW-53340-BUA	Switch Gear	G	Grey	SPP-00026-A	P	12.52
27-Nov-19	Main Floor	Electrical Room	WW-53340-BUA	Switch Gear		Grey	SPP-00026-B	P	12.16
27-Nov-19	Main Floor	Electrical Room	WW-53340-BUA	Switch Gear		Grey	SPP-00026-C	P	15.88
27-Nov-19	Main Floor	Electrical Room	WW-65330 PL1,2,3	Switch Gear	G	Grey	SPP-00027-A	P	6.34
27-Nov-19	Main Floor	Electrical Room	WW-65330 PL1,2,3	Switch Gear		Grey	SPP-00027-B	P	5.58
27-Nov-19	Main Floor	Electrical Room	WW-65330 PL1,2,3	Switch Gear		Grey	SPP-00027-C	P	6.46
27-Nov-19	Main Floor	Electrical Room		Double Door/Frame	F	Grey	SPP-00035-A	P	4.26
27-Nov-19	Main Floor	Electrical Room		Double Door/Frame		Grey	SPP-00035-B	P	3.94
27-Nov-19	Main Floor	Electrical Room		Double Door/Frame		Grey	SPP-00035-C	P	3.52
27-Nov-19	Main Floor	Electrical Room	WW-53340-MCC1	MCC	G	Light Grey	SPP-00037-A	P	1.66
27-Nov-19	Main Floor	Electrical Room	WW-53340-MCC1	MCC		Light Grey	SPP-00037-C	P	1.57
27-Nov-19	Main Floor	Electrical Room	WW-53340-T1	Electrical Panel 1-1	G	Grey	SPP-00042-A	P	2.31
27-Nov-19	Main Floor	Electrical Room	WW-53340-T1	Electrical Panel 1-1		Grey	SPP-00042-B	P	2.23
27-Nov-19	Main Floor	Electrical Room	WW-53340-T1	Electrical Panel 1-1		Grey	SPP-00042-C	P	2.77
27-Nov-19	Main Floor	Electrical Room	WW-53540-DS1	Lighting Panel Disconnect	G	Grey	SPP-00044-A	P	1.01
27-Nov-19	Main Floor	Electrical Room	WW-53540-DS1	Lighting Panel Disconnect		Grey	SPP-00044-B	P	1.04
27-Nov-19	Main Floor	Electrical Room	WW-53540-PL2	Electrical Panel	G	Grey	SPP-00045-B	P	1.01
27-Nov-19	Main Floor	Main Hall Way	WW-71400-FHC2	Fire Hose Cabinet	G	Red	SPP-00056-A	P	16.07
27-Nov-19	Main Floor	Main Hall Way	WW-71400-FHC2	Fire Hose Cabinet		Red	SPP-00056-B	P	13.33
27-Nov-19	Main Floor	Main Hall Way	WW-71400-FHC2	Fire Hose Cabinet		Red	SPP-00056-C	P	14.41
27-Nov-19	Main Floor	Main Hall Way		Washroom Door	G	Grey	SPP-00058-A	P	2.72
27-Nov-19	Main Floor	Main Hall Way		Washroom Door		Grey	SPP-00058-B	P	2.72

27-Nov-19	Main Floor	Main Hall Way		Washroom Door		Grey	SPP-00058-C	P	2.94
27-Nov-19	Main Floor	Main Hall Way		Blower Door	G	Grey	SPP-00059-A	P	3.39
27-Nov-19	Main Floor	Main Hall Way		Blower Door		Grey	SPP-00059-B	P	2.87
27-Nov-19	Main Floor	Main Hall Way		Blower Door		Grey	SPP-00059-C	P	3.18
27-Nov-19	Main Floor	UV Building	WW-79690-V9073	Valve Piping	G	Dark Grey	SPP-00067-B	P	14.82
27-Nov-19	Main Floor	UV Building	WW-79690-PM9039	Pump Motor Box	G	Orange	SPP-00070-A	P	150.99
27-Nov-19	Main Floor	UV Building	WW-79690-PM9039	Pump Motor Box		Orange	SPP-00070-B	P	156.45
27-Nov-19	Main Floor	UV Building	WW-79690-PM9039	Pump Motor Box		Orange	SPP-00070-C	P	149.04
27-Nov-19	Main Floor	UV Building	WW-79690-P9039	Junction Box	G	Light Grey	SPP-00072-A	P	1.52
27-Nov-19	Main Floor	UV Building	WW-79690-P9039	Junction Box		Light Grey	SPP-00072-B	P	1.47
27-Nov-19	Main Floor	UV Building	WW-79690-P9039	Junction Box		Light Grey	SPP-00072-C	P	1.56
27-Nov-19	Main Floor	UV Building	WW-79690-PM9039	Pump Motor	G	Teal	SPP-00073-A	P	33.15
27-Nov-19	Main Floor	UV Building	WW-79690-PM9039	Pump Motor		Teal	SPP-00073-B	P	29.94
27-Nov-19	Main Floor	UV Building	WW-79690-PM9039	Pump Motor		Teal	SPP-00073-C	P	31.79
27-Nov-19	Main Floor	UV Building	WW-79690-9040	Pump Motor	G	Dark Blue	SPP-00074-A	P	8.4
27-Nov-19	Main Floor	UV Building	WW-79690-9040	Pump Motor		Dark Blue	SPP-00074-B	P	8.14
27-Nov-19	Main Floor	UV Building	WW-79690-9040	Pump Motor		Dark Blue	SPP-00074-C	P	7.85
27-Nov-19	Main Floor	UV Building	WW-79690-9040	Support Base	F	Brown	SPP-00075-A	P	10.81
27-Nov-19	Main Floor	UV Building	WW-79690-9040	Support Base		Brown	SPP-00075-B	P	12.79
27-Nov-19	Main Floor	UV Building	WW-79690-9040	Support Base		Brown	SPP-00075-C	P	14.39
27-Nov-19	Main Floor	Blower Room	WW-79630-CPM1	Compressor Pump Motor	G	Yellow	SPP-00094-A	P	18.98
27-Nov-19	Main Floor	Blower Room	WW-79630-CPM1	Compressor Pump Motor		Yellow	SPP-00094-B	P	16.44
27-Nov-19	Main Floor	Blower Room	WW-79630-CPM1	Compressor Pump Motor		Yellow	SPP-00094-C	P	19.36
27-Nov-19	Main Floor	Blower Room	WW-79630-CPM1	Support Base	G	Beige	SPP-00095-A	P	2.17
27-Nov-19	Main Floor	Blower Room	WW-79630-CPM1	Support Base		Beige	SPP-00095-B	P	1.87
27-Nov-19	Main Floor	Blower Room	WW-79630-CPM1	Support Base		Beige	SPP-00095-C	P	1.75
27-Nov-19	Main Floor	Blower Room	WW-79630-SL1	Pipe Components	G	Light Grey	SPP-00097-A	P	183.9
27-Nov-19	Main Floor	Blower Room	WW-79630-SL1	Pipe Components		Light Grey	SPP-00097-B	P	196.45
27-Nov-19	Main Floor	Blower Room	WW-79630-SL1	Pipe Components		Light Grey	SPP-00097-C	P	156.66
27-Nov-19	Main Floor	Blower Room		Dampers	F-P	Brown	SPP-00098-A	P	4.79

27-Nov-19	Main Floor	Blower Room		Dampers		Brown	SPP-00098-B	P	7.67
27-Nov-19	Main Floor	Blower Room		Dampers		Brown	SPP-00098-C	P	4.04
27-Nov-19	Main Floor	Blower Room	WW-76930-CPM2	Compressor Pump Motor	G	Dark Green	SPP-00100-A	P	1.29
27-Nov-19	Main Floor	Blower Room	WW-76930-CPM2	Compressor Pump Motor		Dark Green	SPP-00100-A	P	1.26
27-Nov-19	Main Floor	Blower Room	WW-76930-CPM2	Compressor Pump Motor		Dark Green	SPP-00100-A	P	1.38
27-Nov-19	Main Floor	Blower Room		Man Door	G	Brown	SPP-00102-A	P	5.03
27-Nov-19	Main Floor	Blower Room		Man Door		Brown	SPP-00102-B	P	4.78
27-Nov-19	Main Floor	Blower Room		Man Door		Brown	SPP-00102-C	P	4.08
27-Nov-19	Main Floor	Blower Room	WW-79630-FRI	Door	G	Grey	SPP-00104-A	P	3.14
27-Nov-19	Main Floor	Blower Room	WW-79630-FRI	Door		Grey	SPP-00104-B	P	3.84
27-Nov-19	Main Floor	Blower Room	WW-79630-FRI	Door		Grey	SPP-00104-C	P	3.48
27-Nov-19	Main Floor	Blower Room		Door	G	Grey	SPP-00105-A	P	3.13
27-Nov-19	Main Floor	Blower Room		Door		Grey	SPP-00105-B	P	2.97
27-Nov-19	Main Floor	Blower Room		Door		Grey	SPP-00105-C	P	2.94
27-Nov-19	Main Floor	Blower Room		Floor	F-P	Red	SPP-00106-C	P	1.27
27-Nov-19	Main Floor	Blower Room		Window & Door Frame	G	Grey	SPP-00109-A	P	3.37
27-Nov-19	Main Floor	Blower Room		Window & Door Frame		Grey	SPP-00109-B	P	2.73
27-Nov-19	Main Floor	Blower Room		Window & Door Frame		Grey	SPP-00109-C	P	3.38
27-Nov-19	Main Floor	Comminutor Room		Pipe	F-P	Brown	SPP-00120-A	P	5
27-Nov-19	Main Floor	Comminutor Room		Pipe		Brown	SPP-00120-B	P	5
27-Nov-19	Main Floor	Comminutor Room		Pipe		Brown	SPP-00120-C	P	4.53
27-Nov-19	Main Floor	Comminutor Room	WW-71500-V24	Valve Handle	G	Red	SPP-00122-B	P	1.14
27-Nov-19	Main Floor	Comminutor Room	WW-73000-F7	Support Stand	G-F	Grey	SPP-00125-A	P	4.59
27-Nov-19	Main Floor	Comminutor Room	WW-73000-F7	Support Stand		Grey	SPP-00125-B	P	3.7
27-Nov-19	Main Floor	Comminutor Room	WW-73000-F7	Support Stand		Grey	SPP-00125-C	P	4.01
27-Nov-19	Main Floor	Comminutor Room	WW-73000-F7	Fan Motor	G	Green	SPP-00126-A	P	6.3
27-Nov-19	Main Floor	Comminutor Room	WW-73000-F7	Fan Motor		Green	SPP-00126-B	P	6.24
27-Nov-19	Main Floor	Comminutor Room	WW-73000-F7	Fan Motor		Green	SPP-00126-C	P	5.44
27-Nov-19	Main Floor	Comminutor Room		Door	G-F	Grey	SPP-00128-A	P	3.7
27-Nov-19	Main Floor	Comminutor Room		Door		Grey	SPP-00128-B	P	3.35

27-Nov-19	Main Floor	Comminutor Room		Door		Grey	SPP-00128-C	P	3.18
27-Nov-19	Main Floor	Lab	WW-5354-PL2 CB11, 13	Electrical Distribution Cover	G-F	Grey	SPP-00132-A	P	2.18
27-Nov-19	Main Floor	Lab	WW-5354-PL2 CB11, 13	Electrical Distribution Cover		Grey	SPP-00132-B	P	2.58
27-Nov-19	Main Floor	Lab	WW-5354-PL2 CB11, 13	Electrical Distribution Cover		Grey	SPP-00132-C	P	1.94
28-Nov-19	Outside		WW-79620-V2	Valve Handle	P	Orange	SPP-00140-A	P	3.48
28-Nov-19	Outside		WW-79620-V2	Valve Handle		Orange	SPP-00140-B	P	3.45
28-Nov-19	Outside		WW-79620-V2	Valve Handle		Orange	SPP-00140-C	P	3.04
28-Nov-19	Outside		WW-79610-CNV1	Casing / Guard	P	Grey	SPP-00142-A	P	5.85
28-Nov-19	Outside		WW-79610-CNV1	Casing / Guard		Grey	SPP-00142-B	P	4.9
28-Nov-19	Outside		WW-79610-CNV1	Casing / Guard		Grey	SPP-00142-C	P	4.96
28-Nov-19	Outside		WW-67961-PL41	Sludge Wasting Valve Control Panel	P	Grey	SPP-00143-B	P	1.17
28-Nov-19	Outside		WW-79630-V34	Piping	P	Grey	SPP-00144-A	P	5.51
28-Nov-19	Outside		WW-79630-V34	Piping		Grey	SPP-00144-B	P	6.01
28-Nov-19	Outside		WW-79630-V34	Piping		Grey	SPP-00144-C	P	5.29
28-Nov-19	Outside		WW-79630-V33	Valve Handle	G-F	Green	SPP-00145-A	P	74.99
28-Nov-19	Outside		WW-79630-V33	Valve Handle		Green	SPP-00145-B	P	64.82
28-Nov-19	Outside		WW-79630-V33	Valve Handle		Green	SPP-00145-C	P	68.84
28-Nov-19	Outside		WW-79620-V13	Valve Handle	G	Grey	SPP-00148-A	P	2.84
28-Nov-19	Outside		WW-79620-V13	Valve Handle		Grey	SPP-00148-B	P	2.22
28-Nov-19	Outside		WW-79620-V13	Valve Handle		Grey	SPP-00148-C	P	3.09
28-Nov-19	Outside		WW-71500-V18	Valve	G	Blue	SPP-00151-A	P	4.01
28-Nov-19	Outside		WW-71500-V18	Valve		Blue	SPP-00151-B	P	3.97
28-Nov-19	Outside		WW-71500-V18	Valve		Blue	SPP-00151-C	P	4.58
04-Dec-19	Outside		WW-79660-TK1 & TK2	Pipe	P	Brown	SPP-00153-A	P	5.46
04-Dec-19	Outside		WW-79660-TK1 & TK2	Pipe		Brown	SPP-00153-B	P	6.39

04-Dec-19	Outside		WW-79660-TK1 & TK2	Pipe		Brown	SPP-00153-C	P	6.08
04-Dec-19	Outside			Bollard	G-F	Yellow	SPP-00155-A	P	1.21
04-Dec-19	Outside			Bollard		Yellow	SPP-00155-B	P	1.1
04-Dec-19	Outside			Bollard		Yellow	SPP-00155-C	P	1.01
04-Dec-19	Outside		DF-71400-V5	Hydrant Valve	G	Red	SPP-00157-A	P	53.61
04-Dec-19	Outside		DF-71400-V5	Hydrant Valve		Red	SPP-00157-B	P	58.99
04-Dec-19	Outside		DF-71400-V5	Hydrant Valve		Red	SPP-00157-C	P	59.37
04-Dec-19	Outside		DF-71510-V4	Hydrant Valve	F	Green	SPP-00158-A	P	42.58
04-Dec-19	Outside		DF-71510-V4	Hydrant Valve		Green	SPP-00158-B	P	42.91
04-Dec-19	Outside		DF-71510-V4	Hydrant Valve		Green	SPP-00158-C	P	40.07
04-Dec-19	Outside		DF-71400-V4	Hydrant Valve	F-P	Red / Orange	SPP-00159-A	P	1.7
04-Dec-19	Outside		DF-71400-V4	Hydrant Valve		Red / Orange	SPP-00159-B	P	1.53
04-Dec-19	Outside		DF-71400-V4	Hydrant Valve		Red / Orange	SPP-00159-C	P	1.56
04-Dec-19	Main Floor	Mag Room		Pipe	P	Grey	SPP-00166-B	P	1.21
04-Dec-19	Main Floor	Mag Room		Pipe		Grey	SPP-00166-C	P	1.01

APPENDIX H: LEAD ANALYSIS PHOTOS

Bulk Lead Analysis – Photos

SPP-00008
Exit Door & Door Frame
Dark Grey – Good



SPP-00011
Unwatering Well Pump 5 Piping
Brown - Good



SPP-00012
Unwatering Well Pump 5 Motor
Basement
Yellow – Good



SPP-00013
Pipe WW-71700-NV1
Basement
Black – Fair Poor



SPP-00014
Valve Handle WW-79600-V26
Basement
Red – Good



SPP-00017
Insulated Horizontal Duct Work
Basement
Beige – Good



SPP-00018
Vertical Pipe
Basement
Beige – Poor



SPP-00019
Bracket/Hinge
Basement
Dark Grey – Good



SPP-00021
Double Door/Frame
Electrical Rm – Main Floor
Grey – Good



SPP-00023
Electrical Panel WW-55100-PL4
Electrical Rm – Main Floor
Grey – Good



SPP-00026
Switch Gear WW-53340-BUA
Electrical Rm – Main Floor
Grey – Good



SPP-00027
Switch Gear WW-65330-PL1,2,3
Electrical Rm – Main Floor
Grey – Good



SPP-00035
Double Door/Frame
Electrical Rm – Main Floor
Grey – Fair



SPP-00037
WW-53340-MCC1
Electrical Rm – Main Floor
Light Grey – Good



SPP-00042
Electrical Panel 1-1 for WW-53340-T1
Electrical Rm – Main Floor
Grey – Good



SPP-00044
Lighting Panel Disconnect switch WW-53540-DS1
Electrical Rm – Main Floor
Grey – Good



SPP-00056
Fire Hose Cabinet – WW-71400-FHC2
Main Floor – Main Hallway
Red – Good



SPP-00058
Washroom Door
Main Floor – Main Hallway
Grey – Good



SPP-00059
Blower Door
Main Floor – Main Hallway
Grey – Good



SPP-00067
Valve Piping – WW-79690-V9073
UV Building
Dark Grey – Good



SPP-00070
Pump Motor Box – WW-79690-PM9039
UV Building
Orange – Good



SPP-00072
Junction Box – WW-79690-P9039
UV Building
Light Grey – Good



SPP-00073
Pump Motor – WW-79690-PM9039
UV Building
Teal – Good



SPP-00074
Pump Motor – WW-79690-9040
UV Building
Dark Blue – Good



SPP-00075
Support Base for WW-79690-9040
UV Building
Brown – Fair



SPP-00094
Compressor Pump Motor – WW-79630-CPM1
Main Floor – Blower Rm
Yellow – Good



SPP-00095
Support Base – WW-79630-CPM1
Main Floor – Blower Rm
Beige – Good



SPP-00097
Pipe Components – WW-79630-SL1
Main Floor – Blower Rm
Light Grey – Good



SPP-00098
Dampers
Main Floor – Blower Rm
Brown – Fair Poor



SPP-00100
Compressor Pump Motor – WW-76930-CPM2
Main Floor – Blower Rm
Dark Green – Good



SPP-00102
Man Door
Main Floor – Blower Rm
Brown – Good



SPP-00104
Door – WW-79630-FRI
Main Floor – Blower Rm
Grey – Good



SPP-00105
Door
Main Floor – Blower Rm
Grey – Good



SPP-00106
Floor
Main Floor – Blower Rm
Red – Fair Poor



SPP-00109
Window & Door Frame
Main Floor – Blower Rm
Grey – Good



SPP-00120
Pipe
Main Floor - Comminutor Rm
Brown – Fair Poor



SPP-00122
Valve Handle – WW-71500-V24
Main Floor - Comminutor Rm
Red – Good



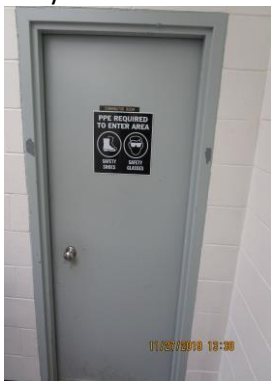
SPP-00125
Support Stand – WW-73000-F7
Main Floor - Comminutor Rm
Grey – Good Fair



SPP-00126
Fan Motor – WW-73000-F7
Main Floor - Comminutor Rm
Green – Good



SPP-00128
Door
Main Floor - Comminutor Rm
Grey – Good Fair



SPP-00132
Electrical Distribution Cover – WW-5354-PL2 CB11, 13
Main Floor – Lab
Grey – Good Fair



SPP-00140
Valve Handle – WW-79620-V2
Outside
Orange – Poor



SPP-00142
Casing/Guard – WW-79610-CNV1
Outside
Grey – Poor



SPP-00143
Sludge Wasting Valve Control Panel – WW-67961-PL41
Outside
Grey – Poor



SPP-00144
Piping – WW-79630-V34
Outside
Grey – Poor



SPP-00145
Valve Handle – WW-79630-V33
Outside
Green – Good Fair



SPP-00148
Valve Handle – WW-79620-V13
Outside
Grey – Good



SPP-00151
Valve – WW-71500-V18
Outside
Blue – Good



SPP-00153
Pipe – WW-79660-TK1 & TK2
Outside
Brown – Poor



SPP-00155
Bollard
Outside
Yellow – Good Fair



SPP-00157
Hydrant Valve – DF-71400-V5
Outside
Red – Good



SPP-00158
Hydrant Valve – DF-71510-V4
Outside
Green – Fair



SPP-00159
Hydrant Valve – DF-71400-V4
Outside
Red/Orange – Fair Poor

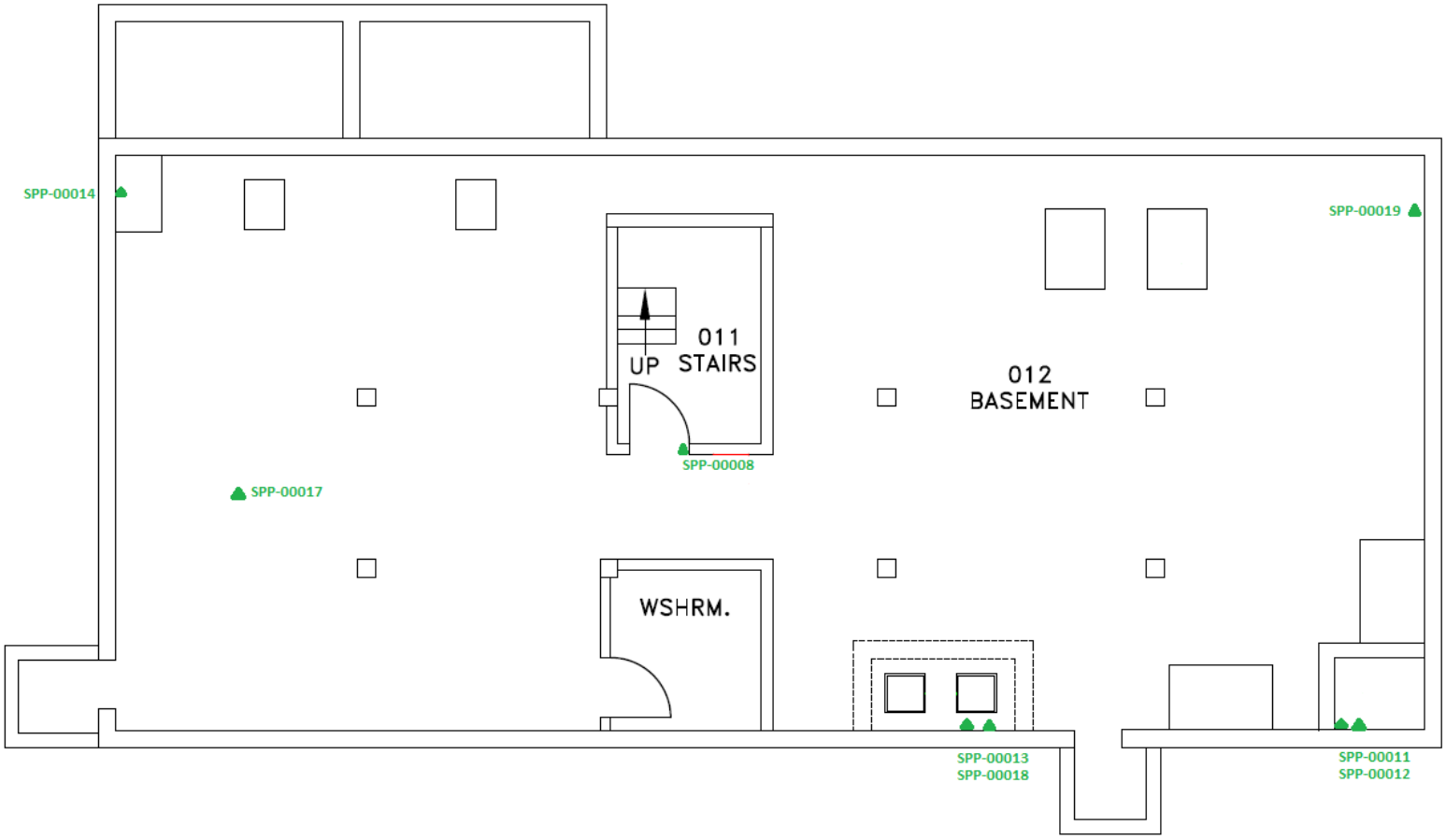


SPP-00166
Pipe
Main Floor – Mag Room
Grey – Poor

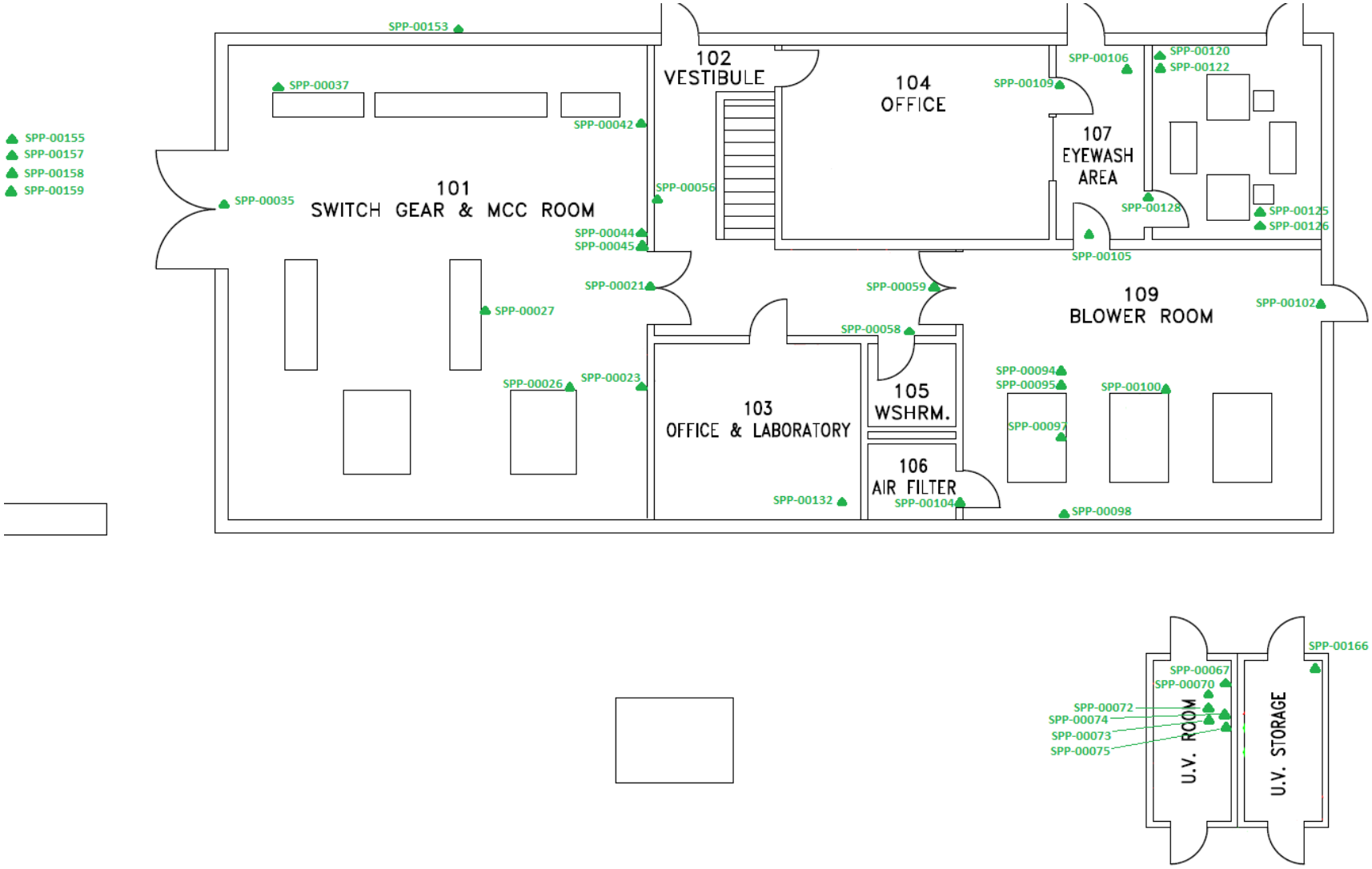


APPENDIX I: POSITIVE LEAD SAMPLING LOCATIONS

B18 – SPP- Sewage Processing Plant – Positive Lead Sampling Locations

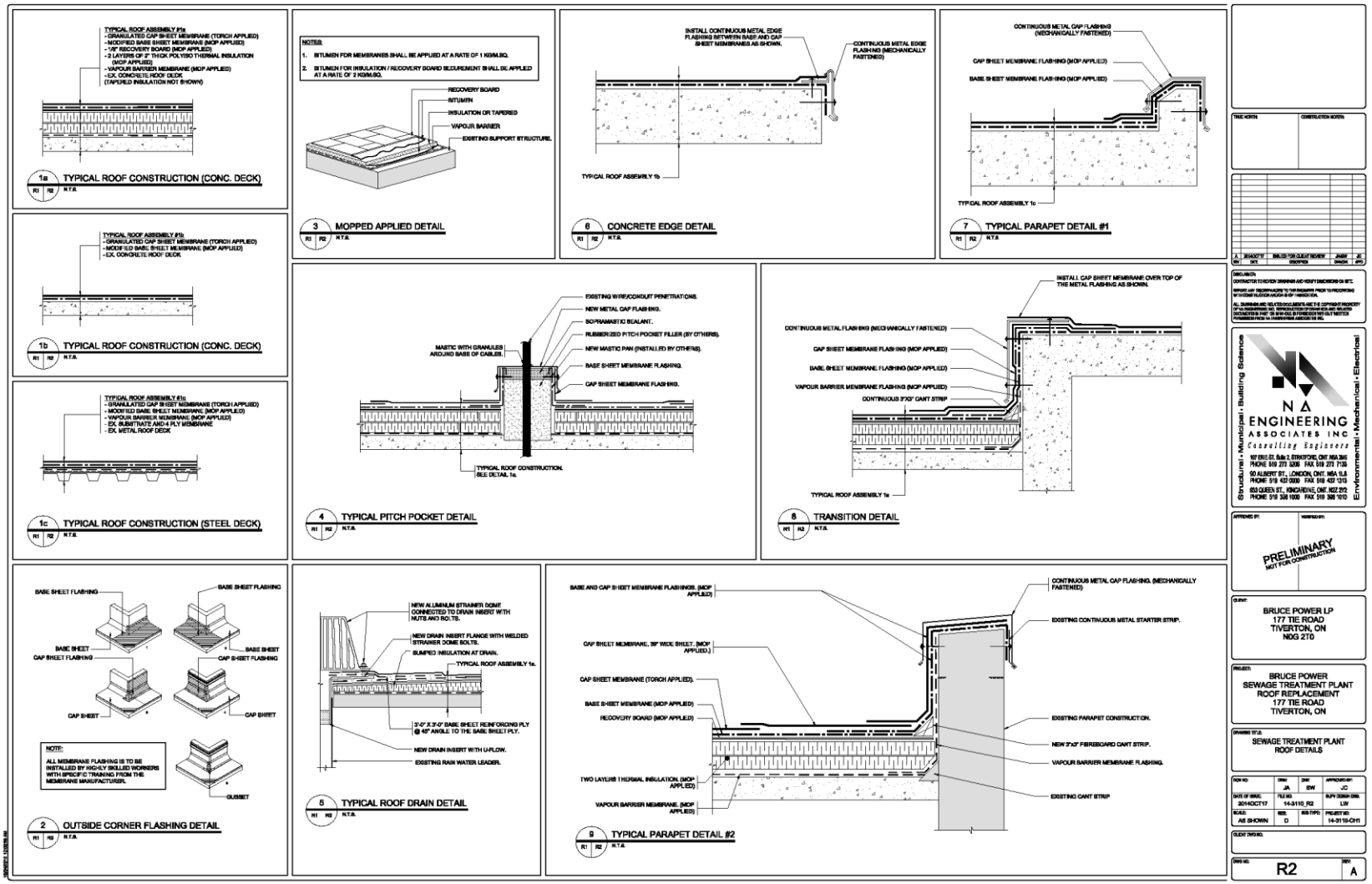


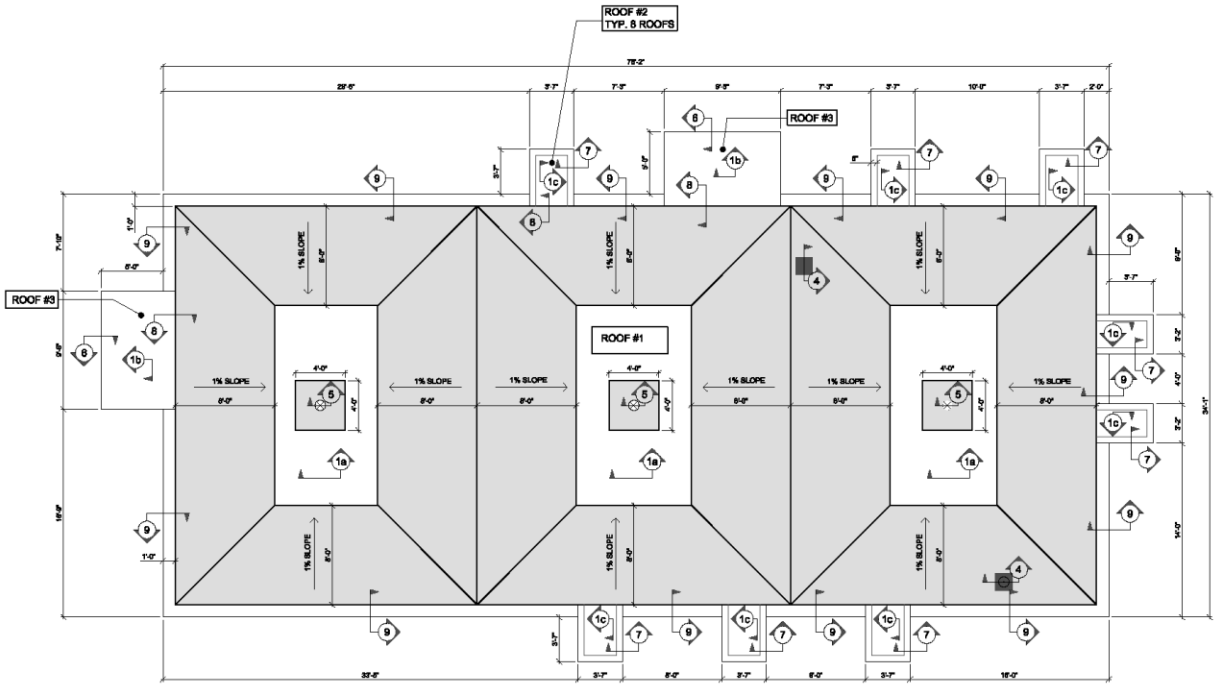
B18 – SPP- Sewage Processing Plant – Lead Sampling Locations



APPENDIX J: NEW ROOF DESIGNS

Roof Replacement Details – Sewage Processing Plant B18





1 SEWAGE TREATMENT PLANT ROOFING PLAN
SK SK N.T.S.

DESIGN STANDARDS

(a) ONTARIO BUILDING CODE 2010
(b) NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA) FIFTH EDITION.

GENERAL ROOFING NOTES

1. ALL DESIGN AND WORKMANSHIP ON THIS PROJECT SHALL MEET THE REQUIREMENTS OF THE ONTARIO BUILDING CODE.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS (INCLUDING LATEST AMENDMENTS) AND OTHER LOCAL AUTHORITIES HAVING JURISDICTION.
3. ALL DIMENSIONS SHALL BE VERIFIED ON THE JOB.
4. DO NOT SCALE DRAWINGS AND USE ONLY THOSE DRAWINGS MARKED "ISSUED FOR CONSTRUCTION". REMOVE EXISTING DRAWINGS FROM SITE, ON RECEIPT OF NEW REVISIONS.
5. REFER TO THE LATEST EDITION OF THE NRCA ROOFING AND WATERPROOFING MANUAL. REFER TO VOLUME 4 FIFTH EDITION FOR LOW SLOPE MEMBRANE ROOFING DETAILS.
6. CONTRACTOR TO UTILIZE GOOD ROOFING PRACTICES.
7. ALL PERSONNEL ON THE ROOFING CREW ARE TO BE TRAINED IN FALL ARREST MEASURES WHILE ON SITE AND CONFORM TO THE LATEST GUIDELINES.
8. ANY DAMAGE TO SURROUNDING ROOF SURFACE AS A RESULT OF THE SCOPE OF WORK ARE TO BE REPAIRED AT THE CONTRACTORS EXPENSE.
9. CONTRACTOR TO ENSURE ALL SURROUNDING GARDENS ETC. ARE PROTECTED FROM FALLING DEBRIS. CLEAN AREA AS REQUIRED. ANY DAMAGED LANDSCAPING IS TO BE REPAIRED AT THE CONTRACTORS EXPENSE.
10. REFER TO THE MANUFACTURERS WRITTEN LITERATURE FOR INSTALLATION GUIDELINES.
11. PROVIDE WARRANTY OF WORKMANSHIP FOR A MINIMUM OF 2 YEARS UPON COMPLETION. PROVIDE MANUFACTURER'S WRITTEN WARRANTIES.
12. ROOF WORK TO BE CONDUCTED BY A QUALIFIED ROOFING CONTRACTOR FAMILIAR WITH THE SPECIFIED PRODUCTS.
13. CARRY OUT ALL WORK AS RECOMMENDED BY THE CANADIAN ROOFING CONTRACTORS ASSOCIATION (CRCA).
14. THE ROOFING CONTRACTOR IS REQUIRED TO BE IN GOOD STANDING ORDER WITH THE CRCA.

TYPICAL LEGEND

- VENT PIPE
- DRAIN
- DENOTES LOCATION OF DRAIN SUMP. TAPER SUMP TO DRAIN CENTER.
- PITCH POCKET

NO.	DATE	DESCRIPTION	BY
A	2014OCT17	ISSUED FOR CLIENT REVIEW	JA/BW

DISCLAIMER:
CONTRACTOR TO REVIEW DRAWINGS AND VERIFY DIMENSIONS ON SITE.
REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION AND/OR SHOP FABRICATION.

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APPROVED BY: | WORKING BY:

PRELIMINARY
NOT FOR CONSTRUCTION

CLIENT:
BRUCE POWER LP
177 TIE ROAD
TIVERTON, ON
N0G 2T0

PROJECT:
BRUCE POWER
SEWAGE TREATMENT PLANT
ROOF REPLACEMENT
177 TIE ROAD
TIVERTON, ON

DRAWING TITLE:
SEWAGE TREATMENT PLANT
ROOF PLANS

DGN NO	DRN	CHK	APPROVED BY
	JA	BW	JC
DATE OF ISSUE	FILE NO.		SUPV. DESIGN ENG.
2014OCT17	14-3110_R1		LW
SCALE	SIZE	ISSUE TYPE	PROJECT NO.
AS SHOWN	D		14-3110-CH1

CLIENT DWG NO.

DWG NO. R1 REV. A