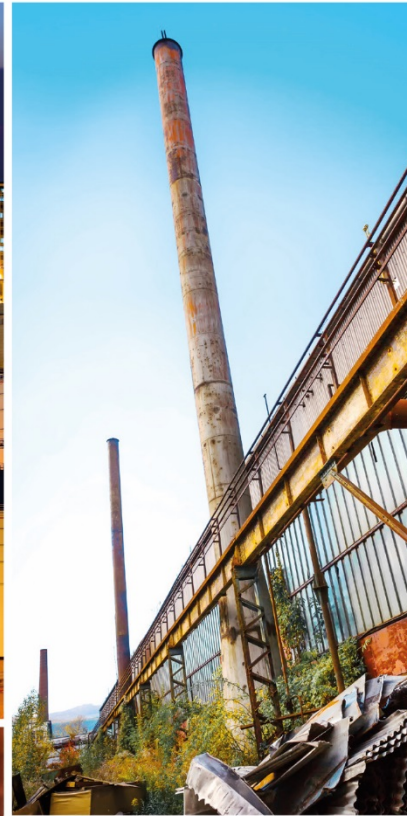
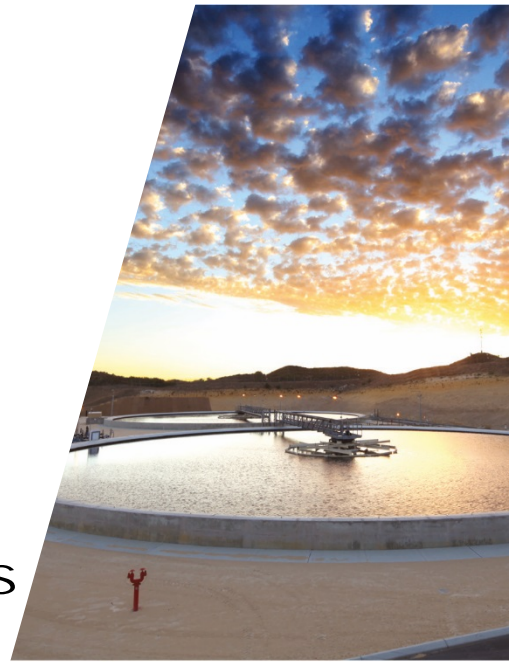




Hazardous Building Materials Assessment

Marystown Shipyard
Marystown, NL

Department of Municipal Affairs
and Environment





Executive Summary

GHD was retained by the Newfoundland and Labrador Department of Municipal Affairs and Environment (NLDMAE) to conduct a limited Hazardous Building Materials Assessment (HBMA) at the Marystown Shipyard (Site or Property) located on the west side of Mortier Bay in the Town of Marystown, Newfoundland and Labrador (NL). The objectives of the limited HBMA were to collect samples of building materials suspect to contain asbestos and/or lead based paints for laboratory analysis and conduct a visual inspection of the condition of the asbestos and lead-based painted surfaces.

Fieldwork associated with the limited HBMA involved the following:

- Collection of 29 potential ACM samples along with one field duplicate from seven buildings
- Collection of 26 potential lead-based paint samples from seven buildings and one outdoor area
- Visual observations for condition of potential ACMs or painted surfaces that may have lead-based paints.

Based on the historical document review along with 2018 Site inspection and analytical results, conclusions and recommendations are presented below and segregated by asbestos or lead-based paints. Priority for completion of the recommended asbestos and lead-based paint abatement work is dependent on the planned sequence of use and occupancy with the buildings to be occupied first to have the highest priority.

ACMs

In general, ACMs still present throughout the various buildings include pipe insulation on straight runs and fittings (some in open and accessible areas with others in concealed spaces), vinyl floor tiles (some with mastic), transite sheeting (cement board), and other miscellaneous types such as oven door gasket. Most remaining ACMs that were visible in the 2018 inspection were in good condition.

Some pipe insulation (friable ACM) in the Assembly & Erection Building was in poor condition.

Vinyl floor tiles with mastic (non-friable ACM) were in varying degrees of condition with some that were observed to be lifted from the sub floor (isolated areas in Carpenters & Joiners Building, some office and lunch room areas in Assembly & Erection Building, prevalent in the Syncrolift Building, and isolated areas in the Administration Building).

The following recommendations are offered regarding ACMs along with comments on priority:

1. The Asbestos Management Plan (AMP) prepared by JWEL in 2000 should be updated and all newly acquired data should be included. An Asbestos Management Manager also needs to be determined who will be responsible to ensure the AMP is maintained and followed by workers and contractors on the premises.
2. Immediate abatement is required for pipe insulation (friable ACM) in the Assembly & Erection Building that was in poor condition before occupancy, use, renovations, or demolition occurs.



3. Abatement of vinyl floor tile with mastic (non-friable ACM) should be completed where tiles were lifted from the subfloor in the Carpenters & Joiners Building, Assembly & Erection Building, Syncrolift Building, and Administration Building. Priority of this work is dependent on the buildings to be occupied.
4. Abatement work should be completed in conjunction with air monitoring to ensure protection of surrounding work areas followed by final inspection that verifies the ACMs were removed and no residual ACM fibres remain in the work areas.

Lead-Based Paints

Firstly, a significant reduction in the criterion for human health occurred in 2016 where the criterion was reduced from 600 mg/kg to 90 mg/kg, which in turn resulted in majority of historical and current lead paint samples to exceed the new criterion. Disposal of lead paints following abatement is still based on the TCLP leachate analysis approach to determine if the paint is hazardous for disposal in landfills.

In general, painted surfaces that contain lead are still present throughout all buildings on Site with most paints in good condition; however, some locations were noted to have varying degrees of flaking and peeling that also reported exceedances for human health. Flaking and peeling paint was observed in the Carpenters & Joiners Building, Assembly & Erection Building, Syncrolift Building, Services Building, Parts Building, Administration Building, Murley Building, and on electrical box enclosures.

The following recommendations are offered regarding lead-based paint assessment along with comments on priority:

1. Develop a Lead Paint Management Plan (LPMP) that includes all historical and newly acquired data. A Lead Paint Management Manager also needs to be determined who will be responsible to ensure the LPMP is maintained and followed by workers and contractors on the premises.
2. Immediate abatement is required for all locations where flaking and peeling paint were reported in the Carpenters & Joiners Building, Assembly & Erection Building, Syncrolift Building, Services Building, Parts Building, Administration, Building, Murley Building, and on electrical box enclosures before occupancy, use, renovations, or demolition occurs. Abatement should include removal of the flaking and peeling paint from the substrate as well as cleaning of the immediate areas where paint was observed on the floor and surrounding areas around and under the flaking surfaces.
3. Abatement work should be completed in conjunction with air monitoring to ensure protection of surrounding work areas followed by final inspection that verifies the lead-based paints were removed and no residual airborne lead remains in the work areas.



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1. Introduction

GHD was retained by the Newfoundland and Labrador Department of Municipal Affairs and Environment (NLDMAE) to conduct a limited Hazardous Building Materials Assessment (HBMA) at the Marystown Shipyard (Site or Property) located on the west side of Mortier Bay in the Town of Marystown, Newfoundland and Labrador (NL). The objectives of the limited HBMA were to collect samples of building materials suspect to contain asbestos and/or lead based paints for laboratory analysis and conduct a visual inspection of the condition of the asbestos and lead-based painted surfaces. A Site Location Map is included as Figure 1 and a Property Plan is presented on Figure 2.

1.1 Site Description

The Marystown Shipyard was established in 1968 and is located in Mortier Bay on the Burin Peninsula of NL. The Site was designed as different clusters of specialty buildings that collectively form the Shipyard and include several fabrication, storage, maintenance, and office buildings. The Site also includes a water lot, yard areas, and areas for fuel storage and marine facilities with associated infrastructure. Based on information provided to GHD, the Shipyard has a total in-house fabrication area of 9,368 square metres (m²) and a water frontage of approximately 330 metres (m).

1.2 Scope of Work

The scope of work for the HBMA, based on the above objectives, included the following:

1.2.1 Asbestos-Containing Materials

Collection of up to 30 potential ACM samples from the buildings/structures at the Site to update/confirm the results in the previous hazardous assessment and abatement programs. Samples to be collected using the bag and glove method and samples to be forwarded to an accredited laboratory for analyses.

1.2.2 Lead-Based Paints

Collection of up to 30 potential lead-based paint samples from the buildings/structures at the Site to update/confirm the results in the previous hazardous assessment and abatement programs. As part of the initial Site reconnaissance, review the previous abatement areas and inspect the current buildings/facilities to determine the requirement for additional testing in areas previously noted not to be flaking and/or damaged. Samples to be collected using the bag and glove method and with sufficient sample collected to complete analyses. Samples to be forwarded to an accredited laboratory for analyses.

2. Overview of Hazardous Building Materials

Hazardous materials in the Province of Newfoundland and Labrador are defined in accordance with the Occupational Health and Safety Act. The following provides an overview of the primary characteristics of asbestos hazardous building materials, their potential health effects, and the potential presence of such substances at the Site identified during the sampling program.



2.1 Asbestos

Asbestos is the name used for a group of fibrous minerals that occur naturally in soil and rock in some areas. Asbestos fibres were formerly used in roofing and exterior wall shingles, ceiling tiles, floor tiles, asbestos cement products, gaskets, insulation, and paper products.

Asbestos mainly affects the lungs. Inhalation of asbestos may result in the build-up of scar-like tissue resulting in cancer of the lungs and the surrounding membrane.

ACMs can be categorized as non-friable or friable. Friable asbestos material can be crumbled, pulverized, or reduced to powder by the application of hand pressure when the material is dry. This type of asbestos is more likely to release asbestos fibres into the air when disturbed, are more easily damaged, and pose the most risk to human health. Examples of friable asbestos include pipe and loose fill insulation, and sprayed fireproofing. Non-friable asbestos is a material that is securely contained by resin, glue, or some other bonding matrix that are much less likely to release asbestos fibres into the air if not disturbed; this type of asbestos poses a significantly lower risk to human health. Examples of non-friable asbestos includes vinyl floor tiles and cement sheathing.

According to the Asbestos Abatement Regulations, 11/98 under the Occupational Health and Safety Act (NL), all building materials containing greater than 1 percent asbestos by weight are considered asbestos containing materials. Samples were analyzed by Polarized Light Microscopy (PLM) analysis in accordance with US Environmental Protection Agency (USEPA) Test Method for the Determination of Asbestos in Bulk Building Materials – EPA/600/R-93/116.

2.2 Lead

Lead is a naturally occurring, bluish grey metal. Lead is, or was, used in the production of batteries, ammunition, solder, gasoline, paint, and pipes. The paths of exposure to lead are limited to inhalation and ingestion, with the highest risk of lead exposure being the inhalation of lead containing dust. Lead can damage the nervous system, kidneys, and the immune system.

The Canadian Hazardous Products Act, Surface Coating Materials Regulations (CHPA – SCMR), June 2016 have reduced the maximum total lead content requirement from 600 mg/kg (0.06 percent weight/weight) to 90 mg/kg (0.009 percent weight/weight) for protection of Human Health.

The Canadian Transportation of Dangerous Goods (TDG) Regulations (2017) identify a leachate extraction concentration for lead of 5 mg/L; materials with concentrations >5 mg/L are to be manifested during transportation. In addition, the Newfoundland and Labrador Leachable Toxic Waste, Testing and Disposal Guidance Document (2003) also stipulates a leachate extraction concentration for lead of 5 mg/L with any painted surfaces that exceed the criterion to be disposed of as hazardous waste. Typically, samples with substrate are analyzed for lead content with 5,000 mg/kg used as a benchmark before Toxicity Characteristic Leaching Procedure (TCLP) analysis is performed.



3. Summary of Previous Investigations

Previous investigations were completed at the Site between 1997 and 2018, which are summarized below.

Report Title	Consultant	Date
Phase II Environmental Site Assessment, Marystown Shipyard and Cow Head Facility, Marystown, Newfoundland	JWEL	1998
Asbestos Building Materials Survey, Marystown Shipyard, Marystown, Newfoundland	JWEL	2000
Asbestos and Lead-Based Paint Abatement Program Friede Goldman Newfoundland Limited's Facilities, Marystown	JWEL	2002
Paint Assessment, Carpenter and Joiner's Building, Marystown Shipyard	Stantec (Formerly JWEL)	2009
Paint Assessment, Maintenance Building, Marystown Shipyard	Stantec	2010
Lead Paint Abatement, Carpenter and Joiners Building and Maintenance Building, Marystown Shipyard	Stantec	2011

3.1 1998 Phase II Environmental Site Assessment

A Phase II ESA was conducted at the Shipyard in 1998 by Jacques Whitford Environmental Limited (JWEL) that included a lead paint and asbestos survey of the Shipyard. A total of 51 potential asbestos samples were collected where damage to suspect material already existed to minimize damage caused by sampling. Asbestos was confirmed in floor tiles, pipeline elbows, straight runs of pipe, chimney, and oven door insulation. In general, all floor tiles and all pipelines were recommended to be considered as ACMs unless test results confirmed otherwise. The majority of ACMs were observed to be in good condition.

The lead paint survey focused on areas of observed disturbances that included areas where paint was observed to be damaged or peeling. Four exterior samples were collected from damaged siding. A total of 13 paint samples were collected from the Shipyard. Lead paint was reported in seven of nine interior samples and all four exterior samples.

The exact location and associated analytical results for the asbestos and lead paint surveys were not available.

Additional details are provided in the report entitled: "Phase II Environmental Site Assessment, Marystown Shipyard and Cow Head Facility, Marystown, Newfoundland." JWEL. December 1998.

3.2 2000 Asbestos Building Materials Survey

An asbestos building materials survey was conducted at the Shipyard in 1999 by JWEL that included the assessment of 8 buildings – one office building and 7 industrial / service buildings that were constructed between 1940 and 1960 except the Murley Building, which was constructed around 1910. The majority of the buildings were heated by steam boilers located in the respective buildings.



The asbestos building material survey included the following:

- Detailed visual survey of all accessible areas of 8 on Site buildings.
- Sampling of suspected ACMs.
- Screening of suspected ACMs, using visual similarity to limit the number of samples obtained.
- Visual assessment of conditions of suspected in-situ ACMs.
- Laboratory analysis of suspected ACMs.
- Evaluation of information and preparation of the report.

Based on the information gathered during this program, JWEL observations, and laboratory analytical results, the asbestos building materials survey confirmed the present of asbestos in building materials throughout the Shipyard.

Friable materials identified during the program included insulating cement on pipe fittings, grey corrugated paper-like straight pipe insulation, white preformed straight pipe insulation, cement parging as pipe and tank insulation, grey preformed tank insulation, and cement parging for boiler insulation. Non-friable materials identified during the program included gaskets, interior cement wall board transite sheathing, and vinyl floor tiles.

Suspected friable ACMs were observed as boiler refractory bricks in the boiler of the Services Building. Suspected non-friable ACMs were observed as drywall compound and roofing materials.

All of the observed ACMs were generally in fair to good condition with some ACMs observed in poor condition at the Services Building, Syncrolift Building, Outfit & Stores Building (Carpenter & Joiner's Building), Main Shed Building (Assembly & Erection Building), and Administration Building. JWEL recommended that all damaged and accessible ACMs in fair to good condition should be repaired. Lastly, JWEL also recommended that an Asbestos Management Plan (AMP) should be developed for the Shipyard.

Additional details are provided in the report entitled: "Asbestos Building Materials Survey, Marystown Shipyard, Marystown, Newfoundland." JWEL. March 2000.

3.3 2002 Asbestos and Lead-Based Paint Abatement Program

An asbestos abatement program was conducted at the Shipyard in 2001 that included the removal and disposal of accessible and known friable ACMs from the Main Shed Building (Assembly & Erection Building), the Syncrolift Building, the Services Building, and the Administration Building; however, short sections of friable pipe insulation was left in concealed wall spaces in eight locations in the Administration Building. The abatement program also included the removal and disposal of friable ACMs from pipelines above ceilings in offices and washrooms in the lower floor of the Outfit & Stores Building (Carpenter & Joiner's Building), as necessary. An extensive air monitoring program for asbestos fibres was conducted by JWEL in conjunction with the asbestos abatement program. Based on the results of the air monitoring and observations of JWEL inspectors on Site, there were no significant issues related to airborne fibre concentrations in the work areas sampled.

The lead-based paint abatement program included the removal and disposal of all accessible interior paint from the interior ceiling panels and interior wall panels in the Main Shed Building (Assembly &



Erection Building) that excluded the New Extension attached to the south side of the Assembly & Erection Building; interior paint from the upper wall panels in the machine shop of the Outfit & Stores Building (Carpenter & Joiner's Building); interior paint from the walls of the Parts Building; loose, scaling, or easily removed paint from the interior walls, ceilings, floors, and structural steel in the Outfit & Stores Building (Carpenter & Joiner's Building), Services Building, Parts Building, and the Main Shed Building (Assembly & Erection Building) that excluded the New Extension. The program was not intended to remove all lead-based paint from the buildings, it was generally limited to the removal of lead-based paints that were in poor condition, except as noted in the Main Shed, Outfit & Stores, and Parts Buildings. An extensive air monitoring program for lead was conducted by JWEL in conjunction with the lead paint abatement program. Based on the results of the air monitoring and observations of JWEL inspectors on Site, there were no significant issues related to lead concentrations in the work areas sampled.

Additional details are provided in the report entitled: "Asbestos and Lead-Based Paint Abatement Program, Friede Goldman Newfoundland Limited' Facilities. Marystown, Newfoundland." JWEL. January 2002.

3.4 2009 Lead Paint Assessment

A paint assessment was conducted in 2009 for the Carpenter & Joiner's building located at the Shipyard that included the collection of 23 bulk samples from the interior of the building; samples could not be collected from the exterior of the building as the paint was well bonded to the substrates. A total of 18 paint samples reported lead concentrations above the TDG 5,000 mg/kg level and all 23 paint samples reported lead concentrations above the current HPA criterion of 90 mg/kg. Sample locations are shown on Figure 3.

Paint condition ranged from good to poor throughout the building; paint on the interior metal siding walls and ceilings was in good to poor condition with extensive areas of loose and scaling paints and previously fallen paints throughout the building; some interior metal ceilings are above suspended ceilings in some areas of the building. Significant amounts of previously fallen paint from interior metal siding walls and ceilings were noted in the Machine Shop, Stock Room, Workshop Assembly, General Stores, and the Electricians shop.

Paints on structural steel and piping as well as on concrete block and wooden walls were generally in good condition with only a few small localized and damaged areas. However, extensive damage to paints was noted on the metal ducts in the Woodworking area.

A total of 21 paint samples were also analyzed for leachability with eight samples that reported leachate concentrations exceeding the 5 mg/L criterion, all of which were from bright yellow paints on interior metal siding walls and ceilings and metal ducts throughout the building.

Stantec recommended that a remediation of lead-containing paints should be initiated that includes removal of previously fallen, loose, scaling, and easily removable lead-containing paints from inside the building, specifically from the interior metal siding walls and ceilings and ducts.

Additional details are provided in the report entitled: "Paint Assessment, Carpenter & Joiner's Building, Marystown Shipyard, Marystown, NL." Stantec. November 2009.



3.5 2010 Lead Paint Assessment

A paint assessment was conducted in 2009 for the Maintenance (now Services) building located at the Shipyard that included the collection of 11 bulk samples from the interior of the building; samples could not be collected from the exterior of the building as the paint was well bonded to the substrates. Nine paint samples reported lead concentrations above the TDG 5,000 mg/kg level and all 11 paint samples reported lead concentrations above the current HPA criterion of 90 mg/kg. Sample locations are shown on Figure 6.

Paint condition ranged from good to poor throughout the building; paint on the interior metal siding walls and ceilings was in good to poor condition with some areas of loose and scaling paints and previously fallen paints throughout the building.

Paints on structural steel as well as on concrete block and wooden walls were generally in good condition with only a few small localized and damaged areas.

A total of 10 paint samples were also analyzed for leachability with three samples that reported leachate concentrations exceeding the 5 mg/L criterion, all of which were from bright yellow, green, or dark blue paints on interior metal siding walls and ceilings and metal ducts throughout the building.

Stantec recommended that a remediation of lead-containing paints should be initiated that includes removal of previously fallen, loose, scaling, and easily removable lead-containing paints from inside the building, specifically from the interior metal siding walls and ceilings and ducts.

Additional details are provided in the report entitled: "Paint Assessment, Maintenance Building, Marystown Shipyard, Marystown, NL." Stantec. July 2010.

3.6 2011 Lead Paint Abatement

A lead paint abatement program was undertaken in 2011 by Envrio Clean NFLD. Ltd. who was responsible for supervision of the work and some lead paint removal involving specialty equipment; labourers were provided by Peter Kiewit Infrastructure Co. Stantec conducted inspections during the paint abatement program and collected air samples to assess airborne lead concentrations in the areas of work.

Abatement included the removal and disposal of all loose, scaling, or easily removed paints from the interior walls, floors, and ceilings of the Carpenter & Joiner's Building and Maintenance Building, but excluded painted interior galvanized roof and wall panels where all paint was removed. The work also included the clean-up and disposal of all fallen paint and dust in these work areas. In general, the abatement program was limited to the removal of lead-based paint that was in poor condition. A review of the Air Monitoring Results from the report confirmed that abatement had occurred in the following locations:

Carpenter & Joiner's Building

- Workshop Assembly Area
- Pipe Room
- General Stores Room – south and north sides



- Machine Shop
- Receiving Area
- Room 7
- Electrical Shop
- Electrical Room
- Tool Crib
- Lunch Room (Pipe Shop)

Maintenance Building

- Garage
- Boiler Room
- Rigger's Shop
- Lunch Room
- Paint Mixing Room
- Water Blast Room

Removal of lead-based paint in the buildings was primarily conducted using Carbon Dioxide (CO₂) blasting with dry ice that was supplemented by sandblasting, where required. Air samples were collected by Stantec during each cleaning method and airborne lead levels were acceptable for the type of respiratory equipment that was used during the program.

Based on the air sample results from the lead-based paint abatement program and observations of Stantec during the work, there were no significant issues related to airborne lead concentrations in the work areas that were sampled. All of the lead waste from the buildings were managed and disposed of as hazardous wastes.

Additional details are provided in the report entitled: "Lead Paint Abatement, Carpenter & Joiner's and Maintenance Building, Marystown Shipyard, Marystown, NL." Stantec. March 2011.

4. 2018 Field Sampling Program

Fieldwork associated with the limited HBMA involved the following:

- Collection of 29 potential ACM samples along with one field duplicate from seven buildings
- Collection of 26 potential lead-based paint samples from seven buildings and one outdoor area
- Visual observations for condition of potential ACMs or painted surfaces that may have lead-based paints.

A photographic log of the 2018 HBMA activities is presented in Appendix A. The general area of the Shipyard is shown on Figure 2 with sample locations shown on Figures 3 to 8.



4.1 ACMs

Potential asbestos samples were collected from the Carpenters & Joiners Building (Outfit & Stores), Assembly & Erection Building (Main Shed), Syncrolift Building, and Administration Building.

Samples were not collected from the Services (Maintenance) Building, Parts Building, or Murley Building.

4.1.1 Carpenters & Joiner's (Outfit & Stores) Building

Nine potential ACM samples were collected from the Carpenters & Joiners Building that included pipe insulation (18ACM-001 and 18ACM-006), textile pipe wrap or lagging (18ACM-002), vinyl floor tile (18ACM-003A to 18ACM-005A, 18ACM-007A, and 18ACM-010A) with mastic (18ACM-003B to 18ACM-005B, 18ACM-007B, and 18ACM-010B), oven door gasket (18ACM-008), and refractory brick (18ACM-009).

All confirmed and suspected ACMs were in fair to good condition; however, some vinyl floor tiles were noted to be lifting and poorly adhered to the subfloors.

4.1.2 Assembly & Erection Building (Main Shed)

Two potential ACM samples were collected from the Assembly & Erection Building that included ceiling tile (18ACM-011) and textile curtain from the Wheelabrator (18ACM-012).

All confirmed and suspected ACMs were in fair to good condition with some ceiling tiles in fair condition; however, some vinyl floor tiles were noted to be lifting and poorly adhered to the subfloors. In addition, pipe insulation along an exterior wall was observed to be in poor condition.

4.1.3 Syncrolift Building

One potential ACM sample was collected from the Syncrolift Building that that was vinyl floor tile (18ACM-013A) and mastic (18ACM-013B).

All vinyl floor tiles were noted to be lifting and poorly adhered to the second floor subfloor and stairs.

4.1.4 Services Building

Potential ACMs were not observed. Pipe insulation and vinyl floor tiles previously reported in the 2010 JWEL report were no longer present.

4.1.5 Parts Building

Potential ACMs were not observed. Pipe insulation previously reported in the 2010 JWEL report were no longer present.

4.1.6 Administration Building

A total of 16 potential ACM samples were collected from the Administration Building that included vinyl floor tile (18ACM-014A to 18ACM-017A, 18ACM-025A, and 18ACM-026A) with mastic (18ACM-014B to 18ACM-017B, 18ACM-025B, and 18ACM-026B), drywall plaster (18ACM-022 and 18ACM-028), ceiling tile (18ACM-018 to 18ACM-021), vinyl sheet flooring (18ACM-027A) with



mastic (18ACM-027B) and window sealant (18ACM-029). In addition, a field duplicate was collected from the vinyl floor tile and mastic (18ACM-000A and 18ACM-000B) of sample 18ACM-025A and 18ACM-025B.

All confirmed and suspected ACMs were in fair to good condition; however, some vinyl floor tiles were noted to be lifting and poorly adhered to the subfloor.

4.1.7 Murley Building

Potential ACMs were not observed. Vinyl floor tiles previously reported in the 2010 JWEL report were no longer present.

4.2 Lead-Based Paint

Potential lead-based paint samples were collected from the Carpenters & Joiners Building (Outfit & Stores), Assembly & Erection Building (Main Shed), Syncrolift Building, Services (Maintenance) Building, Parts Building, Murley Building, Administration Building and electrical cabinet enclosures at the Docking Berths – Side Transfer area.

4.2.1 Carpenters & Joiner's (Outfit & Stores) Building

Six paint samples were collected from the Carpenters & Joiners Building that included the bathroom wall near the Joiners area (Pb18-04), bathroom wall near the machine shop (Pb18-05), floor near the front corner of the machine shop (Pb18-06), second floor wall at the Electrical room (Pb18-07), second floor ceiling at the Electrical room (Pb18-08), and second floor Dry Stores duct (Pb18-09).

Minimal paint flaking and peeling were noted in the two bathroom areas and electrical room area; however, peeling paint was observed at the front corner of the machine shop and on the ducting of the second floor Dry Stores area.

4.2.2 Assembly & Erection Building (Main Shed)

Four paint samples were collected from the Assembly & Erection Building that included the structural steel (Pb18-10), walls of the Sheet Metal Shop (Pb18-11), lockers in the Sheet Metal Shop (Pb18-12), and structural steel of the enclosure around the Wheelabrator (Pb18-13).

Sporadic paint flaking and peeling were noted on the structural steel throughout the building, including the Wheelabrator area, as well as the Sheet Metal Shop walls and lockers; limited amounts of paint flakes were observed at all locations on the floor or equipment.

4.2.3 Syncrolift Building

Two paint samples were collected from the Syncrolift Building that included the bathroom ceiling (Pb18-14) and office wall on the second floor (Pb18-15).

Significant paint flaking and peeling were noted in the both locations with paint flakes observed on the floor, equipment, bathroom fixtures, etc.



4.2.4 Services (Maintenance) Building

Three paint samples were collected from the Services Building that included the Rigging Shop concrete floor and curb (Pb18-16), Boiler Room exhaust fan housing (Pb18-17), and the garage duct (Pb18-18).

Minimal paint flaking and peeling were noted in the Rigging Shop while moderate peeling was observed in the Boiler Room and garage; however, limited quantities of peeling paint was observed on the floor of the Boiler Room and garage.

4.2.5 Parts Building

One paint sample was collected from the Parts Building ceiling (Pb18-19).

Significant paint flaking and peeling was noted with significant quantities of paint flakes observed on the floor and on surrounding shelves, etc. inside the building.

4.2.6 Administration Building

Seven paint samples were collected from the Administration Building that included the wall of the second floor Print Room – Room 210 (Pb18-20), second floor office wall of Room 208 (Pb18-21), main floor lunch room window trim (Pb18-22), main floor wall by lunch room (Pb18-23), main floor Personnel Office wall (Pb18-24), Mechanical room upper wall (Pb18-25), and Mechanical Room lower wall (Pb18-26).

Paint flaking or peeling were noted in most areas of the building except the Mechanical Room where significant peeling and flakes on the floor were observed.

4.2.7 Murley Building

Two paint samples were collected from the Murley Building that included a storage room door on the main floor (Pb18-01) and a storage room wall on the main floor (Pb18-02).

Minimal paint flaking and peeling was noted on the door and walls of the storage room with small amounts of paint flakes observed on the floor in both locations.

4.2.8 Docking Berths – Side Transfer Area

One paint sample was collected from the steel electrical enclosure (Pb18-03).

Moderate paint flaking and peeling was noted in the enclosures that was partially a result of heavy corrosion and delamination of the exterior steel cabinets.

5. Results of Field Investigation

5.1 ACMs

Potential asbestos samples were collected from the Shipyard Site in four buildings, all of which were submitted to AGAT in St. John's, NL for analysis.



Potential asbestos sample locations for the Carpenters & Joiners Building, Assembly & Erection Building, Syncrolift Building, and Administration Building are shown on Figures 3, 4, 5, and 8 respectively; Asbestos sample analytical results are presented in Table 1; and the Laboratory Certificate of Analysis is included as Appendix B.

5.1.1 Carpenters & Joiner's (Outfit & Stores) Building

Nine potential ACM samples were collected from the Carpenters & Joiners Building that included pipe insulation, textile pipe wrap or lagging, vinyl floor tile with mastic, oven gasket, and refractory brick.

Asbestos was confirmed in the pipe insulation (18ACM-001 and 18ACM-006), vinyl floor tile mastic from the second floor Electrician's Office (18ACM-010B), and oven door gasket on the second floor of dry stores (18ACM-009). The remaining samples reported non-detectable concentrations of asbestos.

5.1.2 Assembly and Erection Building

Two potential ACM samples were collected from the Assembly & Erection Building that included ceiling tile (18ACM-011) and textile curtain from the Wheelabrator (18ACM-012), neither of which reported asbestos.

5.1.3 Syncrolift Building

One potential ACM sample was collected from the Syncrolift Building that that was vinyl floor tile (18ACM-013A) and mastic (18ACM-013B), both of which reported asbestos concentrations.

5.1.4 Administration Building

Asbestos was confirmed in vinyl floor tile (18ACM-015A and 18ACM-025A) and mastic (18ACM-015B and 18ACM-025B) along with the field duplicate (18ACM-000A and 18ACM-000B). The remaining samples reported non-detectable concentrations of asbestos.

5.1.5 Asbestos QA/QC Sampling Program

One field duplicate soil sample (18ACM-000) was collected from the same sample location of 18ACM-025. The field duplicate sample (DUP01) reported identical asbestos concentrations, which was consistent with the parent sample.

5.2 Lead-Based Paint

Potential lead-based paint samples were collected from the Shipyard Site in seven buildings and one exterior electrical cabinet enclosure, all of which were submitted to AGAT in St. John's, NL for analysis.

Potential lead-based paint sample locations for the Carpenters & Joiners Building, Assembly & Erection Building, Syncrolift Building, Services Building, Parts Building, and Administration Building are shown on Figures 3 to 8 respectively; Lead-based paint analytical results are presented in Table 2, and the Laboratory Certificate of Analysis is included as Appendix B.



5.2.1 Carpenter & Joiner's Building

Six paint samples were collected from the Carpenters & Joiners Building. Samples from the bathroom wall near the Joiners area (Pb18-04), bathroom wall near the machine shop (Pb18-05), floor near the front corner of the machine shop (Pb18-06), and second floor Dry Stores duct (Pb18-09) reported lead concentrations above the 5,000 mg/kg criterion.

One additional sample from the second floor wall at the Electrical room (Pb18-07) and ceiling of the Electrical Room (Pb18-08) reported lead concentrations above the 90 mg/kg criterion.

5.2.2 Assembly and Erection Building

Four paint samples were collected from the Assembly & Erection Building with samples from the structural steel (Pb18-10) throughout the building and the structural steel of the enclosure around the Wheelabrator (Pb18-13) that reported lead concentrations above the 5,000 mg/kg criterion. The remaining two samples from the walls of the Sheet Metal Shop (Pb18-11) and lockers in the Sheet Metal Shop (Pb18-12) reported lead concentrations above the 90 mg/kg criterion.

5.2.3 Syncrolift Building

Two paint samples were collected from the Syncrolift Building with one sample from the bathroom ceiling (Pb18-14) that reported a lead concentration above the 5,000 mg/kg criterion while the second sample from the office wall on the second floor (Pb18-15) reported a lead concentration above the 90 mg/kg criterion.

5.2.4 Services Building

Three paint samples were collected from the Services Building that included the Rigging Shop concrete floor and curb (Pb18-16), Boiler Room exhaust fan housing (Pb18-17), and the garage duct (Pb18-18), all of which reported lead concentrations above the 5,000 mg/kg criterion.

5.2.5 Parts Building

One paint sample was collected from the Parts Building ceiling (Pb18-19) that reported a lead concentration above the 5,000 mg/kg criterion.

5.2.6 Administration Building

Seven paint samples were collected from the Administration Building that included the wall of the second floor Print Room – Room 210 (Pb18-20), second floor office wall of Room 208 (Pb18-21), main floor lunch room window trim (Pb18-22), main floor wall by lunch room (Pb18-23), main floor Personnel Office wall (Pb18-24), Mechanical room upper wall (Pb18-25), and Mechanical Room lower wall (Pb18-26), all of which reported lead concentrations below the 5,000 mg/kg criterion. However, paint samples from the wall of the second floor Print Room – Room 210 (Pb18-20), main floor lunch room window trim (Pb18-22), Mechanical room upper wall (Pb18-25), and Mechanical Room lower wall (Pb18-26) reported lead concentrations above the 90 mg/kg criterion.



5.2.7 Murley Building

Two paint samples were collected from the Murley Building with one sample from the storage room door on the main floor (Pb18-01) that reported a lead concentration above the 5,000 mg/kg criterion while the second sample from a storage room wall on the main floor (Pb18-02) reported a concentration above the 90 mg/kg criterion.

5.2.8 Docking Berths – Side Transfer Area

One paint sample was collected from the steel electrical enclosure (Pb18-03), which reported a lead concentration above the 5,000 mg/kg criterion.

5.2.9 Lead-Based Paint QA/QC Sampling Program

Due to the large quantity of paint flakes required for a single sample, insufficient paint sample was available to collect a field duplicate sample.

6. Discussion

6.1 ACMs

Historical information provided in the 2002 JWEL Asbestos and Lead-Based Paint Abatement report did not clearly identify specific sample locations that were removed during the work; therefore, GHD has inferred that certain sample locations were removed according to the information presented in the 2002 JWEL report.

Although ACMs that are in good condition can remain in place, an Asbestos Management Plan such as the one presented by JWEL in 2000 must be implemented with annual inspections and contractor notifications.

Additional discussion is provided below based on the 2018 Site inspection.

6.1.1 Carpenters & Joiner's (Outfit & Stores) Building

Asbestos was confirmed in pipe insulation, vinyl floor tile mastic from the second floor Electrician's Office, and oven door gasket on the second floor of dry stores; however, **no abatement** is required at this time.

6.1.2 Assembly and Erection Building

Asbestos was confirmed in pipe insulation, vinyl floor tile (not in mastic), and transite sheeting. Pipe insulation was reportedly removed from the ceiling spaces during the 2002 asbestos abatement program, which was confirmed where ceiling spaces were visible; however, some pipe insulation along the exterior wall near the Sheet Metal Shop was observed to be in poor condition that requires **immediate abatement** before working in the area.



6.1.3 Syncrolift Building

Asbestos was confirmed in pipe insulation in the ceiling space of main floor, which was removed during the 2002 abatement. Vinyl floor tile and mastic from the stairs and second floor confirmed the presence of asbestos and were lifted from the subfloor. Prior to use of the building, **abatement is required** when time and budget allows since vinyl floor tile are non-friable.

6.1.4 Services Building

Asbestos was confirmed in pipe insulation throughout the building and vinyl floor tile in the Maintenance Office, all of which was subsequently removed during the 2002 abatement and confirmed during the 2018 inspection. No action required.

6.1.5 Parts Building

Asbestos was confirmed in pipe insulation throughout the building that was subsequently removed during the 2002 abatement and confirmed during the 2018 inspection. No action required.

6.1.6 Administration Building

Asbestos was confirmed in pipe insulation in ceiling spaces on the Main Floor and vinyl floor tile throughout the First Floor and Second Floor of the building; all accessible pipe insulation in ceiling spaces and limited areas of vinyl floor tile were subsequently removed and confirmed during the 2018 inspection. Pipe insulation with asbestos still remains within concealed wall spaces that does not require immediate attention. Some vinyl floor tile throughout the building contains asbestos with isolated locations where the tiles have lifted from the subfloor. **Limited abatement is required** for removal of loose floor tiles.

6.1.7 Murley Building

Asbestos was confirmed in vinyl floor tile throughout the main floor of the building that was subsequently removed during the 2002 abatement and confirmed during the 2018 inspection. No action required.

6.2 Lead-Based Paint

Historical information provided in the 2002 JWEL Asbestos and Lead Based Paint Abatement report did not clearly identify specific sample locations that were removed during the work; therefore, GHD has inferred that certain sample locations were removed according to the information presented in the 2002 JWEL report.

Although lead-based paints that are in good condition can remain in place, a Management Plan (similar to an Asbestos Management Plan) should be developed and implemented with annual inspections and contractor notifications.

Additional discussion is provided below based on the 2018 Site inspection.



6.2.1 Carpenter & Joiner's Building

All paint samples collected from the Carpenters & Joiners Building in 2009 and 2018 reported lead concentrations above the 90 mg/kg criterion; therefore, all peeling and flaking paint requires **immediate abatement** prior to occupancy, use, or renovations that include partial demolition.

Based on the October 2018 inspection, specific areas that require abatement are the bathroom walls of the Joiners Shop and Millwright Shop, floor of the Machine Shop, ceiling and walls of the second floor Electrical Office area, and ductwork in the Dry Stores area on the second floor (around the Despatch Oven). Note that paint flakes were observed on the floor, equipment, and surrounding areas around and under the flaking surfaces; therefore, cleaning will also be required.

6.2.2 Assembly and Erection Building

Paint samples collected from the Carpenters & Joiners Building in 2009 were assumed to be comparable to similar paints in the Assembly & Erection Building. All paint samples collected from the Carpenters & Joiners Building in 2009 and paint samples collected from the Assembly & Erection Building in 2018 reported lead concentrations above the 90 mg/kg criterion; therefore, all peeling and flaking paint requires **immediate abatement** prior to occupancy, use, or renovations that include partial demolition.

Based on the October 2018 inspection, specific areas that require abatement are the yellow painted structural steel (most notably around the office space centrally located between the Main Bay and Preparation Bay), black painted structural steel for the Wheelabrator enclosure, grey painted walls and lockers in the Sheet Metal Shop. Note that paint flakes were observed on the floor, equipment, and surrounding areas around and under the flaking surfaces; therefore, cleaning will also be required.

6.2.3 Syncrolift Building

All paint samples collected from the Syncrolift Building in 2018 reported lead concentrations above the 90 mg/kg criterion; therefore, all peeling and flaking paint requires **immediate abatement** prior to occupancy, use, renovations, or demolition.

Based on the October 2018 inspection, specific areas that require abatement are the main floor bathroom walls and ceiling as well as the second floor walls. Note that paint flakes were observed on the floor, equipment, and surrounding areas around and under the flaking surfaces; therefore, cleaning will also be required.

6.2.4 Services Building

All paint samples collected from the Services Building in 2009 and 2018 reported lead concentrations above the 90 mg/kg criterion; therefore, all peeling and flaking paint requires **immediate abatement** prior to occupancy, use, renovations, or demolition.

Based on the October 2018 inspection, specific areas that require abatement are the Rigging Shop concrete floor and curb, Boiler Room exhaust hoods, and ductwork in the Garage. Note that paint flakes were observed on the floor, equipment, and surrounding areas around and under the flaking surfaces; therefore, cleaning will also be required.



6.2.5 Parts Building

The paint sample collected from the Parts Building in 2018 reported a lead concentration above the 90 mg/kg criterion; therefore, all peeling and flaking paint requires **immediate abatement** prior to occupancy, use, renovations, or demolition.

Based on the October 2018 inspection, specific areas that require abatement are all ceilings in the loading bay and stock room area. Note that paint flakes were observed on the floor and surrounding areas around and under the flaking surfaces; therefore, cleaning will also be required.

6.2.6 Administration Building

Paint samples collected from the Administration Building in 2018 reported lead concentrations below the 90 mg/kg criterion for the office wall at Room 208, Lunch Room wall, and Personnel office wall – none of these sample locations were noted to be peeling or flaking.

Paint samples collected from the Administration Building in 2018 reported lead concentrations above the 90 mg/kg criterion for the second floor Print Room, which was not observed to be peeling or flaking; therefore, abatement is not required.

Paint samples collected from the Administration Building in 2018 reported lead concentrations above the 90 mg/kg criterion for the Lunch Room window trims and Mechanical Room upper and lower walls/ceiling – isolated areas of Lunch Room window trims were flaking or peeling while significant peeling was noted in the Mechanical Room; therefore, all peeling and flaking paint requires **immediate abatement** prior to occupancy, use, or renovations. Note that paint flakes were observed on the floor and surrounding areas around and under the flaking surfaces; therefore, cleaning will also be required.

6.2.7 Murley Building

Paint samples collected from the Murley Building in 2018 reported lead concentrations above the 90 mg/kg criterion; therefore, all peeling and flaking paint requires **immediate abatement** prior to occupancy, use, renovations, or demolition.

Based on the October 2018 inspection, specific areas that require abatement are the yellow door to the main floor storage room and white walls in the back storage Room. Note that paint flakes were observed on the floor and surrounding areas around and under the flaking surfaces; therefore, cleaning will also be required.

6.2.8 Docking Berths – Side Transfer Area

The paint sample collected from the Docking Berth and Side Transfer area in 2018 reported lead concentrations above the 90 mg/kg criterion; therefore, all peeling and flaking paint requires **immediate abatement** prior to use or removal.

Based on the October 2018 inspection, specific areas that require abatement are the 10 orange electrical box enclosures throughout the area and any other exterior equipment noted to be painted orange. Note that paint flakes were observed on the ground under the flaking surfaces; therefore, cleaning will also be required.



7. Conclusions and Recommendations

7.1 Conclusions

GHD was retained by the Newfoundland and Labrador Department of Municipal Affairs and Environment (NLDMAE) to conduct a limited Hazardous Building Materials Assessment (HBMA) at the Marystown Shipyard (Site or Property) located on the west side of Mortier Bay in the Town of Marystown, Newfoundland and Labrador (NL). The objectives of the limited HBMA were to collect samples of building materials suspect to contain asbestos and/or lead based paints for laboratory analysis and conduct a visual inspection of the condition of the asbestos and lead-based painted surfaces.

Based on the historical document review along with 2018 Site inspection and analytical results, conclusions are presented below and segregated by asbestos or lead-based paints.

7.1.1 Conclusions - ACMs

In general, ACMs still present throughout the various buildings include pipe insulation on straight runs and fittings (some in open and accessible areas with others in concealed spaces), vinyl floor tiles (some with mastic), transite sheeting (cement board), and other miscellaneous types such as oven door gasket. Most remaining ACMs that were visible in the 2018 inspection were in good condition.

Some pipe insulation (friable ACM) in the Assembly & Erection Building was in poor condition.

Vinyl floor tiles with mastic (non-friable ACM) were in varying degrees of condition with some that were observed to be lifted from the sub floor (isolated areas in Carpenters & Joiners Building, some office and lunch room areas in Assembly & Erection Building, prevalent in the Syncrolift Building, and isolated areas in the Administration Building).

7.1.2 Conclusions - Lead-Based Paints

Firstly, a significant reduction in the criterion for human health occurred in 2016 where the criterion was reduced from 600 mg/kg to 90 mg/kg, which in turn resulted in majority of historical and current lead paint samples to exceed the new criterion. Disposal of lead paints following abatement is still based on the TCLP leachate analysis approach to determine if the paint is hazardous for disposal in landfills.

In general, painted surfaces that contain lead are still present throughout all buildings on Site with most paints in good condition; however, some locations were noted to have varying degrees of flaking and peeling that also reported exceedances for human health. Flaking and peeling paint was observed in the Carpenters & Joiners Building, Assembly & Erection Building, Syncrolift Building, Services Building, Parts Building, Administration, Building, Murley Building, and on electrical box enclosures.

7.2 Recommendations

The recommendations provided below are based on the historical file review and results of the 2018 Site inspection with limited HBMA sampling program, which are separated between ACMs and lead-



based paints. Priority for completion of the recommended asbestos and lead-based paint abatement work is dependent on the planned sequence of use and occupancy with the buildings to be occupied first to have the highest priority.

7.2.1 Recommendations – ACMs

The following recommendations are offered regarding ACMs along with comments on priority:

1. The Asbestos Management Plan (AMP) prepared by JWEL in 2000 should be updated and all newly acquired data should be included. An Asbestos Management Manager also needs to be determined who will be responsible to ensure the AMP is maintained and followed by workers and contractors on the premises.
2. Immediate abatement is required for pipe insulation (friable ACM) in the Assembly & Erection Building that was in poor condition before occupancy, use, renovations, or demolition occurs.
3. Abatement of vinyl floor tile with mastic (non-friable ACM) should be completed where tiles were lifted from the subfloor in the Carpenters & Joiners Building, Assembly & Erection Building, Syncrolift Building, and Administration Building. Priority of this work is dependent on the buildings to be occupied.
4. Abatement work should be completed in conjunction with air monitoring to ensure protection of surrounding work areas followed by final inspection that verifies the ACMs were removed and no residual ACM fibres remain in the work areas.

7.2.2 Recommendations – Lead-Based Paints

The following recommendations are offered regarding lead-based paint assessment along with comments on priority:

5. Develop a Lead Paint Management Plan (LPMP) that includes all historical and newly acquired data. A Lead Paint Management Manager also needs to be determined who will be responsible to ensure the LPMP is maintained and followed by workers and contractors on the premises.
6. Immediate abatement is required for all locations where flaking and peeling paint were reported in the Carpenters & Joiners Building, Assembly & Erection Building, Syncrolift Building, Services Building, Parts Building, Administration Building, Murley Building, and on electrical box enclosures before occupancy, use, renovations, or demolition occurs. Abatement should include removal of the flaking and peeling paint from the substrate as well as cleaning of the immediate areas where paint was observed on the floor and surrounding areas around and under the flaking surfaces.
7. Abatement work should be completed in conjunction with air monitoring to ensure protection of surrounding work areas followed by final inspection that verifies the lead-based paints were removed and no residual airborne lead remains in the work areas.



8. Closure

This report has been prepared for the sole benefit of Newfoundland and Labrador Department of Municipal Affairs and Environment and the Town of Marystown. The report may not be used by any other person or entity without the express written consent of GHD and the Newfoundland and Labrador Department of Municipal Affairs and Environment and the Town of Marystown. Any use which a third party makes of this report, or any reliance on decisions made based on it, is the responsibility of such third parties GHD accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

GHD makes no representation or warranty with respect to this report other than the work was undertaken by trained professional and technical staff in accordance with generally accepted engineering and scientific practices current at the time the work was performed. Any information or facts provided by others and referred to or utilized in the preparation of this report was assumed by GHD to be accurate. Conclusions presented in this report should not be construed as legal advice.

This risk assessment was undertaken exclusively for the purpose outlined herein and was limited to those contaminants, exposure pathways, receptors, and related uncertainties specifically referenced in this report. This work was specific to the site conditions and land use considerations described herein. The report cannot be used or applied under any circumstances to another location or situation or for any other purpose without further evaluation of the data and related limitations.

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. This report was prepared by Brian Luffman, P.Eng. and reviewed by James O'Neill, P.Eng.

GHD

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James O'Neill, P.Eng.
Senior Project Manager | Principal

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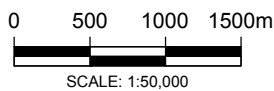
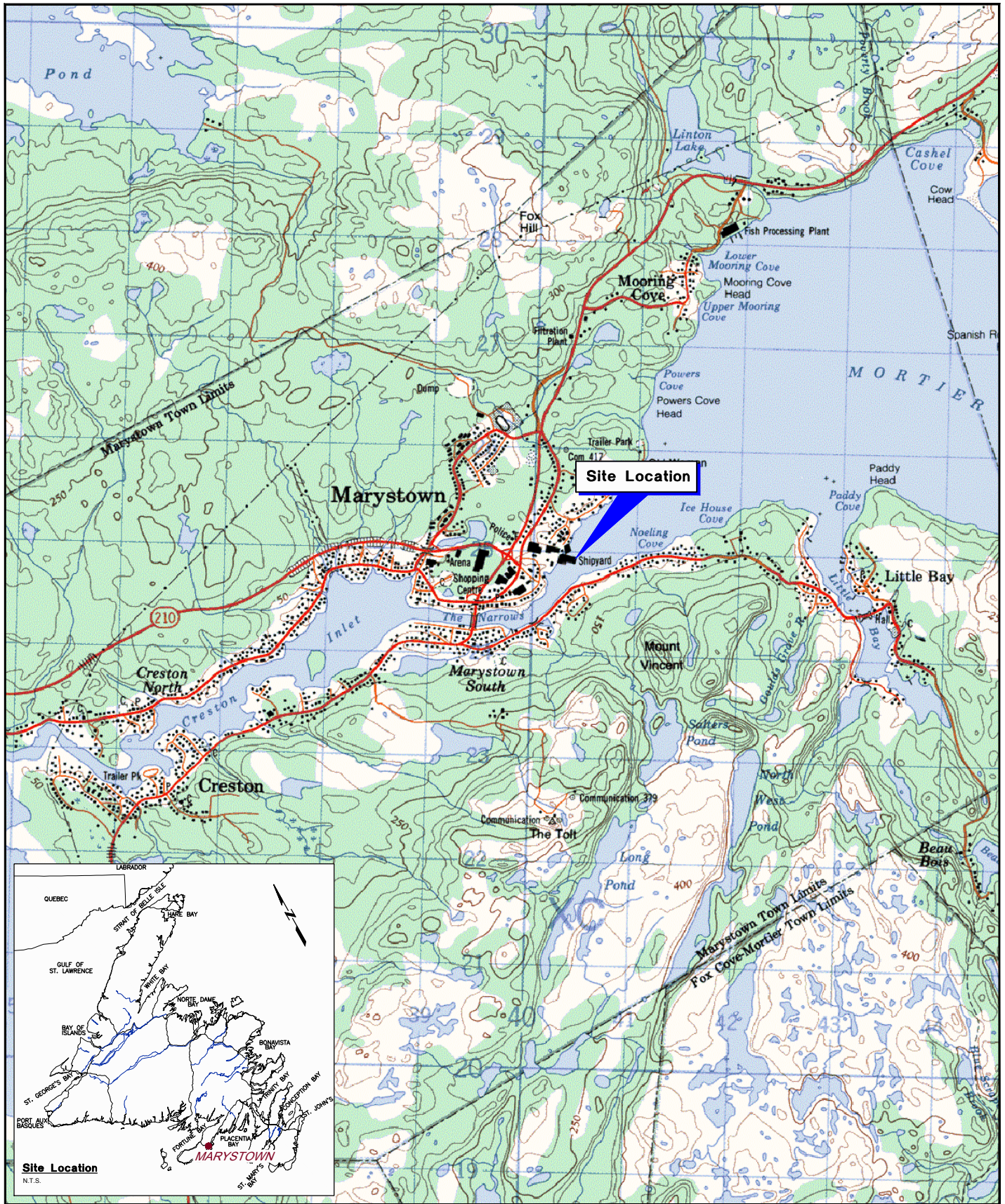
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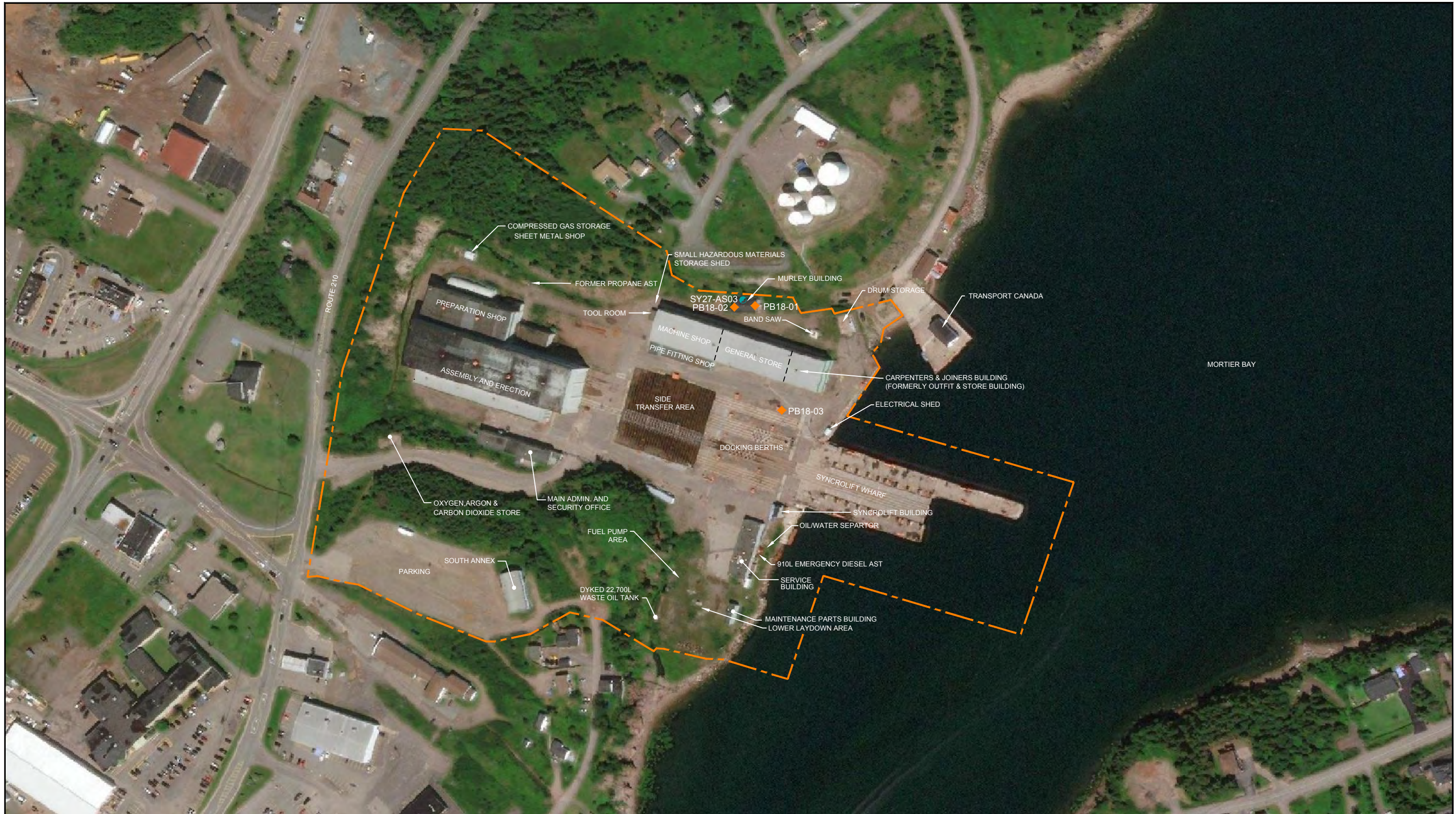
NL DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT
 MARYSTOWN SHIPYARD, MARYSTOWN, NL
 HAZARDOUS BUILDING MATERIALS ASSESSMENT

11178792-03

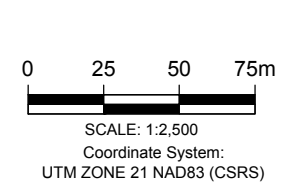
Dec 12, 2018

SITE LOCATION MAP

FIGURE 1



SOURCE: MICROSOFT PRODUCT SCREEN SHOT(S) REPRINTED WITH PERMISSION FROM MICROSOFT CORPORATION: © 2018 MICROSOFT CORPORATION © 2018 DIGITALGLOBE ©CNES (2018) DISTRIBUTION AIRBUS DS



- LEGEND:**
- — — — — PROPERTY BOUNDARY LINE
 - ◆ ASBESTOS SAMPLE LOCATION (JWEL 1998)
 - ◆ LEAD PAINT SAMPLE LOCATION (GHD 2018)

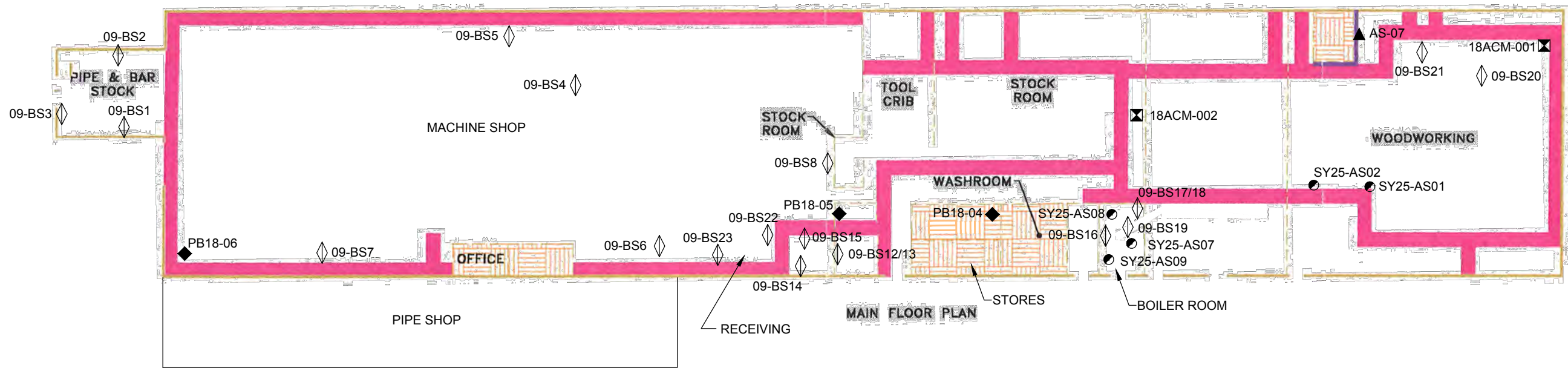
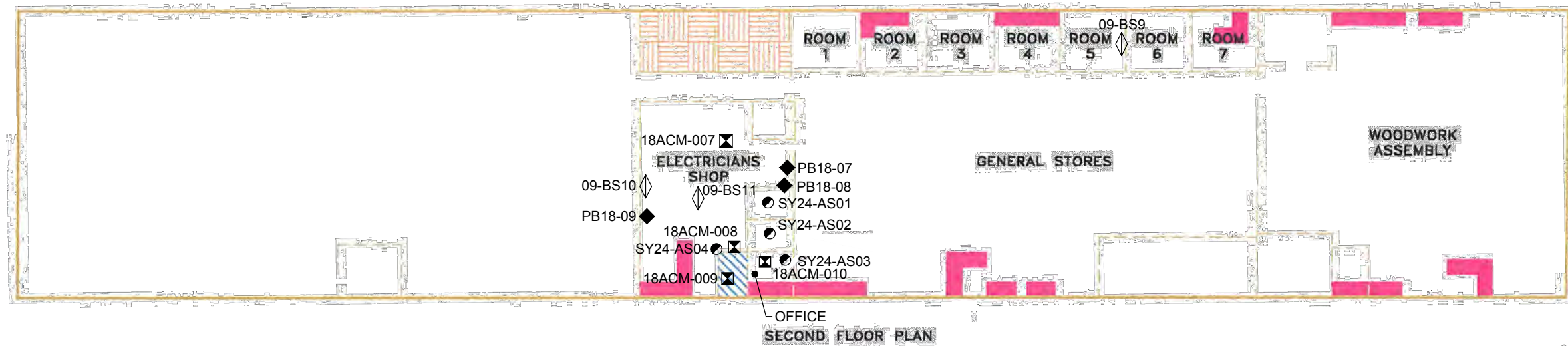


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 HAZARDOUS BUILDING MATERIAL ASSESSMENT

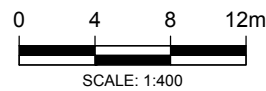
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 Dec 3, 2018

PROPERTY PLAN WITH SELECT SAMPLE LOCATIONS

FIGURE 2



SOURCE: JACQUES WHITFORD: Proj. 33165, DWG 1 (99/07/29)



LEGEND

- VINYL FLOOR TILES
- ACM PIPE INSULATION
- BOILER REFRACTORY
- TRANSITE CEMENT BOARDS

- ASBESTOS SAMPLE LOCATION (JWEL 1998)
- ASBESTOS SAMPLE LOCATION (JWEL 1999)
- ASBESTOS SAMPLE LOCATION (GHD 2018)
- LEAD PAINT SAMPLE LOCATION (GHD 2018)
- ASBESTOS SAMPLE LOCATION-ASSUMED (STANTEC 2010)

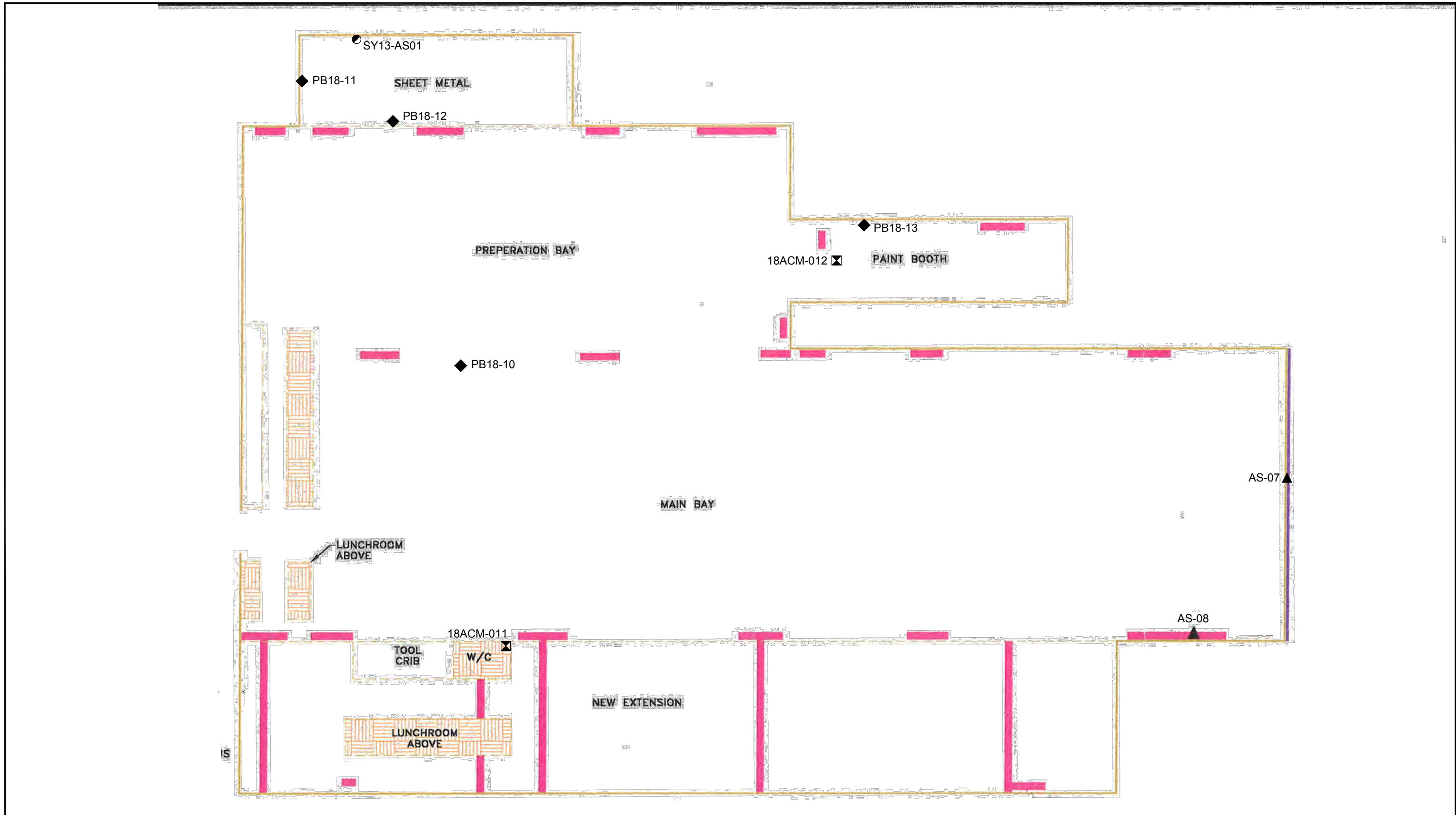


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 MARYSTOWN SHIPYARD, MARYSTOWN, NEWFOUNDLAND AND LABRADOR
 HAZARDOUS BUILDING MATERIAL ASSESSMENT
FLOOR PLAN WITH SAMPLE LOCATIONS
OUTFIT & STORES - CARPENTER & JOINERS

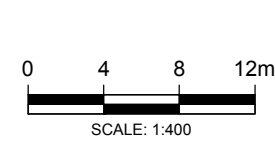
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Dec 10, 2018

FIGURE 3



SOURCE: JACQUES WHITFORD: Proj. 33165, DWG 8 (99/03/28)



LEGEND

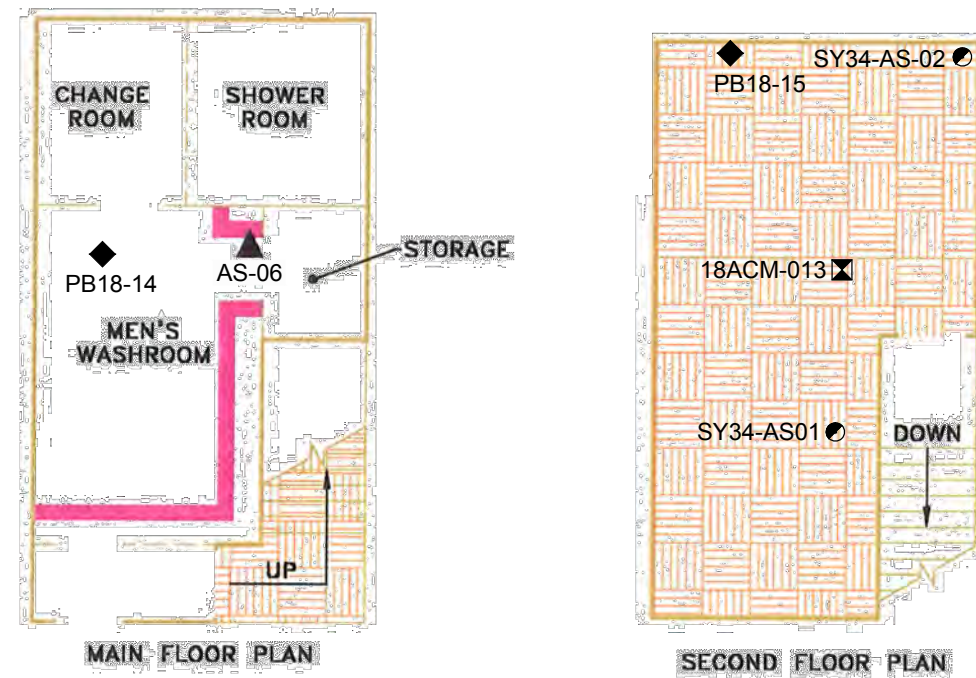
- VINYL FLOOR TILES
- PIPE INSULATION
- ASBESTOS SAMPLE LOCATIONS (JWEL 1999)
- ASBESTOS SAMPLE LOCATION (JWEL 1998)
- ASBESTOS SAMPLE LOCATION (GHD 2018)
- LEAD PAINT SAMPLE LOCATION (GHD 2018)
- TRANSITE CEMENT BOARDS









NL DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT
 MARYSTOWN SHIPYARD, MARYSTOWN, NEWFOUNDLAND AND LABRADOR
 HAZARDOUS BUILDING MATERIAL ASSESSMENT
**FLOOR PLAN WITH SAMPLE LOCATIONS
 ASSEMBLY & ERECTION (MAIN SHED)**

11178792-03
 Dec 6, 2018

FIGURE 4



LEGEND

-  VINYL FLOOR TILES
-  PIPE INSULATION
-  ASBESTOS SAMPLE LOCATIONS (JWEL 1999)
-  ASBESTOS SAMPLE LOCATION (JWEL 1998)
-  ASBESTOS SAMPLE LOCATION (GHD 2018)
-  LEAD PAINT SAMPLE LOCATION (GHD 2018)

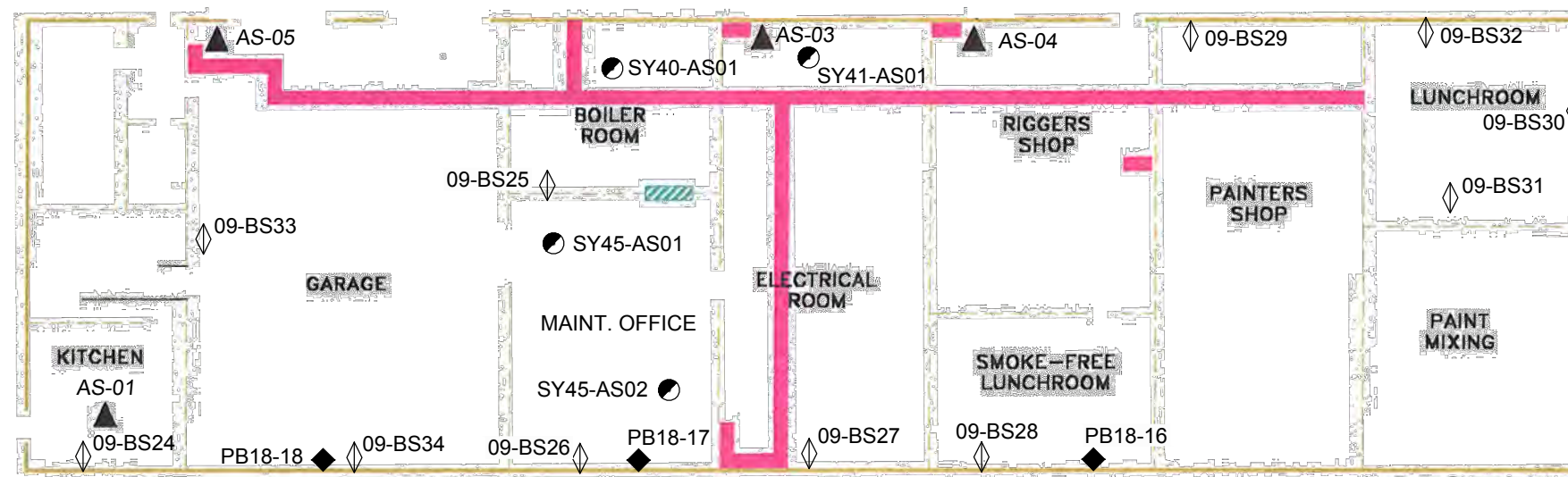
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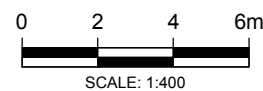
NL DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT
 MARYSTOWN SHIPYARD, MARYSTOWN, NEWFOUNDLAND AND LABRADOR
 HAZARDOUS BUILDING MATERIAL ASSESSMENT
FLOOR PLAN WITH SAMPLE LOCATIONS
SYNCROLIFT BUILDING

11178792-03
 Dec 6, 2018

FIGURE 5



SOURCE: JACQUES WHITFORD: Proj. 33165, DWG 9 (99/07/12)



LEGEND

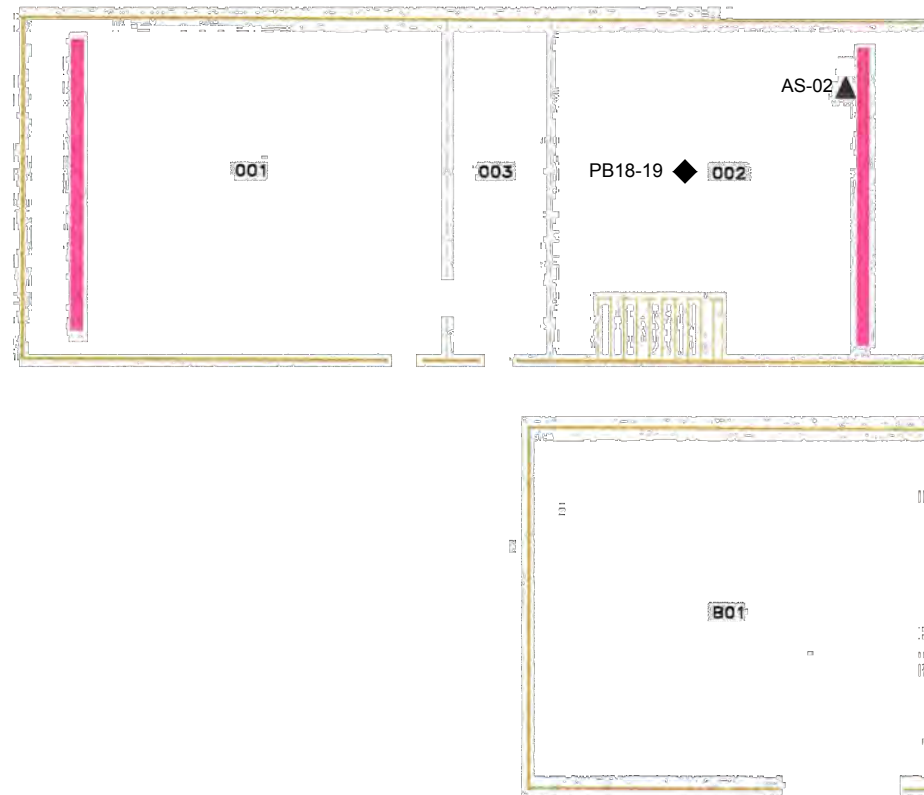


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 MARYSTOWN SHIPYARD, MARYSTOWN, NEWFOUNDLAND AND LABRADOR
 HAZARDOUS BUILDING MATERIAL ASSESSMENT
FLOOR PLAN WITH SAMPLE LOCATIONS
SERVICES BUILDING

11178792-03

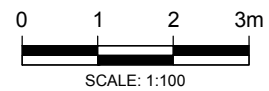
Dec 6, 2018

FIGURE 6



- LEGEND**
- PIPE INSULATION
 - ASBESTOS SAMPLE LOCATIONS (JWEL 1999)
 - LEAD PAINT SAMPLE LOCATION (GHD 2018)

SOURCE: JACQUES WHITFORD: Proj. 33165, DWG 10 (99/07/12)

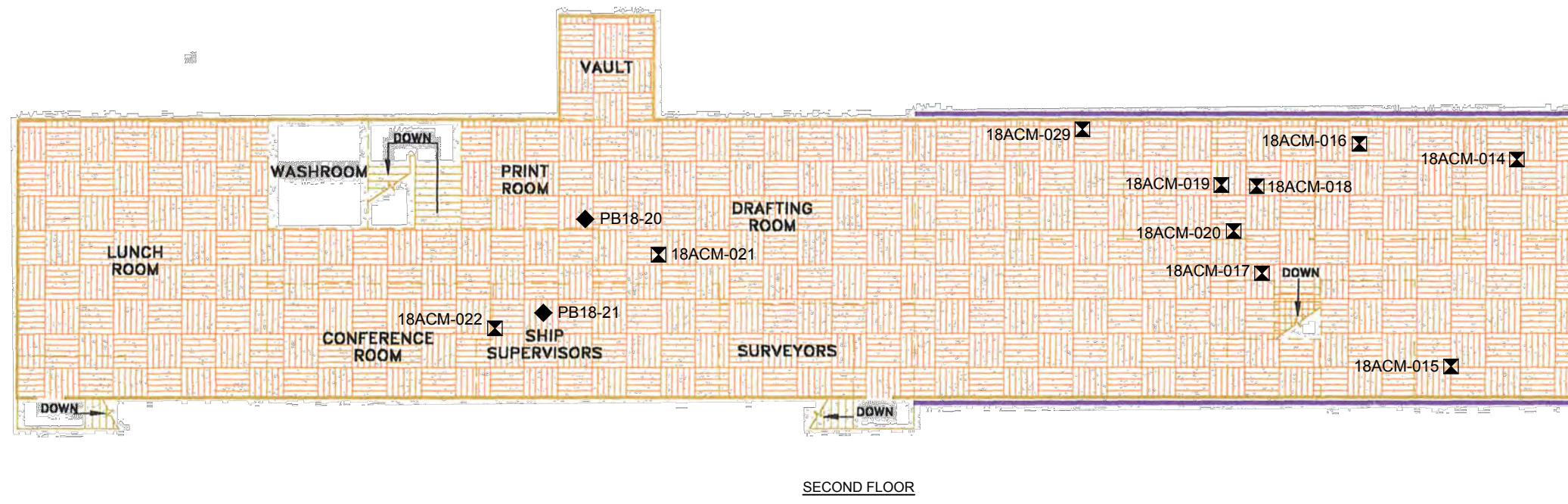
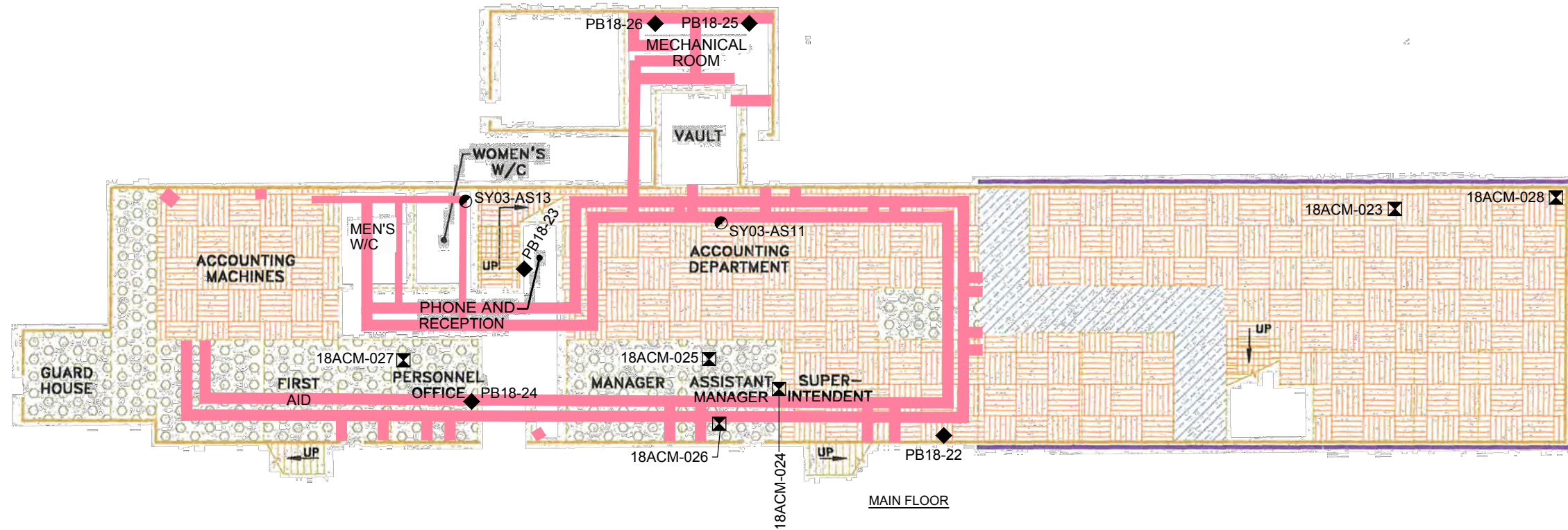


NL DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT
 MARYSTOWN SHIPYARD, MARYSTOWN, NEWFOUNDLAND AND LABRADOR
 HAZARDOUS BUILDING MATERIAL ASSESSMENT
FLOOR PLAN WITH SAMPLE LOCATIONS
PARTS BUILDING

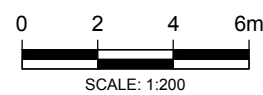
11178792-03

Dec 5, 2018

FIGURE 7



SOURCE: JACQUES WHITFORD: Proj. 33165, DWG 2 & 4 (99/07/30)



LEGEND

- VINYL FLOOR TILES
- SHEET FLOORING
- LINOLEUM
- TRANSITE CEMENT BOARDS

PIPE INSULATION

- ASBESTOS SAMPLE LOCATION (JWEL 1998)
- ASBESTOS SAMPLE LOCATION (JWEL 1999)
- ASBESTOS SAMPLE LOCATION (GHD 2018)
- LEAD PAINT SAMPLE LOCATION (GHD 2018)
- ASBESTOS SAMPLE LOCATION-ASSUMED (STANTEC 2010)



NL DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT
 MARYSTOWN SHIPYARD, MARYSTOWN, NEWFOUNDLAND AND LABRADOR
 HAZARDOUS BUILDING MATERIAL ASSESSMENT
FLOOR PLAN WITH SAMPLE LOCATIONS
ADMINISTRATION BUILDING

11178792-03

Dec 10, 2018

FIGURE 8

Asbestos Analytical Results (%)
Hazardous Building Materials Survey
Marystown Shipyard-MGSB
200 Ville Marie Dr., Marystown, NL

Sample ID	Date	Location	Description	Chrysotile	Amosite	Crocidolite	Tremolite
Carpenter and Joiners Area (Outfit and Stores Building)							
SY26-AS01	Jul 1998	Joiner's Shop	Pipe Elbow Insulation Grey	35	15	<	<
SY26-AS02	Jul 1998	Joiner's Shop	Pipe Run Insulation White	25	25	<	<
SY26-AS03	Jul 1998	Joiner's Shop	VFT (Beige w/ Brown Specks 9" x 9")	8	<	<	<
SY26-AS04	Jul 1998	Joiner's Shop	VFT (White w/ Black/Brown Stains 12" x 12")	2	<	<	<
SY26	Jul 1998	Joiner's Shop Outfit Supervisor's Office	VFT (9" x 9") Similar to SY26-AS03	-	-	-	-
18ACM-001	Oct 11, 2018	Main Floor NE Corner	White/Grey Heating Unit Cementitious Pipe Insulation	30-50	5-15	<	<
General Stores (Outfit and Stores Building)							
SY25-AS01	Jul 1998	Unknown	Grey/White Fibrous 2" Pipe Elbow Insulation	85	<	<	<
SY25-AS02	Jul 1998	Unknown	Grey/White Fibrous 4" Pipe Run Insulation	30	10	<	<
SY25-AS03	Jul 1998	Unknown	Grey Fibrous 4" Pipe Elbow Insulation	80	3	<	<
SY25-AS04	Jul 1998	Unknown	Light Beige Fibrous 2" Pipe Run Insulation	<	95	<	<
SY25-AS05	Jul 1998	Chief Storekeeper Office	VFT (Beige w/ Brown Stripes 9" x 9")	6	<	<	<
SY25-AS07	Jul 1998	Boiler Room	Grey Coating over Fibreglass	95	<	<	<
SY25-AS08	Jul 1998	Boiler Room	White Elbow Insulation	85	3	<	<
SY25-AS09	Jul 1998	Boiler Room	Grey-White Chimney Insulation	95	<	<	<
SY25	Jul 1998	Storekeeper's Office	VFT (12" x 12") Similar to SY24 & SY26	-	-	-	-
SY25	Jul 1998	Clerk's Office	VFT (12" x 12") Similar to SY24 & SY26	-	-	-	-
SY25	Jul 1998	Lunch Room	VFT (12" x 12") Similar to SY24 & SY26	-	-	-	-
SY24-AS01	Jul 1998	Second Floor Electrical Shop	VFT (White w/ Brown Stripes & Black Stains 12" x 12")	6	<	<	<
SY24-AS02	Jul 1998	Second Floor Change Hands Office	VFT (Beige w/ White/Grey 12" x 12")	3	<	<	<
SY24-AS03	Jul 1998	Second Floor Electrical Shop	VFT (Grey 12" x 12")	<	<	<	<
SY24-AS04	Jul 1998	Second Floor Electrical Shop	Baking Oven Door Grey Rope	90	<	<	<
SY24	Jul 1998	Unknown	Pipe Elbow Insulation Similar to SY25-AS01	-	-	-	-
SY24	Jul 1998	Unknown	Pipe Run Insulation Similar to SY25-AS02	-	-	-	-
SY23	Jul 1998	Pipe Shop Lunch Room	VFT (12" x 12") Similar to SY24 & SY26	-	-	-	-
AS-07	May 1999	Woodworking Shop	Cement Board	35	-	-	-
18ACM-002	Oct 11, 2018	Main Floor Stock Room	Textile Pipe Wrap	<	<	<	<
18ACM-007A	Oct 11, 2018	Second Floor Room Top of Stairs	VFT (Cream 12" x 12")	<	<	<	<
18ACM-007B	Oct 11, 2018		VFT (Cream 12" x 12") - Mastic	<	<	<	<
18ACM-008	Oct 11, 2018	Second Floor Dry Stores 3	Despatch Oven Door Gasket	>75	<	<	<
18ACM-009	Oct 11, 2018	Second Floor Dry Stores 3	Despatch Oven Refractory Brick	<	<	<	<
18ACM-010A	Oct 11, 2018	Second Floor Dry Stores 3 Electrician Office	VFT (Cream 12" x 12")	<	<	<	<
18ACM-010B	Oct 11, 2018		VFT (Cream 12" x 12") - Mastic	1-5	<	<	<
Machine Shop (Outfit and Stores Building)							
SY22-AS02	Jul 1998	Unknown	VFT (White/Grey w/ Brown/Black Stains 9" x 9")	8	<	<	<
SY22	Jul 1998	Unknown	Hot Water Pipe Insulation (Same as SY25)	-	-	-	-
SY22	Jul 1998	Main Floor Foreman Machinist Office	VFT (White/Grey w/ Brown/Black Stains 9" x 9") Same as SY22-AS02	-	-	-	-
SY22	Jul 1998	Main Floor Foreman Engine Office	VFT (White w/ Black Stains 12" x 12") Same as SY24-AS01	-	-	-	-
18ACM-003A	Oct 11, 2018	Main Floor Lunch Room	VFT (Cream 12" x 12")	<	<	<	<
18ACM-003B	Oct 11, 2018		VFT (Cream 12" x 12") - Mastic	<	<	<	<
18ACM-004A	Oct 11, 2018	Main Floor Lunch Room	VFT (Brownish Pink 12" x 12")	<	<	<	<
18ACM-004B	Oct 11, 2018		VFT (Brownish Pink 12" x 12") - Mastic	<	<	<	<
18ACM-005A	Oct 11, 2018	Main Floor Lunch Room	VFT (Dark Brown 12" x 12")	<	<	<	<
18ACM-005B	Oct 11, 2018		Millwright Lunch Room VFT (Dark Brown 12" x 12") - Mastic	<	<	<	<
18ACM-006	Oct 11, 2018	Main Floor NW Side	White/Grey Heating Unit Cementitious Pipe Insulation	15-30	15-30	<	<
Syncro Lift Building							
SY34-AS01	Jul 1998	Stairs & Second Floor	VFT (Beige w/ Dark Stains 9" x 9")	4	-	-	-
SY34-AS02	Jul 1998	Stairs & Second Floor	Drywall Plaster	<	<	<	<
AS-06	May 1999	Washroom	Insulating Cement on Pipe Fittings	80	-	-	-
18ACM-013A	Oct 11, 2018	Second Floor Office	VFT (Cream 9" x 9")	1-5	-	-	-
18ACM-013B	Oct 11, 2018		VFT (Cream 9" x 9") - Mastic	1-5	-	-	-
Services Building (Maintenance)							
SY40-AS01	Jul 1998	Boiler Room	Pipe Connector White Woven Fabric	<	<	<	<
SY41-AS01	Jul 1998	Electrical Substation 2	Domestic Cold Water Pipeline Insulation Grey	35	-	-	-
SY45-AS01	Jul 1998	Maintenance Office	VFT (Beige 12" x 12")	2	-	-	-
SY45-AS02	Jul 1998	Maintenance Office	VFT (Grey 12" x 12")	<	<	<	<
AS-01	May 1999	Kitchen	VFT (Green)			<	
AS-03(1)	May 1999	Electrical Room	Straight Cold Water Pipe Insulation (Ribbed White Outer Layer)	40	-	-	-
AS-03(2)	May 1999	Electrical Room	Straight Cold Water Pipe Insulation (Beige Dimpled Inner Core)			<	
AS-04	May 1999	Rigger's Shop	Woven Cloth roll on Floor	<			
AS-05	May 1999	Garage	Insulating Cement on Pipe Fittings	55	-	-	-
Parts Building							
AS-02	May 1999	Upper Level	Black Tar Paper			<	

Asbestos Analytical Results (%)
Hazardous Building Materials Survey
Marystown Shipyard-MGSB
200 Ville Marie Dr., Marystown, NL

Sample ID	Date	Location	Description	Chrysotile	Amosite	Crocidolite	Tremolite
Assembly and Erection (Main Shed)							
SY10-AS01	Jul 1998	New Extension	VFT (Cream/White/Grey 12" x 12")	4	<	<	<
SY10-AS02	Jul 1998	New Extension	Hard Elbow Roof Drain Insulation	95	<	<	<
SY10	Jul 1998	New Extension	Hard Elbow Water Pipe Insulation (Same as SY10-AS02)	-	-	-	-
SY11-AS07	Jul 1998	Washroom	VFT (White w/ Brown/Yellow Specks 12" x 12")	6	<	<	<
SY11-AS08	Jul 1998	Unknown	VFT (Blue w/ Brown/Yellow Specks 12" x 12")	3	<	<	<
SY11-AS09	Jul 1998	Welding Rod Storage Room	Canvas (Black)	<	<	<	<
SY11	Jul 1998	Lunch Room	VFT Similar to SY11 and SY12	-	-	-	-
SY11	Jul 1998	Chimney from Hot Air Furnace	Similar to SY12-AS03	-	-	-	-
SY11	Jul 1998	Steel Office	VFT Similar to SY12-AS06	-	-	-	-
SY12-AS01	Jul 1998	Preparation Shop	VFT (Grey/White 12" x 12")	8	<	<	<
SY12-AS02	Jul 1998	Preparation Shop	Pipe Elbow Cementitious Fibreglass over Chicken Wire - Grey	100	<	<	<
SY12-AS03	Jul 1998	Preparation Shop Chimney from Hot Air Furnace and Gas Line	Hard Elbow Insulation Dark Grey	80	<	<	<
SY12-AS04	Jul 1998	Preparation Shop Clerk's Office	VFT (Grey 12" x 12")	8	<	<	<
SY12-AS05	Jul 1998	Preparation Shop Small Offices	VFT, thick (Beige 12" x 12")	6	<	<	<
SY12-AS06	Jul 1998	Preparation Shop Small Offices	VFT, thin (Beige 12" x 12")	2	<	<	<
SY13-AS01	Jul 1998	Sheet Metal Shop Walls	Cellulose on Walls over Styrofoam	-	-	-	-
AS-07	May 1999	Unknown	Cement Board	35	-	-	-
AS-08	May 1999	North Wall at East End	Exhaust Breeching Insulation (Same as SY12-AS03)	65	-	-	-
18ACM-011	Oct 11, 2018	Main Floor Bathroom	Ceiling Tile Wormhole	<	<	<	<
18ACM-012	Oct 11, 2018	Wheelabrator	Heat Shield Curtain	<	<	<	<
Administration Building							
SY03-AS01	Jul 1998	South Hall	VFT (Brown-Grey w/ White/Beige Stripes 12" x 12")	10	<	<	<
SY03-AS02	Jul 1998	Kitchen / Office	Ceiling Tile Defined Layer, Grey (2' x 2')	<	<	<	<
SY03-AS03	Jul 1998	Unknown	VFT (White w/ Brown Stripes 9" x 9")	12	<	<	<
SY03-AS04	Jul 1998	Unknown	VFT (Cream-Brown w/ White Stripes 9" x 9")	20	<	<	<
SY03-AS05	Jul 1998	Unknown	Ceiling Tile White w/ Holes (4' x 2')	<	<	<	<
SY03-AS06	Jul 1998	Hall by Boardroom	Ceiling Tile Round Holes (2' x 2')	<	<	<	<
SY03-AS09	Jul 1998	Unknown	Ceiling Tile White (4' x 2')	<	<	<	<
SY03-AS10	Jul 1998	Unknown	VFT (Yellow 12" x 12")	2	<	<	<
SY03-AS11	Jul 1998	Unknown	Pipeline Straight Insulation-Grey	20	35	<	<
SY03-AS13	Jul 1998	Unknown	Pipeline Elbow Insulation-Grey	45	<	<	<
SY03-AS14	Jul 1998	Unknown	Insulation on Heating Pipe-Grey	<	<	<	<
18ACM-014A	Oct 12, 2018	Room 201	VFT (Light Blue With Dark Blue/White Flecks 12" x 12")	<	<	<	<
18ACM-014B	Oct 12, 2018		VFT (Light Blue With Dark Blue/White Flecks 12" x 12") - Mastic	<	<	<	<
18ACM-015A	Oct 12, 2018	Second Floor Hall by Centre Stairs	VFT (Dark Brn W/ Light Brown/Cream Streaks 12" x 12")	1-5	<	<	<
18ACM-015B	Oct 12, 2018		VFT (Dark Brn W/ Light Brown/Cream Streaks 12" x 12") - Mastic	1-5	<	<	<
18ACM-016A	Oct 12, 2018	Room 204	VFT (Tan w/ Faded Light Brown Flecks 12" x 12")	<	<	<	<
18ACM-016B	Oct 12, 2018		VFT (Tan w/ Faded Light Brown Flecks 12" x 12") - Mastic	<	<	<	<
18ACM-017A	Oct 12, 2018	Second Floor Gym Area	VFT (Cream w/ Faded Dark Brown Streaks 12" x 12")	<	<	<	<
18ACM-017B	Oct 12, 2018		VFT (Cream w/ Faded Dark Brown Streaks 12" x 12") - Mastic	<	<	<	<
18ACM-018	Oct 12, 2018	Second Floor	Wormhole Ceiling Tile 2' x 4'	<	<	<	<
18ACM-019	Oct 12, 2018	Second Floor	Irratic Perforations Ceiling Tile 2' x 4'	<	<	<	<
18ACM-020	Oct 12, 2018	Second Floor Gym Area	Symmetrical Ceiling Tile 2' x 4'	<	<	<	<
18ACM-021	Oct 12, 2018	Second Floor Gym Area	Wormhole Ceiling Tile 2' x 4'	<	<	<	<
18ACM-022	Oct 12, 2018	Room 216	Drywall Plaster	<	<	<	<
18ACM-023	Oct 12, 2018	Main Floor Stairs by Locker Room	VFT (Light Grey w/ Dark Grey/Cream Blotches)	<	<	<	<
18ACM-024	Oct 12, 2018	Room 117 Server Room	VFT (Tan 12" x 12")	<	<	<	<
18ACM-025A	Oct 12, 2018	Room 117 Server Room	VFT (Light Brown w/ Dark Brown & Cream Streaks 12" x 12")	1-5	<	<	<
18ACM-025B	Oct 12, 2018		VFT (Light Brown w/ Dark Brown & Cream Streaks 12" x 12") - Mastic	1-5	<	<	<
18ACM-000A	Oct 12, 2018	Room 117 Server Room	VFT (Light Brown w/ Dark Brown & Cream Streaks 12" x 12")	1-5	<	<	<
18ACM-000B	Oct 12, 2018		VFT (Light Brown w/ Dark Brown & Cream Streaks 12" x 12") - Mastic	1-5	<	<	<
18ACM-026A	Oct 12, 2018	Main Floor Personnel Office	Vinyl Sheet Flooring (Light Brown-Yellow)	<	<	<	<
18ACM-026B	Oct 12, 2018		Vinyl Sheet Flooring (Light Brown-Yellow) - Mastic	<	<	<	<
18ACM-027A	Oct 12, 2018	Main Floor First Aid Room	Vinyl Sheet Flooring (Light Grey w/ Black Flecks)	<	<	<	<
18ACM-027B	Oct 12, 2018		Vinyl Sheet Flooring (Light Grey w/ Black Flecks) - Mastic	<	<	<	<
18ACM-028	Oct 12, 2018	Main Floor Locker Room	Drywall Plaster	<	<	<	<
18ACM-029	Oct 12, 2018	Main Floor Exterior	Aluminum Window Sealant (Black)	<	<	<	<
Murley Building							
SY27-AS03	Jul 1998	Unknown	VFT (Brown 12" x 12")	3	<	<	<

Notes:

Analysis completed by AGAT Laboratories in Toronto, ON.

Asbestos containing materials are defined by Newfoundland and Labrador Regulation as having greater than 1% asbestos by dry

< = Parameter below 1%

SY41-AS01 Sample Location removed

= Sample exceeds 1% asbestos by dry

= Field Duplication of 18ACM-025

**Lead Paint Analytical Results (mg/kg)
Hazardous Building Materials Survey
Marystown Shipyard-MGSB
200 Ville Marie Dr., Marystown, NL**

Sample ID	Date	Location	Description	Available Lead (Pb)
Carpenters & Joiners Building				
09-BS1	Sep 2009	Pipe & Bar Stock Room	Interior Metal Wall (White/Grey)	11,000
09-BS2	Sep 2009	Pipe & Bar Stock Room	Interior Metal Wall (Blue)	13,000
09-BS3	Sep 2009	Pipe & Bar Stock Room	Interior Metal Ceiling (Yellow)	1,700
09-BS4	Sep 2009	Machine Shop	Interior Metal Ceiling (Yellow)	19,000
09-BS5	Sep 2009	Machine Shop	Interior Metal Wall (Yellow)	32,000
09-BS6	Sep 2009	Machine Shop	Interior Metal Wall (Yellow)	18,000
09-BS7	Sep 2009	Machine Shop	Interior Metal Wall (Yellow/Grey)	30,000
09-BS8	Sep 2009	Machine Shop	Wood Wall (Green)	350
09-BS9	Sep 2009	Main Washroom	Concrete Block Wall (Blue/Yellow)	21,000
09-BS10	Sep 2009	Electrical Room	Metal Ducting (Yellow)	22,000
09-BS11	Sep 2009	Electrical Room	Concrete Floor (Grey)	3,200
09-BS12	Sep 2009	Receiving	Concrete Block Wall (Yellow)	30,000
09-BS13	Sep 2009	Receiving	Concrete Block Wall (Grey)	5,600
09-BS14	Sep 2009	Receiving	Concrete Loading Ramp (Grey)	480
09-BS15	Sep 2009	Receiving	Interior Metal Ceiling (Yellow)	16,000
09-BS16	Sep 2009	Boiler Room	Concrete Floor (Grey)	730
09-BS17	Sep 2009	Boiler Room	Concrete Block Wall (Blue)	7,700
09-BS18	Sep 2009	Boiler Room	Interior Metal Wall (White/Yellow)	6,700
09-BS19	Sep 2009	Boiler Room	Interior Metal Ceiling (White/Yellow)	9,400
09-BS20	Sep 2009	Main Floor Woodworking	Metal Duct Work (Yellow)	18,000
09-BS21	Sep 2009	Second Floor Electrical Shop	Wood Ceiling (White)	1,500
09-BS22	Sep 2009	Receiving	Interior Metal Wall (Green)	8,800
09-BS23	Sep 2009	Receiving	Interior Metal Wall (Yellow)	17,000
PB18-04	Oct 11, 2018	Bathroom by Joiners Shop	Wall (Green/Yellow)	12,400
PB18-05	Oct 11, 2018	Bathroom by Millwright Shop	Wall (Light Grey Over Light Green)	6,800
PB18-06	Oct 11, 2018	Machine Shop	Front Corner Floor (Grey over Green)	42,700
PB18-07	Oct 11, 2018	Second Floor Room Top of Stairs	Wall (Teal)	631
PB18-08	Oct 11, 2018	Second Floor Room Top of Stairs	Ceiling (White)	440
PB18-09	Oct 11, 2018	Second Floor Dry Stores	Ductwork (Grey Over Yellow)	98,300
Assembly & Erection Building				
PB18-10	Oct 11, 2018	Outside Welder's Cable Storage Rm	Structural Steel (Yellow)	60,700
PB18-11	Oct 11, 2018	Sheet Metal Shop	Walls (Grey)	1,090
PB18-12	Oct 11, 2018	Sheet Metal Shop	Lockers (Blue On White On Grey)	3,500
PB18-13	Oct 11, 2018	Wheelabrator	Structural Steel Enclosure (Black Over Cream/Green)	10,800
Docking Berths - Side Transfer Area				
PB18-03	Oct 11, 2018	Docking Berths	Steel Electrical Containment Box (Orange)	65,400

**Lead Paint Analytical Results (mg/kg)
Hazardous Building Materials Survey
Marystown Shipyard-MGSB
200 Ville Marie Dr., Marystown, NL**

Sample ID	Date	Location	Description	Available Lead (Pb)
Syncro Building				
PB18-14	Oct 11, 2018	Main Floor Bathroom	Ceiling (Teal Over Yellow Over Cream)	11,500
PB18-15	Oct 11, 2018	Second Floor	Wall (Grey Over Green Over Yellow)	3,580
Services Building				
09-BS24	Sep 2009	Garage	Ceiling (White)	7,800
09-BS25	Sep 2009	Boiler Room	Floor (Grey)	2,500
09-BS26	Sep 2009	Boiler Room	Metal Wall (Baby Blue)	12,000
09-BS27	Sep 2009	Electrical Room	Interior Metal Wall (Yellow)	12,000
09-BS28	Sep 2009	Rigging Shop	Interior Metal Wall (Bright Yellow)	23,000
09-BS29	Sep 2009	Painter's Room (Water Blast)	Interior Metal Wall (Green)	15,000
09-BS30	Sep 2009	Lunch Room	Interior Metal Wall (Green)	7,800
09-BS31	Sep 2009	Lunch Room	Ceiling (Yellow)	17,000
09-BS32	Sep 2009	Lunch Room	Door (Grey)	920
09-BS33	Sep 2009	Garage	Lower Interior Metal Wall (Dark Blue)	5,200
09-BS34	Sep 2009	Garage	Upper Interior Metal Wall (White)	5,500
PB18-16	Oct 11, 2018	Rigging Shop	Floor/Curb (Dark Grey Over Light Grey Over Red)	15,300
PB18-17	Oct 11, 2018	Boiler Room	Exhaust Fan Housing (White Over yellow)	24,100
PB18-18	Oct 11, 2018	Garage	Duct (White Over Yellow)	5,160
Parts Building				
PB18-19	Oct 11, 2018	Parts	Ceiling (Yellow Over Cream)	14,500
Administration Building				
PB18-20	Oct 11, 2018	Room 210 Print Room	Wall (Cream Over Pale Yellow)	622
PB18-21	Oct 11, 2018	Room 208	Wall (Light Blue)	<15
PB18-22	Oct 11, 2018	Lunch Room	Window (Cream Over Yellow)	3,150
PB18-23	Oct 11, 2018	Lunch Room Hall	Wall (Cream/White)	<15
PB18-24	Oct 11, 2018	Personnel Office	Wall (Light green)	<15
PB18-25	Oct 11, 2018	Mechanical Room	Top Half Of Wall & Ceiling (White)	1,020
PB18-26	Oct 11, 2018	Mechanical Room	Bottom Half Of Wall (Grey)	4,380
Murley Building				
PB18-01	Oct 11, 2018	Main Floor	Storage Room Door (Mustard Yellow)	6,260
PB18-02	Oct 11, 2018	Main Floor	Storage Room Wall (White)	4,040

Notes:

2009 Analysis completed by PSC Analytical in Bedford, NS.

2018 Analysis completed by AGAT Laboratories in Dartmouth, NS.

Canadian Transportation of Dangerous Goods (TDG) Criterion = 5,000 mg/kg

Canadian Hazardous Products Act (HPA), Surface Coating Materials Regulations (2016) = 90 mg/kg

Sample > TDG

Sample > HPA

Appendices

Appendix A

Photographic Record



Photo 1: **Carpenters & Joiners Building** – Main Floor heating unit pipe elbow insulation confirmed as ACM.



Photo 2: **Carpenters & Joiners Building** – Main Floor bathroom by Joiners Shop where limited areas of green over yellow lead-based paint was confirmed.



Photo 3: **Carpenters & Joiners Building** – Main Floor Stock Room where textile pipe wrap was confirmed to contain no ACMs.



Photo 4: **Carpenters & Joiners Building** – Main Floor front corner of Machine Shop area where grey over green peeling lead-based paint was confirmed



Site Photographs



Photo 5: **Carpenters & Joiners Building** – Second Floor Dry Stores area where peeling green over yellow lead-based paint was **confirmed**.



Photo 6: **Carpenters & Joiners Building** – Second Floor Despatch oven where door gasket was **confirmed ACM** while there was **no ACM** in the refractory brick.



Photo 7: **Carpenters & Joiners Building** – Second Floor Electrician’s Office where the vinyl floor tile had no ACMs, tile mastic confirmed ACM, teal green walls and white ceilings had no lead-based paint.



Photo 8: **Carpenters & Joiners Building** – Main Floor view of the Machine Shop area with offices and lunch room at the left and pipe stock room at the top right.





Photo 9: **Carpenters & Joiners Building** – Second Floor view of the woodwork assembly area where no paint flakes or peeling were evident.

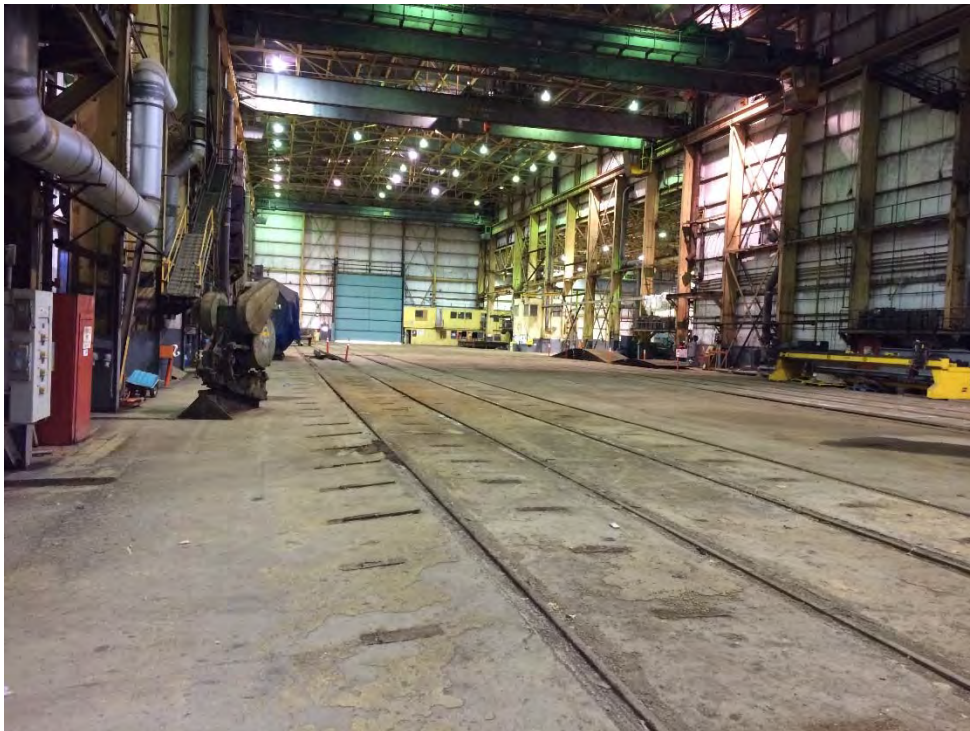


Photo 10: **Assembly & Erection Building** – Main Floor of erection and fabrication area where little to no paint flakes were noted on the floor or equipment.





Photo 11: **Assembly & Erection Building** – Main Floor bathroom where **ceiling tile** was confirmed to have **no ACMs**; pipe insulation was not observed in the ceiling space.



Photo 12: **Assembly & Erection Building** – Sheet Metal Shop walls where grey **paint** was confirmed to be **above Human Health** criterion and **below TDG** criterion.



Photo 13: **Assembly & Erection Building** – Sheet Metal Shop lockers where peeling blue over white over grey paint was confirmed to be **above Human Health** criterion and **below TDG** criterion.



Photo 14: **Assembly & Erection Building** – Wheelabrator equipment where textile curtain was confirmed to have **no ACMs**.



Photo 15: **Assembly & Erection Building** – Structural steel with occasional areas of peeling yellow **paint confirmed** to be lead-based. Also note **ACM pipe insulation** in poor condition.



Photo 16: **Assembly & Erection Building** – Wheelabrator equipment area where small flaking was observed of black over cream over green **paint was confirmed** as lead-based.





Photo 17: **Syncrolift Building** – Main Floor where peeling teal green over yellow paint was **confirmed** to be lead-based. ACM pipe insulation was not observed in the ceiling space.



Photo 18: **Syncrolift Building** – Second Floor where peeling grey over green over yellow paint was **confirmed** to be **above Human Health** criterion and **below TDG** criterion. Vinyl floor tile and mastic were confirmed as ACM.



Site Photographs



Photo 19: **Services Building** – Lunch Room where flaking or peeling paint or potential ACMs were not observed.



Photo 20: **Services Building** – Paint Shop or Water Blast Room where flaking or peeling paint or potential ACMs were not observed.





Photo 21: **Services Building** – Rigger's Room where flaking or peeling paint or potential ACMs were not observed.



Photo 22: **Services Building** – Rigger's Room back area where peeling grey paint on the concrete floor and curb was **confirmed** as lead-based. Potential ACMs were not observed.



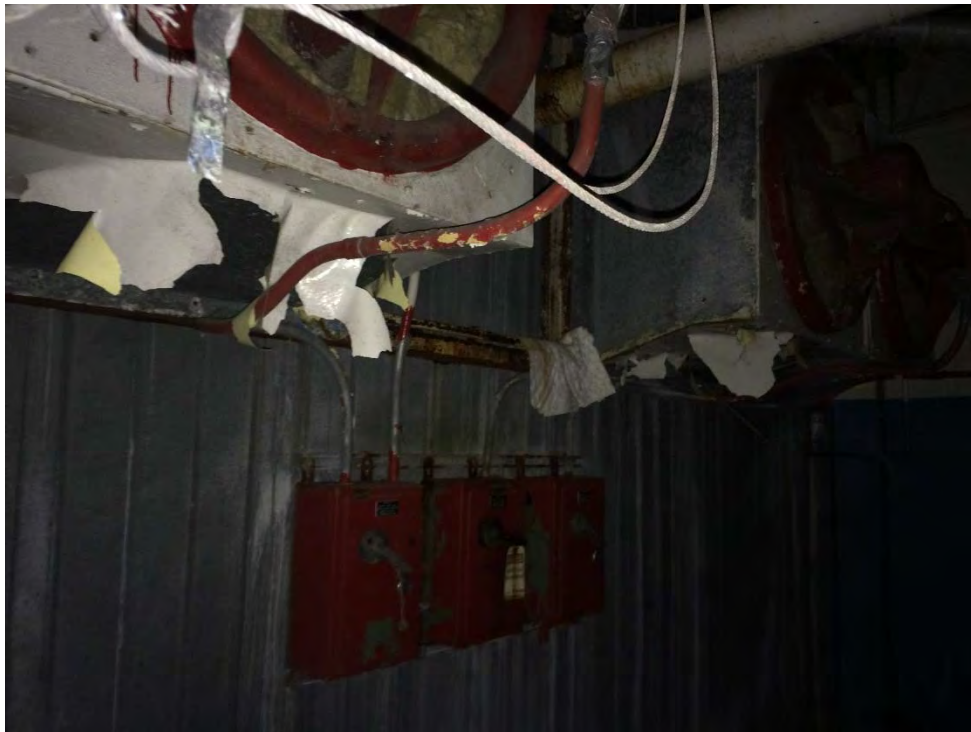


Photo 23: **Services Building** – Boiler Room exhaust fan housing with peeling white over yellow **paint** that was **confirmed** as lead-based. Potential ACMs were not observed, but may be present in various components of the boiler



Photo 24: **Services Building** – Garage where white over yellow peeling **paint** was **confirmed** as lead-based; flakes were also observed on the floor. Potential ACMs were not observed.



Photo 25: **Parts Building** – Loading bay where peeling yellow over cream **paint** was **confirmed** as lead-based. Paint flakes were noted to cover the floor area and potential ACMs were not observed.



Photo 26: **Parts Building** – Stock room where peeling yellow over cream **paint** was **confirmed** as lead-based. Paint flakes were noted to cover the floor area and shelves; potential ACMs were not observed.



Site Photographs



Photo 27: **Administration Building** – Second Floor hall by centre stairwell where remaining vinyl floor tile and mastic confirmed as ACM.



Photo 28: **Administration Building** – Second Floor Gym area where three types of ceiling tile confirmed as no ACMs.



Photo 29: **Administration Building** – Main Floor Lunch Room where cream over yellow window trim **paint** was **confirmed** to be **above Human Health** criterion and **below TDG** criterion; cream painted walls were below criteria.



Photo 30: **Administration Building** – Main Floor Server Room 117 where the light brown vinyl **floor tile and mastic** was confirmed **ACMs**. The vinyl **sheet flooring** had no **ACMs**.





Photo 31: **Administration Building** – Main Floor Board Room (former Accounting Machines) where the light brown vinyl floor tile and mastic was confirmed **ACMs**. Accessible pipe insulation was previously removed from the ceiling space.



Photo 32: **Administration Building** – Main Floor Personnel Office where vinyl sheet flooring had no **ACMs** and light green wall paint was **not** lead-based.



Site Photographs



Photo 33: **Administration Building** – Main Floor Washroom where accessible ACM pipe insulation was previously removed. Note remaining debris following a water leak repair, but mould impacted surface remains in drywall.



Photo 34: **Administration Building** – Main Floor Locker Room where **drywall plaster** was confirmed with **no ACMs**.



Photo 35: **Administration Building** – Mechanical Room where peeling and flaking grey paint on lower wall with peeling and flaking white paint on upper wall ceiling that confirmed lead concentrations above the **Human Health** criterion.



Photo 36: **Murley Building** – Second Floor storage room door with peeling and flaking yellow over green paint that was confirmed as lead-based. Small quantities of flaking paint were observed on the floor in the hallway.



Photo 37: **Murley Building** – Second Floor storage room wall with flaking and peeling white paint that **confirmed** lead concentrations **above** the **Human Health** criterion. Some flaking paint was observed on the floor and cabinets.



Photo 38: **Docking Berths & Side Transfer Area** – Steel electrical containment boxes with heavy corrosion and flaking orange paint that was **confirmed** as lead-based.



Appendix B

Laboratory Certificates of Analysis

**CLIENT NAME: GHD LIMITED
1118 TOPSAIL ROAD
ST. JOHN'S , NL A1B3N7
(709) 364-5353**

ATTENTION TO: JAMES O'NEILL

PROJECT: 11178792-02

AGAT WORK ORDER: 18K397145

ASBESTOS REVIEWED BY: Whenhong Zou, Lab Analyst

DATE REPORTED: Oct 23, 2018

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (709)747-8573

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 18K397145

PROJECT: 11178792-02

57 Old Pennywell Road, Unit I
 St. John's, NL
 CANADA A1E 6A8
 TEL (709)747-8573
 FAX (709) 747-2139
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: JAMES O'NEILL

SAMPLING SITE:

SAMPLED BY:

Bulk Asbestos											
DATE RECEIVED: 2018-10-15					DATE REPORTED: 2018-10-23						
		SAMPLE DESCRIPTION:		18ACM-001	18ACM-002	18ACM-006	18ACM-008	18ACM-009	18ACM-011	18ACM-012	18ACM-018
		SAMPLE TYPE:		Other	Other	Other	Other	Other	Other	Other	Other
		DATE SAMPLED:		2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-12
Parameter	Unit	G / S	RDL	9624232	9624234	9624238	9624240	9624241	9624243	9624244	9624250
Asbestos (Bulk)	%	0.5	0.5	50-75	ND	30-50	>75	ND	ND	ND	ND
		SAMPLE DESCRIPTION:		18ACM-019	18ACM-020	18ACM-021	18ACM-022	18ACM-023	18ACM-024	18ACM-028	18ACM-029
		SAMPLE TYPE:		Other	Other	Other	Other	Other	Other	Other	Other
		DATE SAMPLED:		2018-10-12	2018-10-12	2018-10-12	2018-10-12	2018-10-12	2018-10-12	2018-10-12	2018-10-12
Parameter	Unit	G / S	RDL	9624251	9624252	9624253	9624254	9624255	9624256	9624261	9624262
Asbestos (Bulk)	%	0.5	0.5	ND	ND	ND	ND	ND	ND	ND	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON OSHA - Reg. 278
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9624232 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

Asbestos Present: Chrysotile 30-50%
 Amosite 5-15%

9624234 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

"ND" - Not Detected

9624238 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

Asbestos Present: Chrysotile 15-30%
 Amosite 15-30%

9624240 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

Asbestos Present: Chrysotile

9624241-9624262 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

"ND" - Not Detected

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 18K397145

PROJECT: 11178792-02

57 Old Pennywell Road, Unit I
 St. John's, NL
 CANADA A1E 6A8
 TEL (709)747-8573
 FAX (709) 747-2139
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

SAMPLING SITE:

ATTENTION TO: JAMES O'NEILL

SAMPLED BY:

Bulk Asbestos											
DATE RECEIVED: 2018-10-15					DATE REPORTED: 2018-10-23						
		SAMPLE DESCRIPTION:		18ACM-003	18ACM-004	18ACM-005	18ACM-007	18ACM-010	18ACM-013	18ACM-014	18ACM-015
		SAMPLE TYPE:		Other	Other	Other	Other	Other	Other	Other	Other
		DATE SAMPLED:		2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-12	2018-10-12
Parameter	Unit	G / S	RDL	9624235	9624236	9624237	9624239	9624242	9624245	9624246	9624247
Asbestos (Bulk) Phase 1	%	0.5	0.5	ND	ND	ND	ND	ND	1-5	ND	1-5
Asbestos (Bulk) Phase 2	%	0.5	0.5	ND	ND	ND	ND	1-5	1-5	ND	1-5
		SAMPLE DESCRIPTION:		18ACM-016	18ACM-017	18ACM-025	18ACM-026	18ACM-027	18ACM-000		
		SAMPLE TYPE:		Other	Other	Other	Other	Other	Other		
		DATE SAMPLED:		2018-10-12	2018-10-12	2018-10-12	2018-10-12	2018-10-12	2018-10-12		
Parameter	Unit	G / S	RDL	9624248	9624249	9624258	9624259	9624260	9624263		
Asbestos (Bulk) Phase 1	%	0.5	0.5	ND	ND	1-5	ND	ND	1-5		
Asbestos (Bulk) Phase 2	%	0.5	0.5	ND	ND	1-5	ND	ND	1-5		

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18K397145

PROJECT: 11178792-02

57 Old Pennywell Road, Unit I
St. John's, NL
CANADA A1E 6A8
TEL (709)747-8573
FAX (709) 747-2139
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: JAMES O'NEILL

SAMPLING SITE:

SAMPLED BY:

Bulk Asbestos

DATE RECEIVED: 2018-10-15

DATE REPORTED: 2018-10-23

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON OHSA - Reg. 278
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9624235-9624239 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

"ND" - Not Detected
Phase1: VFT Phase2: Mastic

9624242 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

"ND" - Not Detected
Asbestos Present: Chrysotile
Phase1: VFT Phase2: Mastic

9624245 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

Asbestos Present: Chrysotile
Phase1: VFT Phase2: Mastic

9624246 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

"ND" - Not Detected
Phase1: VFT Phase2: Mastic

9624247 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

Asbestos Present: Chrysotile
Phase1: VFT Phase2: Mastic

9624248-9624249 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

"ND" - Not Detected
Phase1: VFT Phase2: Mastic

9624258 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

Asbestos Present: Chrysotile
Phase1: VFT Phase2: Mastic

9624259-9624260 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

"ND" - Not Detected
Phase1: VFT Phase2: Adhesive

9624263 Condition of sample was satisfactory at time of arrival in laboratory. Analysis done at AGAT 5623 McAdam Road Mississauga location.

Asbestos Present: Chrysotile
Phase1: VFT Phase2: Mastic

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Method Summary

CLIENT NAME: GHD LIMITED

AGAT WORK ORDER: 18K397145

PROJECT: 11178792-02

ATTENTION TO: JAMES O'NEILL

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Asbestos (Bulk)	INORG 93-6010	EPA 600/R-93/116 & NIOSH 9002	PLM
Asbestos (Bulk) Phase 1	INORG 93-6010	EPA 600/R-93/116 & NIOSH 9002	PLM
Asbestos (Bulk) Phase 2	INORG 93-6010	EPA 600/R-93/116 & NIOSH 9002	PLM



AGAT Laboratories

Unit 122 • 11 Morris Drive

Dartmouth, NS

B3B 1M2

webearth.agatlabs.com • www.agatlabs.com

P: 902.468.8718 • F: 902.468.8924

Laboratory Use Only

Arrival Condition: Good Poor (see notes)

Arrival Temperature: _____

AGAT Job Number: 18K397145

Notes: _____

Chain of Custody Record

Report Information

Company: GHD Limited
 Contact: James O'Neill
 Address: 1118 Topsail Road
St. John's NL A1B 3N7
 Phone 1-709-364-5353 Fax: 1-709-364-5368
 Site # and/or Name: MARYSTOWN SHIPYARD - MGSB
 Project #: 11178792-02
 AGAT Quotation #: GHD Standing Offer
 GHD PO #: TO FOLLOW

Report Information

1. Name: James O'Neill
 Email: James.Oneill@ghd.com
 2. Name: datanl
 Email: datanl@ghd.com

Report Format

Single Sample per page
 Multiple Samples per page
 Excel Format Included

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days
 Rush TAT 1 day 2 days
 3 days

Date Required: _____

Drinking Water Sample: Yes No

Reg. No.: _____

Invoice To

Same Yes / No

Company: _____
 Contact: _____
 Address: _____
 Phone: _____ Fax: _____

Regulatory Requirements (Check):

List Guidelines on Report Do Not List Guidelines on Report
 PIRI
 Tier 1 Gas Pot Coarse
 Res Fuel N/Pot Fine
 Com Lube
 CCME CDWQ
 Industrial
 Commercial Other _____
 Res/Park _____
 Agricultural _____
 FWAL _____
 Sediment _____

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	SAMPLE MATRIX	COMMENTS - SITE/SAMPLE INFO, TYPE OF CONTAMINANT	NUMBER OR CONTAINERS	TPH/BTEX - ATLANTIC RBCA TIER 1	TPH/BTEX - ATLANTIC RBCA TIER 1 - LOW LEVEL (POTABLE)	TPH/BTEX FRACTIONATION	MTBE (ADDED TO TPH/BTEX)	MTBE ONLY	METALS: <input type="checkbox"/> Total <input type="checkbox"/> Diss <input checked="" type="checkbox"/> Available	FOC	PARTICLE SIZE (Sieve and Pipette)	PAHs	PCBs	TPH FRACTIONATION (Summa Canister)	OTHER: Asbestos 1 % Detection Limit	OTHER:	OTHER:	HOLD FOR 1 YEAR (Y/N)	HAZARDOUS (Y/N)	
18ACM-001	2018/11/10 17:00	Solid	Pipe Insulation	1																	
18ACM-002	2018/11/10 17:00	Solid	Pipe Wrap	1																	
18ACM-003	2018/11/10 17:00	Solid	Floor Tile Cream (12x12)	1																	
18ACM-004	2018/11/10 17:00	Solid	Floor Tile Brown-Pink (12x12)	1																	
18ACM-005	2018/11/10 17:00	Solid	Floor Tile Dark Brown (12x12)	1																	
18ACM-006	2018/11/10 17:00	Solid	Pipe Insulation	1																	
18ACM-007	2018/11/10 17:00	Solid	Floor Tile Cream (12x12)	1																	
18ACM-008	2018/11/10 17:00	Solid	Gasket	1																	
18ACM-009	2018/11/10 17:00	Solid	Refractory Brick	1																	
18ACM-010	2018/11/10 17:00	Solid	Floor Tile Cream (12x12)	1																	
18ACM-011	2018/11/10 17:00	Solid	Ceiling Tile (Wormhole)	1																	

Samples Relinquished By (Print Name): Brian Luffman
 Date/Time: Oct 15/18 14:30
 Samples Relinquished By (Sign): [Signature]

Samples Received By (Print Name): Emma Penney
 Date/Time: Oct 15/18
 Samples Received By (Sign): [Signature]

Date/Time: 3:30 pm
 Page 1 of 3



AGAT Laboratories

Unit 122 • 11 Morris Drive

Dartmouth, NS

B3B 1M2

webearth.agatlabs.com • www.agatlabs.com

P: 902.468.8718 • F: 902.468.8924

Laboratory Use Only

Arrival Condition: Good Poor (see notes)

Arrival Temperature: _____

AGAT Job Number: 18K397145

Notes: _____

Chain of Custody Record

Report Information

Company: GHD Limited
 Contact: James O'Neill
 Address: 1118 Topsail Road
St. John's NL A1B 3N7
 Phone 1-709-364-5353 Fax: 1-709-364-5368
 Site # and/or Name: MARYSTOWN SHIPYARD - MGSB
 Project #: 11178792-02
 AGAT Quotation #: GHD Standing Offer
 GHD PO #: TO FOLLOW

Report Information

1. Name: James O'Neill
 Email: James.Oneill@ghd.com
 2. Name: datanl
 Email: datanl@ghd.com

Report Format

- Single Sample per page
 Multiple Samples per page
 Excel Format Included

Turnaround Time Required (TAT)

- Regular TAT 5 to 7 working days
 Rush TAT 1 day 2 days
 3 days

Date Required: _____

Drinking Water Sample: Yes No

Reg. No.: _____

Invoice To Same Yes / No

Company: _____
 Contact: _____
 Address: _____
 Phone: _____ Fax: _____

Regulatory Requirements (Check):

- List Guidelines on Report Do Not List Guidelines on Report
 PIRI
 Tier 1 Gas Pot Coarse
 Res Fuel N/Pot Fine
 Com Lube
 CCME CDWQ
 Industrial
 Commercial Other _____
 Res/Park
 Agricultural
 FWAL
 Sediment

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	SAMPLE MATRIX	COMMENTS - SITE/SAMPLE INFO, TYPE OF CONTAMINANT	NUMBER OF CONTAINERS	TPH/BTEX - ATLANTIC RBCA TIER 1	TPH/BTEX - ATLANTIC RBCA TIER I - LOW LEVEL (POTABLE)	TPH/BTEX FRACTIONATION	MTBE (ADDED TO TPH/BTEX)	MTBE ONLY	METALS: <input type="checkbox"/> Total <input type="checkbox"/> Diss <input checked="" type="checkbox"/> Available	FOC	PARTICLE SIZE (Sieve and Pipette)	PAHs	PCBs	TPH FRACTIONATION (Summa Canister)	OTHER: Asbestos 1 % Detection Limit	OTHER:	OTHER:	HOLD FOR 1 YEAR (Y/N)	HAZARDOUS (Y/N)	
18ACM-012	2018/11/10 17:38	Solid	Heat Shield Curtain	1																	
18ACM-013	2018/11/10 17:08	Solid	Floor Tile Cream (9x9)	1																	
18ACM-014	2018/12/10 12:48	Solid	Floor Tile Lt Blue (12x12)	1																	
18ACM-015	2018/12/10 14:48	Solid	Floor Tile Lt Brown (12x12)	1																	
18ACM-016	2018/12/10 14:49	Solid	Floor Tile Fade Lt Br (12x12)	1																	
18ACM-017	2018/12/10 14:49	Solid	Floor Tile CreamDkBr (12x12)	1																	
18ACM-018	2018/12/10 14:49	Solid	Ceiling Tile (Wormhole)	1																	
18ACM-019	2018/12/10 14:49	Solid	Ceiling Tile (Erratic Perf)	1																	
18ACM-020	2018/12/10 14:49	Solid	Ceiling Tile (Symmetr Perf)	1																	
18ACM-021	2018/12/10 14:49	Solid	Ceiling Tile (Old Wormhole)	1																	
18ACM-022	2018/12/10 14:49	Solid	Drywall Plaster	1																	

Samples Relinquished By (Print Name): Brian Luffman
 Date/Time: 01/15/10
 Date/Time: 14:30

Samples Received By (Print Name): Emma Penney
 Date/Time: 01/15/10
 Date/Time: 3:30pm



AGAT Laboratories

Laboratory Use Only

Arrival Condition: Good Poor (see notes)

Arrival Temperature: _____

AGAT Job Number: 18K397145

Notes: _____

Chain of Custody Record

Report Information

Company: GHD Limited
 Contact: James O'Neill
 Address: 1118 Topsail Road
St. John's NL A1B 3N7
 Phone 1-709-364-5353 Fax: 1-709-364-5368
 Site # and/or Name: MARYSTOWN SHIPYARD - MGSB
 Project #: 11178792-02
 AGAT Quotation #: GHD Standing Offer
 GHD PO #: TO FOLLOW

Report Information

1. Name: James O'Neill
 Email: James.Oneill@ghd.com
 2. Name: datanl
 Email: datanl@ghd.com

Report Format

- Single Sample per page
 Multiple Samples per page
 Excel Format Included

Turnaround Time Required (TAT)

- Regular TAT 5 to 7 working days
 Rush TAT 1 day 2 days
 3 days

Date Required: _____

Regulatory Requirements (Check):

- List Guidelines on Report Do Not List Guidelines on Report
 PIRI
 Tier 1 Gas Pot Coarse
 Res Fuel N/Pot Fine
 Com Lube
 CCME CDWQ
 Industrial
 Commercial Other _____
 Res/Park _____
 Agricultural _____
 FWAL _____
 Sediment _____

Drinking Water Sample: Yes No
 Reg. No.: _____

Invoice To Same Yes / No
 Company: _____
 Contact: _____
 Address: _____
 Phone: _____ Fax: _____

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	SAMPLE MATRIX	COMMENTS - SITE/SAMPLE INFO, TYPE OF CONTAMINANT	NUMBER OR CONTAINERS	TPH/BTEX - ATLANTIC RBCA TIER 1	TPH/BTEX - ATLANTIC RBCA TIER I - LOW LEVEL (POTABLE)	TPH/BTEX FRACTIONATION	MTBE (ADDED TO TPH/BTEX)	MTBE ONLY	METALS: <input type="checkbox"/> Total <input type="checkbox"/> Diss <input type="checkbox"/> Available	FOC	PARTICLE SIZE (Sieve and Pipette)	PAHS	PCBS	TPH FRACTIONATION (Summa Canister)	OTHER: Asbestos 1 % Detection Limit	OTHER:	OTHER:	HOLD FOR 1 YEAR (Y/N)	HAZARDOUS (Y/N)	
18ACM-023	2018/12/10 12:20	Solid	Floor Tile Grey (12x12)	1												<input checked="" type="checkbox"/>					
18ACM-024	2018/12/10 12:20	Solid	Floor Tile Tan (12x12)	1												<input checked="" type="checkbox"/>					
18ACM-025	2018/12/10 14:48	Solid	Floor Tile Lt Brown (9x9)	1												<input checked="" type="checkbox"/>					
18ACM-026	2018/12/10 14:48	Solid	Vinyl Sheet Floor Yellow	1												<input checked="" type="checkbox"/>					
18ACM-027	2018/12/10 14:48	Solid	Vinyl Sheet Floor Lt Grey	1												<input checked="" type="checkbox"/>					
18ACM-028	2018/12/10 14:48	Solid	Drywall Plaster	1												<input checked="" type="checkbox"/>					
18ACM-029	2018/12/10 14:49	Solid	Ext Window Sealant	1												<input checked="" type="checkbox"/>					
18ACM-000	2018/12/10 14:48	Solid	Floor Tile	1												<input checked="" type="checkbox"/>					

Samples Relinquished By (Print Name): Brian Luffman Date/Time: Oct 15/18 14:30
 Samples Received By (Print Name): Imma Penney Date/Time: Oct 15/18 3:30pm
 Samples Relinquished By (Sign): [Signature] Date/Time: 14:30
 Samples Received By (Sign): [Signature] Date/Time: 3:30pm

CLIENT NAME: GHD LIMITED
1118 TOPSAIL ROAD
ST. JOHN'S , NL A1B3N7
(709) 364-5353

ATTENTION TO: JAMES O'NEILL

PROJECT: 11178792-02 Marystown Shipyard - MGSB

AGAT WORK ORDER: 18K397156

SOIL ANALYSIS REVIEWED BY: Jason Coughtrey, Inorganics Supervisor

DATE REPORTED: Oct 24, 2018

PAGES (INCLUDING COVER): 7

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (709)747-8573

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 18K397156

PROJECT: 11178792-02 Marystown Shipyard - MGSB

57 Old Pennywell Road, Unit I
 St. John's, NL
 CANADA A1E 6A8
 TEL (709)747-8573
 FAX (709) 747-2139
<http://www.agatlabs.com>

CLIENT NAME: GHD LIMITED

ATTENTION TO: JAMES O'NEILL

SAMPLING SITE:

SAMPLED BY:

Lead In Paint

DATE RECEIVED: 2018-10-15

DATE REPORTED: 2018-10-24

Parameter		Unit	G / S	RDL	Pb18-01	Pb18-02	Pb18-03	Pb18-04	Pb18-05	Pb18-06	Pb18-07	Pb18-08
SAMPLE DESCRIPTION:					Pb18-01	Pb18-02	Pb18-03	Pb18-04	Pb18-05	Pb18-06	Pb18-07	Pb18-08
SAMPLE TYPE:					Paint	Paint	Paint	Paint	Paint	Paint	Paint	Paint
DATE SAMPLED:					2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11
Lead		mg/kg	15		9624351	9624352	9624353	9624354	9624355	9624356	9624357	9624358
Total Sample Mass		g			0.5034	0.4978	0.5071	0.4985	0.5066	0.4946	0.4968	0.4984
SAMPLE DESCRIPTION:					Pb18-09	Pb18-10	Pb18-11	Pb18-12	Pb18-13	Pb18-14	Pb18-15	Pb18-16
SAMPLE TYPE:					Paint	Paint	Paint	Paint	Paint	Paint	Paint	Paint
DATE SAMPLED:					2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11	2018-10-11
Lead		mg/kg	15		98300	60700	1090	3500	10800	11500	3580	15300
Total Sample Mass		g			0.4991	0.5083	0.4980	0.5023	0.4924	0.4924	0.4979	0.4978
SAMPLE DESCRIPTION:					Pb18-17	Pb18-18	Pb18-19	Pb18-20	Pb18-21	Pb18-22	Pb18-23	Pb18-24
SAMPLE TYPE:					Paint	Paint	Paint	Paint	Paint	Paint	Paint	Paint
DATE SAMPLED:					2018-10-11	2018-10-11	2018-10-11	2018-10-12	2018-10-12	2018-10-12	2018-10-11	2018-10-11
Lead		mg/kg	15		24100	5160	14500	622	<15	3150	<15	<15
Total Sample Mass		g			0.4932	0.5043	0.4937	0.4984	0.4993	0.5060	0.4916	0.5009
SAMPLE DESCRIPTION:					Pb18-25	Pb18-26						
SAMPLE TYPE:					Paint	Paint						
DATE SAMPLED:					2018-10-11	2018-10-11						
Lead		mg/kg	15		1020	4380						
Total Sample Mass		g			0.4953	0.5028						

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
 Analysis performed at AGAT Halifax (unless marked by *)

Certified By: _____

Quality Assurance

CLIENT NAME: GHD LIMITED

AGAT WORK ORDER: 18K397156

PROJECT: 11178792-02 Marystown Shipyard - MGSB

ATTENTION TO: JAMES O'NEILL

SAMPLING SITE:

SAMPLED BY:

Soil Analysis															
RPT Date: Oct 24, 2018			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Lead In Paint															
Lead	1	9624372	3150	2780	12.5%	< 15	103%	70%	130%	111%	70%	130%	99%	70%	130%

Certified By: _____

Method Summary

CLIENT NAME: GHD LIMITED

AGAT WORK ORDER: 18K397156

PROJECT: 11178792-02 Marystown Shipyard - MGSB

ATTENTION TO: JAMES O'NEILL

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Lead	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B, SM3125, AOAC 974.02	ICP/MS
Total Sample Mass			



AGAT Laboratories

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Dartmouth, NS

B3B 1M2

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Laboratory Use Only

Arrival Condition: Good Poor (see notes)

Arrival Temperature: _____

AGAT Job Number: 18K397156

Notes:

HOLD FOR POSSIBLE TCLP ANALYSIS

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days

Rush TAT 1 day 2 days

3 days

Date Required: _____

Drinking Water Sample: Yes No

Reg. No.: _____

Chain of Custody Record

Report Information

Company: GHD Limited

Contact: James O'Neill

Address: 1118 Topsail Road

St. John's NL A1B 3N7

Phone 1-709-364-5353 Fax: 1-709-364-5368

Site # and/or Name: MARYSTOWN SHIPYARD - MGSB

Project #: 11178792-02

AGAT Quotation #: GHD Standing Offer

GHD PO #: TO FOLLOW

Report Information

1. Name: James O'Neill

Email: James.Oneill@ghd.com

2. Name: datanl

Email: datanl@ghd.com

Report Format

Single Sample per page

Multiple Samples per page

Excel Format Included

Regulatory Requirements (Check):

List Guidelines on Report Do Not List Guidelines on Report

PIRI

Tier 1 Gas Pot Coarse

Res Fuel N/Pot Fine

Com Lube

CCME CDWQ

Industrial Other _____

Commercial Res/Park _____

Agricultural _____

FWAL _____

Sediment _____

Invoice To

Same Yes / No

Company: _____

Contact: _____

Address: _____

Phone: _____ Fax: _____

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	SAMPLE MATRIX	COMMENTS - SITE/SAMPLE INFO, TYPE OF CONTAMINANT	NUMBER OR CONTAINERS	TPH/BTEX - ATLANTIC RBCA TIER 1	TPH/BTEX - ATLANTIC RBCA TIER 1 - LOW LEVEL (POURABLE)	TPH/BTEX FRACTIONATION	MTBE (ADDED TO TPH/BTEX)	MTBE ONLY	METALS: <input type="checkbox"/> Total <input type="checkbox"/> Diss <input checked="" type="checkbox"/> Available	FOC	PARTICLE SIZE (Sieve and Pipette)	PAHs	PCBs	TPH FRACTIONATION (Summa Canister)	OTHER: Lead	OTHER:	OTHER:	HOLD FOR 1 YEAR (Y/N)	HAZARDOUS (Y/N)
																<input type="checkbox"/>				
Pb18-01	2018/11/10 17:38	Solid	Paint Chips Mustard Yellow	1												<input checked="" type="checkbox"/>				
Pb18-02	2018/11/10 17:38	Solid	Paint Chips White	1												<input checked="" type="checkbox"/>				
Pb18-03	2018/11/10 13:05	Solid	Paint Chips Orange	1												<input checked="" type="checkbox"/>				
Pb18-04	2018/11/10 13:05	Solid	Paint Chips Green	1												<input checked="" type="checkbox"/>				
Pb18-05	2018/11/10 13:05	Solid	Paint Chips Lt Grey	1												<input checked="" type="checkbox"/>				
Pb18-06	2018/11/10 13:05	Solid	Paint Chips Grey	1												<input checked="" type="checkbox"/>				
Pb18-07	2018/11/10 13:05	Solid	Paint Chips Teal Green	1												<input checked="" type="checkbox"/>				
Pb18-08	2018/11/10 13:06	Solid	Paint Chips White	1												<input checked="" type="checkbox"/>				
Pb18-09	2018/11/10 13:06	Solid	Paint Chips Grey	1												<input checked="" type="checkbox"/>				
Pb18-10	2018/11/10 13:06	Solid	Paint Chips Yellow	1												<input checked="" type="checkbox"/>				
Pb18-11	2018/11/10 13:06	Solid	Paint Chips Grey	1												<input checked="" type="checkbox"/>				

Samples Relinquished By (Print Name): Brian Luffman

Date/Time: _____

Samples Received By (Print Name): Brian Penney

Date/Time: Oct 15/18

Samples Relinquished By (Sign): _____

Date/Time: _____

Samples Received By (Sign): [Signature]

Date/Time: 3:30pm

Page 1 of 3



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Laboratory Use Only

Arrival Condition: Good Poor (see notes)

Arrival Temperature: _____

AGAT Job Number: 18K397156

Notes:
HOLD FOR POSSIBLE TCLP ANALYSIS

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days

Rush TAT 1 day 2 days

3 days

Date Required: _____

Report Format

Single Sample per page

Multiple Samples per page

Excel Format Included

Drinking Water Sample: Yes No

Reg. No.: _____

Chain of Custody Record

Report Information

Company: GHD Limited
 Contact: James O'Neill
 Address: 1118 Topsail Road
St. John's NL A1B 3N7
 Phone 1-709-364-5353 Fax: 1-709-364-5368
 Site # and/or Name: MARYSTOWN SHIPYARD - MGSB
 Project #: 11178792-02
 AGAT Quotation #: GHD Standing Offer
 GHD PO #: TO FOLLOW

Report Information

1. Name: James O'Neill
 Email: James.Oneill@ghd.com
 2. Name: datanl
 Email: datanl@ghd.com

Regulatory Requirements (Check):

List Guidelines on Report Do Not List Guidelines on Report
 PIRI
 Tier 1 Gas Pot Coarse
 Res Fuel N/Pot Fine
 Com Lube

CCME CDWQ
 Industrial
 Commercial Other
 Res/Park
 Agricultural
 FWAL
 Sediment

Invoice To

Same Yes / No

Company: _____
 Contact: _____
 Address: _____
 Phone: _____ Fax: _____

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	SAMPLE MATRIX	COMMENTS - SITE/SAMPLE INFO, TYPE OF CONTAMINANT	NUMBER OR CONTAINERS	TPH/BTEX - ATLANTIC RBCA TIER 1	TPH/BTEX - ATLANTIC RBCA TIER 1 - LOW LEVEL (POTABLE)	TPH/BTEX FRACTIONATION	MTBE (ADDED TO TPH/BTEX)	MTBE ONLY	METALS: <input type="checkbox"/> Total <input type="checkbox"/> Diss <input type="checkbox"/> Available	FOC	PARTICLE SIZE (Sieve and Pipette)	PAHs	PCBs	TPH FRACTIONATION (Summa Canister)	OTHER: LEAD	OTHER:	OTHER:	HOLD FOR 1 YEAR (Y/N)	HAZARDOUS (Y/N)
																<input type="checkbox"/>				
Pb18-12	2018/11/10 17:38	Solid	Paint Chips Blue	1												<input checked="" type="checkbox"/>				
Pb18-13	2018/11/10 17:38	Solid	Paint Chips Black	1												<input checked="" type="checkbox"/>				
Pb18-14	2018/11/10 13:05	Solid	Paint Chips Teal Green	1												<input checked="" type="checkbox"/>				
Pb18-15	2018/11/10 13:05	Solid	Paint Chips Grey	1												<input checked="" type="checkbox"/>				
Pb18-16	2018/11/10 13:05	Solid	Paint Chips Dk Grey	1												<input checked="" type="checkbox"/>				
Pb18-17	2018/11/10 13:05	Solid	Paint Chips White	1												<input checked="" type="checkbox"/>				
Pb18-18	2018/11/10 13:05	Solid	Paint Chips White	1												<input checked="" type="checkbox"/>				
Pb18-19	2018/11/10 13:06	Solid	Paint Chips Yellow	1												<input checked="" type="checkbox"/>				
Pb18-20	2018/12/10 13:13	Solid	Paint Chips Cream	1												<input checked="" type="checkbox"/>				
Pb18-21	2018/12/10 13:13	Solid	Paint Chips Lt Blue	1												<input checked="" type="checkbox"/>				
Pb18-22	2018/12/10 13:13	Solid	Paint Chips Cream	1												<input checked="" type="checkbox"/>				

Samples Relinquished By (Print Name):
Brian Luffman
 Samples Relinquished By (Sign): _____

Date/Time: _____
 Date/Time: _____

Samples Received By (Print Name):
Summer Kenney
 Samples Received By (Sign): _____

Date/Time: 01-15/15
 Date/Time: 3:30pm



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Laboratory Use Only

Arrival Condition: Good Poor (see notes)

Arrival Temperature: _____

AGAT Job Number: 18K397156

Notes:

HOLD FOR POSSIBLE TCLP ANALYSIS

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days

Rush TAT 1 day 2 days

3 days

Date Required: _____

Drinking Water Sample: Yes No

Reg. No.: _____

Chain of Custody Record

Report Information

Company: GHD Limited
 Contact: James O'Neill
 Address: 1118 Topsail Road
St. John's NL A1B 3N7
 Phone 1-709-364-5353 Fax: 1-709-364-5368
 Site # and/or Name: MARYSTOWN SHIPYARD - MGSB
 Project #: 11178792-02
 AGAT Quotation #: GHD Standing Offer
 GHD PO #: TO FOLLOW

Report Information

1. Name: James O'Neill
 Email: James.Oneill@ghd.com
 2. Name: datanl
 Email: datanl@ghd.com

Report Format

- Single Sample per page
 Multiple Samples per page
 Excel Format Included

Regulatory Requirements (Check):

- List Guidelines on Report Do Not List Guidelines on Report
 PIRI
 Tier 1 Gas Pot Coarse
 Res Fuel N/Pot Fine
 Com Lube
 CCME CDWQ
 Industrial Commercial Other
 Res/Park
 Agricultural
 FWAL
 Sediment

Invoice To

Same Yes / No

Company: _____
 Contact: _____
 Address: _____
 Phone: _____ Fax: _____

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	SAMPLE MATRIX	COMMENTS - SITE/SAMPLE INFO, TYPE OF CONTAMINANT	NUMBER OR CONTAINERS	TPH/BTEX - ATLANTIC RBCA TIER 1	TPH/BTEX - ATLANTIC RBCA TIER 1 - LOW LEVEL (POIABLE)	TPH/BTEX FRACTIONATION	MTBE (ADDED TO TPH/BTEX)	MTBE ONLY	METALS: <input type="checkbox"/> Total <input type="checkbox"/> Diss <input checked="" type="checkbox"/> Available	FOC	PARTICLE SIZE (Sieve and Pipette)	PAHs	PCBs	TPH FRACTIONATION (Summa Canister)	OTHER: Lead	OTHER:	OTHER:	HOLD FOR 1 YEAR (Y/N)	HAZARDOUS (Y/N)
Pb18-23	2018/11/10 17:38	Solid	Paint Chips Cream	1												<input checked="" type="checkbox"/>				
Pb18-24	2018/11/10 17:38	Solid	Paint Chips Lt Green	1												<input checked="" type="checkbox"/>				
Pb18-25	2018/11/10 13:05	Solid	Paint Chips White	1												<input checked="" type="checkbox"/>				
Pb18-26	2018/11/10 13:05	Solid	Paint Chips Grey	1												<input checked="" type="checkbox"/>				

Samples Relinquished By (Print Name): <u>Brian Luffman</u>	Date/Time: _____	Samples Received By (Print Name): <u>Emma Kenney</u>	Date/Time: <u>Oct 15 18</u>
Samples Relinquished By (Sign):	Date/Time: _____	Samples Received By (Sign):	Date/Time: <u>3:30pm</u>



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

www.ghd.com