



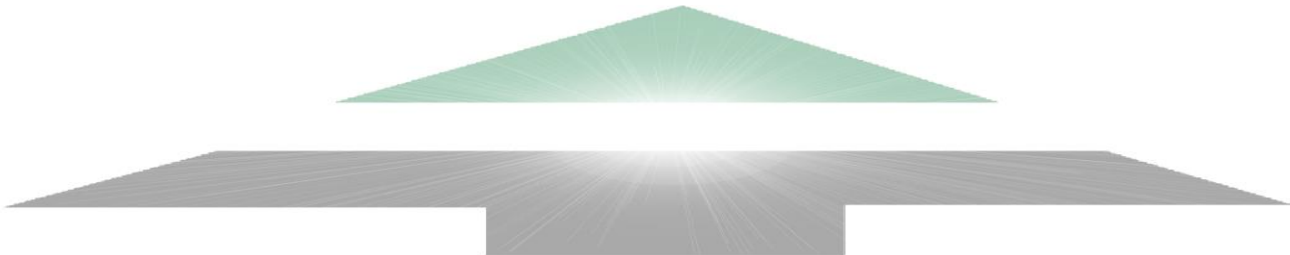
Phase III Environmental Site Assessment Former Queens County Highways Depot Riverside Drive, Charlottetown, Prince Edward Island

FINAL REPORT

Prepared For:
PEI Transportation and Infrastructure
Public Works and Planning Division
11 Kent Street
Charlottetown, PE

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ALL-TECH Project No. PE23442



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Executive Summary

ALL-TECH Environmental Services Limited (ALL-TECH) was retained by the Prince Edward Island (PEI) Department of Transportation and Infrastructure (DTI), Public Works and Planning Division to conduct a Phase III Environmental Site Assessment (ESA) at the Former Queens County Highways Depot along Riverside Drive in Charlottetown, PEI (Figures 1 and 2, Appendix A), herein referred to as the “Site”.

The Site (PIDs Nos.: 825927, 365593 and a portion of 336537) is located in eastern Charlottetown, PEI. The Site is approximately of 11.91 acres with two distinct areas, which are identified as:

- The Joseph A. Ghiz Memorial Park (PID No.: 825927); and
- Former Queens County Highways Depot (PID Nos.: 365593 and a portion of 336537)

The Site is located in a mixed residential, commercial and industrial area of Charlottetown, PEI. In general, commercial and industrial properties are located to the north, east and south of the Site, and residential properties are located to the west of the Site. The Site and the surrounding properties are serviced by the City of Charlottetown municipal water supply and sanitary sewer collection systems.

The following known environmental assessments have been completed on the Site:

- Phase I Environmental Site Assessment, Queens County Highway Depot, Charlottetown, PE (Stantec, December 2020)
- Phase II Environmental Site Assessment, Former Queens County Highway Depot, Charlottetown, Prince Edward Island (ALL-TECH, 2024)

In summer 2023, ALL-TECH was retained by the PEI DTI to complete a Phase II ESA on the Site addressing the environmental concerns identified in the Phase I. Based on the information gathered and on observations made during this assessment, the following environmental concerns were identified:

- **Former Queens County Highways Depot (APEC#1):** Petroleum hydrocarbon exceedances were identified in locations in and around the Former Highways Depot Building, specifically at: 1) the above ground fuel oil tanks (north side of building); 2) the former fuel oil tank (north side of building); 3) the former underground storage tanks/pump island (east side of building and; 4) inside the depot building. Additional delineation was recommended to better quantify the volume of impacted soil associated with the former underground storage tanks and pump island.
- **Former Imperial Oil Bulk Plant (APEC#6):** The cadmium exceedance in groundwater at MW23-02 is considered to be sourced from the miscellaneous fill materials that were

used when the swamp at this location was historically infilled. Confirmatory and surface water sampling in the manmade ditch was recommended to demonstrate there is no risk to the Hillsborough River.

- **Former Concrete Plant (APEC#10):** Elevated PAHs were detected in SS-16, it is unlikely that the exceedances are associated with the former concrete plant. It was recommended that confirmatory soil sample be conducted at SS-16 and additional shallow soil samples be collected to delineate the horizontal and vertical extent of impacts.

Based on the information gathered and on observations made during this assessment, the Phase III ESA has revealed the following:

Former Queens County Highways Depot (APEC#1):

Delineation efforts north of the building showed PHC migration westward to BH23-28, where modified TPH concentrations still exceeded Tier I RBSLs and ESLs at 370mg/kg. Though at a lesser concentration than BH23-25 (3400mg/kg), this suggests PHC contamination could extend under or near the northwestern building foundation. Further delineation is required and can be undertaken during remediation.

Inside the building and to the east, the delineation program has modified the PHC plume's extent. However, due to internal access limitations in the building and services location limitations during the test pitting program, additional assessment is required to further delineate the PHC plume to the east and can be achieved if the oil water separator is to be decommissioned.

Remedial action is required to achieve a state where future development of the garage building and the adjacent contaminated areas outside the building can proceed as per regulations. Refer to Section 6.0 for details regarding applicable environmental quality standards.

Former Imperial Oil Bulk Plant (APEC#6):

Based on the re-sampling of MW23-02 and surface water sampling program, the concentrations of cadmium were below the CCME CWQG. No further assessment in this area is required.

Former Concrete Plant (APEC#10):

Vertical and horizontal delineation test pits in the Phase III ESA revealed PAH concentrations below the CCME CSQG. These findings showed PAH concentration to be consistent with those from previous test pits, without significant variations from the Phase II results. The origin of the PAH concentrations in SS-16 remains undetermined. No further assessment in this area is required.

This Executive Summary provides a brief overview of the main conclusions and recommendations of this Phase III ESA report. Complete details are provided in the report and the attached Appendices. The statements made in this Executive Summary are subject to the same limitations as described in Section 12.0.

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1.0 Introduction

ALL-TECH Environmental Services Limited (ALL-TECH) was retained by the Prince Edward Island (PEI) Department of Transportation and Infrastructure (DTI), Public Works and Planning Division to conduct a Phase III Environmental Site Assessment (ESA) at the Former Queens County Highways Depot along Riverside Drive in Charlottetown, PEI (Figures 1 and 2, Appendix A), herein referred to as the “Site”.

The following sections of this report detail the site background, site description, previous assessment programs, scope of work, methodology, regulatory framework, results, and conclusions.

2.0 Background

It is understood that the PEI DTI are considering expanding and/or redeveloping portions of the property, which may include single or multiple story slab on grade buildings for residential, commercial or institutional use. The purpose of this Phase II ESA was to identify actual areas of environmental contamination, which would require remediation and/or risk management considerations as part of the future expansion and/or redevelopment plans.

It is understood that the following potential redevelopment of the site is being considered:

- **Former Highways Depot:** It is understood that the larger portion of the property where the Former Highways Building is located is being considered for potential future residential, commercial and/or institutional redevelopment (i.e., new buildings). The portion of the property with the Administration Building and the Emergency Shelters may also be expanded (adding additional emergency shelters) with the addition of a safe injection site.
- **The Joseph A. Ghiz Memorial Park (herein referred to as the “Park”):** There are no plans to redevelop this portion of the property.

2.1 Topography, Regional Geology, and Hydrogeology

The Site is situated in a relatively flat area of Charlottetown with an elevation ranging from 1-3 m above sea level. Based on topographical mapping (Toporama), the land gradient of the general area slopes east, down toward Hillsborough River.

The surficial geology in the vicinity of the Site is mapped as clay and clay-silt till, characterized as ground moraine. The matrix is predominantly composed of clay to clay-silt, with varying stone content. The till is compact in nature and displays varying thickness, ranging from a few centimeters to 5 meters in most areas. However, along coastal regions, it can attain thicknesses of 9 to 10 meters. The transitions between this till unit and other till units are typically gradual. These soils are generally of low permeability but where the soils are more sandy, permeabilities may increase. Soil stratigraphy observed during the

assessment generally consisted of reddish-brown silt/clayey silt and some fine-grained sands with traces of gravel.

The bedrock geology in the vicinity of the Site is mapped as reddish-brown sandstone, siltstone and claystone breccia. Bedrock was not encountered during the assessment.

Groundwater was encountered at depths ranging from 0.67 to 2.29 m BGS. Shallow groundwater flows to the east/southeast towards the Hillsborough River with an average hydraulic gradient of 0.001 m/m. Petroleum hydrocarbons (LNAPL) were not observed during the groundwater monitoring events.

Hydraulic gradient and groundwater flow direction are presented on Figure 6, Depth to groundwater and groundwater elevations are presented in Appendix D.

3.0 Site Description

The Site (PIDs Nos.: 825927, 365593 and a portion of 336537) is located in eastern Charlottetown, PEI (Figure 1, Appendix A). The Site is approximately 11.91 acres with two distinct areas, which are described as follows:

The Joseph A. Ghiz Memorial Park (PID No.: 825927): The Park is generally described as a day park (approximately 4.86 acres) with a small open grass field, a gazebo (with several picnic tables) and a small portion of the Confederation Trail (a walking trail). The Park is bordered to the north by several residential properties; to the east by two large asphalt parking lots, and a small grass field; to the south by Grafton Street; to the southwest by Edward Street and a small grass field; and to the west by a small grass field and Kent Street. Access into this portion of the property is from the parking area along Kent Street and from the trail entrances near the intersections of Kent Street, Fitzroy Street, Esher Street and Kensington Road (at the northernmost point of the Confederation Trail within the Site) and at the intersections of Grafton Street and Edward Street (at the southernmost point of the Confederation Trail within the Site). Although the Confederation Trail is covered by Type 1 (or Class A) gravel, the smaller northern walking trail is covered by asphalt. The majority of the Park is covered by grass.

There is a small manmade ditch that borders a portion of the eastern boundary of the Park (between the Park and the adjacent asphalt parking lots). This ditch appears to extend to the north along the Confederation Trail (the former CNR Railway). Both ends of this ditch either drain from or into an underground culvert system and appears to have several sections of underground concrete culvert upgradient of the Site. The manmade drain is considered to be a simple ditch (surface) drainage system, and not a sensitive aquatic and/or ecological environment.

Former Queens County Highways Depot (PID Nos.: 365593 and a portion of 336537): As indicated by the title, this portion of the property (approximately 7.05 acres) formerly operated as the Queens County

Highways Depot, which currently consists of the maintenance garage, administration building, emergency shelters and a security booth. This portion of the Site is bordered by Park Street to the north; Riverside Drive (or the Trans-Canada Highway) to the east; several commercial properties (i.e., Tim Hortons, Wendy's, Gateway Dental, etc.) to the south; and Park Street, Beach Street and several residential properties to the west. This portion of this property is surrounded by a security fence. Although there are several small strips of grass along the eastern and western property boundaries, the majority of the property is covered by gravel or asphalt. Access into the Site is through the security gate off of Park Street.

The Site is located in a mixed residential, commercial and industrial area of Charlottetown, PEI (see Figure 2, Appendix A). In general, commercial and industrial properties are located to the north, east and south of the Site, and residential properties are located to the north and west of the Site.

The Site is located approximately 143 meters west of the Hillsborough River, which discharges into the Charlottetown Harbour. Because of the close proximity of the Hillsborough River to the Charlottetown Harbour (approximately 1.5 km), it is anticipated that this portion of the Hillsborough River is tidal.

The Site and the surrounding properties are serviced by the City of Charlottetown municipal water supply and sanitary sewer collection systems.

Photographs of the Site and the surrounding area are presented in Appendix B.

4.0 Previous Environmental Assessment Activities

The following known environmental assessments have been completed on the Site:

- Phase I Environmental Site Assessment, Queens County Highway Depot, Charlottetown, PE (Stantec, December 2020)
- Phase II Environmental Site Assessment, Former Queens County Highway Depot, Charlottetown, Prince Edward Island (ALL-TECH, 2024)

In 2020, Stantec conducted a Phase I ESA for the Site and identified ten (10) Areas of Potential Environmental Concern (APEC), which were identified as follows in Table 1:

Table 1: APECS and Potential Contaminates of Concern

Location	Potential Contaminants of Concern
APEC #1: Former Queens County Highways Depot	PHCs, VOCs
APEC #2: Former Rail Lines Throughout the Property	Metals, PAHs, PHCs
APEC #3: Former Infilled Area/Dump Location	Metals, PHCs, VOCs, PAHs, PCBs
APEC #4: Administration Building (Former Asphalt Testing Lab)	PHCs, VOCs, PAHs

APEC #5: Irving Oil Bulk Plant and Gasoline Retail Outlet	PHCs, PAHs, Metals
APEC #6: Former Imperial Oil Bulk Plant	PHCs, VOCs
APEC #7: Former Asphalt Plant	PHCs, PAHs
APEC #8: Former Coal Shed and Yard Storage	PHCs
APEC #9: 377 Kent Street (Major Residential Fuel Oil Release)	PHCs, VOCs
APEC #10: Former Concrete Plant	PHCs, VOCs

In summer 2023, ALL-TECH was retained by the PEI DTI to complete a Phase II ESA on the Site addressing the environmental concerns identified in the Phase I. Based on the information gathered and on observations made during this assessment, the following environmental concerns were identified:

- **Former Queens County Highways Depot (APEC#1):** Petroleum hydrocarbon exceedances were identified in locations in and around the Former Highways Depot Building, specifically at: 1) the above ground fuel oil tanks (north side of building); 2) the former fuel oil tank (north side of building); 3) the former underground storage tanks/pump island (east side of building and; 4) inside the depot building. Additional delineation was recommended to better quantify the volume of impacted soil associated with the former underground storage tanks and pump island.
- **Former Imperial Oil Bulk Plant (APEC#6):** The cadmium exceedance in groundwater at MW23-02 is considered to be sourced from the miscellaneous fill materials that were used when the swamp at this location was historically infilled. Confirmatory and surface water sampling in the manmade ditch was recommended to demonstrate there is no risk to the Hillsborough River.
- **Former Concrete Plant (APEC#10):** Elevated PAHs were detected in SS-16, it is unlikely that the exceedances are associated with the former concrete plant. It was recommended that confirmatory soil sample be conducted at SS-16 and additional shallow soil samples be collected to delineate the horizontal and vertical extent of impacts.

The extent of the impacts is presented in Figures 5 and Figure 6, Appendix A.

5.0 Scope of Work

In 2023, ALL-TECH completed a Phase III ESA, which included the following objectives:

- **Former Queens County Highways Depot (APEC#1):** To further delineate petroleum hydrocarbon contamination detected inside, and to the north and east of the depot. Additionally, one monitoring well will be drilled and installed inside the depot near BH23-11, where the highest concentrations of hydrocarbons were found, to assess for the presence of free product.
- **Former Imperial Oil Bulk Plant (APEC#6):** To review the cadmium exceedance by re-sampling MW23-02 and collect several surface water samples to determine if cadmium from the imported miscellaneous fill material is leaching into the manmade ditch.

- **Former Concrete Plant (APEC#10):** To assess the exceedances of PAHs by re-sampling the surface soil in proximity to SS-16 and implementing an additional surface sampling program. This program is intended to delineate the impacts both vertically and horizontally, to understand the extent of contamination.

6.0 Regulatory Framework, Guidelines and Site Classification

The Prince Edward Island Department of Environment, Energy and Climate Action manage petroleum hydrocarbon impacted sites in accordance with the Prince Edward Island, Environmental Protection Act, Petroleum Hydrocarbon Remediation Regulations (PHRR, Updated September 19, 2015), herein referred to as the “Regulations”. The Regulations have generally adopted the Atlantic RBCA (Risk-Based Corrective Action) approach for managing petroleum impacted sites.

The Regulations have both Risk-Based Screening Levels (RBSLs) and Pathway Specific Screening Levels (PSSLs), which are used to assess the soil and groundwater quality at the Site.

Based on the land use (including potential future land use considerations), groundwater use and soil type (discussed throughout the report), the southwestern portion of the Site, specifically The Joseph A. Ghiz Memorial Park, is classified as parkland/non-potable/coarse-grained and the Former Highways Depot, specifically the northeastern portion of the Site, is classified as residential and/or commercial/non-potable/coarse-grained.

The Regulations do not include other contaminants (i.e., metals, PAHs, PCBs, VOCs, etc.). The Prince Edward Island Department of Environment, Energy and Climate Action assess these contaminants in accordance with the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines (CEQGs).

7.0 Methodology

The following presents a summary of the methodology used to conduct the Phase III ESA.

7.1 *Underground Utility Locates/Clearances*

Prior to any intrusive assessment activities, ALL-TECH contacted Bell Aliant, City of Charlottetown (Water and Sewer), Enwave, Maritime Electric and Utility Corridor to locate and mark (i.e., paint on the surface) any underground utilities and clear the proposed borehole and/or monitoring well locations. The underground utilities were marked and/or clearances were obtained from all of the above utility companies.

Maritime Electric notified ALL-TECH that the boreholes proposed to the east of the government garage, adjacent to Riverside Drive, fell within the minimum safe distance from the main power lines. Therefore, drilling at these locations with a drill rig was not recommended due to health and safety risks.

7.2 Drilling Program

In total, seven (7) boreholes (BH23-28 to BH23-34) were advanced and one (1) monitoring well (MW23-23) was installed on November 28, 2023, by Q-Drilling & Remediation INC., using a truck-mounted environmental/geotechnical drill rig. The depth of the boreholes and monitoring well ranged from 3.04 to 3.65 meters below ground surface (mbgs). The location of the boreholes and the monitoring wells are presented in Figures 4 and 6, Appendix A.

The soil samples were collected, where possible, using a split spoon sampler at 0.6 m intervals. When soil recovery was sufficient, a portion of the sample placed in clean laboratory supplied vials/bottles and the remaining portion of sample placed in a heavy duty ziplock bag. Immediately after collection, the soil-filled laboratory vials/bottles were placed in a cooler and kept on ice until delivered to the laboratory. VOC concentration measurements were obtained using the MINI RAE 3000™ photo-ionization detector from the headspace of the recovered soil samples. Based on field observations, and headspace readings select soil samples from the boreholes were submitted for laboratory analysis.

The split spoon samplers were cleaned between each sample in a clean bucket with water and a mild environmentally friendly detergent. A new pair of nitrile gloves was used when collecting each soil sample.

The monitor well was constructed using 50 mm diameter Schedule 40 PVC casing, screen and an end cap. The annulus between the screened PVC pipe and soil was backfilled with clean silica sand, up approximately 0.3 m above the screened PVC pipe. A bentonite seal was placed and hydrated to provide a watertight seal for the well. The monitor well was then secured with a compression plug and a bolt down, flush-mounted steel cover.

7.3 Test Pitting Program

Two test pits, TP1 and TP2, were excavated adjacent to Riverside Drive and the oil water separator, (east of the highway depot) to depths ranging from approximately 0.3 to 2.6 meters below ground surface (mbgs) by GNL Environmental LTD. Once the desired depth was reached, soil samples were taken from the excavator bucket and placed in clean laboratory supplied vials/bottles. Immediately after collection, the soil-filled laboratory vials/bottles were placed in a cooler and kept on ice until delivered to the laboratory. After the soil sample was collected, the shallow excavation was backfilled and leveled.

Shallow Test Pits

Four shallow test holes (SS-24, SS-25, SS-26, and SS-27) were manually dug using a pick and shovel to a depth ranging between 0.57 to 0.65 mbgs. The shallow soil samples were collected using a stainless-steel trowel and/or by hand. The shallow soil samples were placed in clean laboratory supplied vials/bottles. Immediately after collection, the soil-filled laboratory vials/bottles were placed in a cooler and kept on ice until delivered to the laboratory. A chain of custody was also completed and submitted with the soil

samples. After the soil sample was collected, the shallow test hole was backfilled with the original excavated material and was compacted with a manual tamper.

The location of the test pits are presented in Figures 4 and 6, Appendix A.

7.4 Groundwater Monitoring Program

New waterra tubing (Waterra Polyethylene Tubing) and a foot valve was installed and dedicated in the monitoring well. A minimum of three well volumes was purged from each monitoring well, or the well was developed dry three times, to remove any standing water and ensure that the samples were representative of the surrounding groundwater. At a minimum, the groundwater was allowed to recover to approximately 80% of its original static. The groundwater samples were placed directly into clean laboratory supplied vials/bottles. Immediately after collection, the water-filled laboratory vials/bottles were placed in a cooler and kept on ice until delivered to the laboratory. A chain of custody was also completed and submitted with the groundwater samples. A new pair of nitrile gloves was used to develop and collect each groundwater sample.

7.5 Surface Water Sampling Program

Three surface water samples (SW1, SW2, and SW3) were collected from the man-made ditch located on the southwestern portion of the site. SW1 was collected from the northernmost point of the ditch (upstream), SW2 was collected from the central segment of the ditch (midstream), and SW3 was collected from the southern end of the ditch (downstream).

A new pair of nitrile gloves was used to collect each surface water sample. Immediately after collection, the water-filled laboratory containers were placed in a cooler and kept on ice until delivered to the laboratory. A chain of custody was also completed and submitted with the surface water samples.

The location of the surface water samples are presented in Figures 3 and 5, Appendix A.

7.6 Quality Assurance and Quality Control (QA/QC)

During fieldwork, various Quality Assurance/Quality Control (QA/QC) measures were implemented for the Phase II ESA:

- Cleaning the spilt spoon samplers between soil samples, and rinsing off the augers between each borehole/monitoring well location;
- Restricted use of petroleum-based lubricants on tools and equipment;
- Maintaining a clean work area for sample handling/logging;
- Using disposable nitrile gloves when handling samples;
- Using clean laboratory-supplied containers for soil and groundwater samples;
- Maintaining well materials in factory-supplied packaging until placed in the borehole;

- Using dedicated waterra tubing and foot valves or new KURI-TEC clear PVC tubing and geotech silicone tubing when developing and sampling each monitoring well;
- Keeping samples in cool storage in a secure location and maintaining direct custody of samples until delivery to the laboratory.

RPC is accredited with the Standards Council of Canada (SCC) and conforms to the requirements of ISO/IEC 17025 (Testing and Calibration Laboratories Accreditation Program – Environmental Testing). RPC has an internal QA program that consists of analyzing matrix spike, spiked blank, certified reference materials and reference blanks. The results of these analyses are compared to established control limits to assess the quality of the laboratory analytical results. These QA processes and results were reviewed and are discussed within the ESA sections of the report.

8.0 Results

8.1 Field Observations

The following sections presents summary of notable field observations during the Phase III ESA field program. The stratigraphy for each borehole/monitor well and test pit logs are presented in Appendix C.

8.1.1 Former Queens County Highways Depot (APEC#1)

Test Pitting Program

Two test pits, TP1 and TP2, were excavated adjacent to Riverside Drive and the oil water separator, (east of the highway depot) to depths ranging from approximately 0.3 to 2.6 meters

TP1 was excavated approximately 10 m south of the oil water separator to a depth of 2.6 mbgs. Soil stratigraphy observed during the test pit consisted of reddish-brown silt/clayey silt and some fine-grained sands with traces of gravel. Groundwater was encountered, no obvious indications of petroleum hydrocarbon impacts were observed.

TP2 was excavated adjacent to the oil water separator to a depth of 0.3 mbgs. It was noted that in TP2, gravel was observed at a depth of 0.2 mbgs. This gravel is presumed to have been placed as backfill material during the installation of the oil-water separator. The presence of gravel in TP2 suggests that it was used to enhance drainage around the separator, provide structural support to the surrounding soil, and potentially to protect the integrity of the oil-water separator by preventing direct contact with potentially expansive or shifting soils.

Given these observations, the decision to terminate TP2 at 0.3 mbgs was made to prevent any disturbance to the surrounding gravel backfill material that could lead to soil compaction, water accumulation, or undue pressure on the oil-water separator. Such disturbances could compromise the separator's stability, potentially causing it to shift, tilt, or even crack.

Drilling Program

Seven boreholes (BH23-28 to BH23-34) were advanced and one monitoring well (MW23-23) was installed to 3.06 to 3.65 mbgs. Soil stratigraphy observed during the assessment generally consisted of reddish-brown silt/clayey silt and some fine-grained sands with traces of gravel. Groundwater was encountered, no obvious indications of petroleum hydrocarbon product observed in BH23-28 to BH23-34. Monitoring well MW23-23 was augured and installed adjacent to BH23-13. Petroleum hydrocarbon impacts (moderate odour, and grey stained soil) were observed during the installation.

8.1.2 Former Concrete Plant (APEC#10)

Four shallow test pits (SS-24 to SS-26) were manually dug using a pick and shovel to a depth ranging between 0.57 to 0.65 mbgs. Slag (what appeared to be clinker and ash) material was observed in SS-26, no other indications of impacts were observed in the remaining shallow test pit locations.

8.2 Soil Analytical Results

8.2.1 Former Queens County Highways Depot (APEC#1)

Petroleum Hydrocarbons

The laboratory analysis indicated that the soil sample from BH23-28, situated near the underground storage tank (UST) and former above ground storage tank (AST) on the north side of the highway depot, contained PHCs and Modified TPH concentrations that exceeded the Tier I RBSLs resembling fuel oil.

Furthermore, the laboratory also reported that samples from BH23-29 to BH23-34, all located within the highway depot, showed concentrations of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX), PHC, and Modified TPH below the reporting detection limits (RDLs) and therefore below the Tier I RBSLs. In addition, BTEX, PHC, and Modified TPH concentrations in TP1 were also reported below the laboratory RDLs and therefore below the Tier I RBSLs.

The complete analytical results are presented in Table 2 and Table 3, Appendix D. The estimated extent of the PHC impacts are presented in Figures 5 and 6, Appendix A.

8.2.2 Former Concrete Plant (APEC#10)

Polycyclic Aromatic Hydrocarbons

The laboratory analysis indicated that concentrations of PAHs in surface soil samples SS-24, SS-25, SS-26, and SS-27, collected near SS-16 adjacent to the security building northwest of the highway depot, were below the CCME CSQG.

The complete analytical results are presented in Table 4, Appendix D. The extent of potential PAH impacts are presented in Figures 5 and 6, Appendix A.

8.3 Groundwater and Surface Water Analytical Results

8.3.1 Former Queens County Highways Depot (APEC#1)

Petroleum Hydrocarbons

The laboratory analysis indicated that concentrations of BTEX, PHCs, and Modified TPH in groundwater sample MW23-23 (resembling a mixture of gasoline, fuel oil, and lube oil), taken from within the northern garage of the highway depot, were detected at concentrations below the Tier I RBSLs.

The complete analytical results are presented in Table 5 and 6, Appendix D. The extent of potential PHC impacts are presented in Figure 6, Appendix A.

8.3.2 Former Imperial Oil Bulk Plant (APEC#6)

Cadmium

The laboratory analysis indicated that concentrations of cadmium in groundwater sample MW23-02, collected from the southwestern portion of the site, which was historically infilled with miscellaneous fill materials, were reported below the CCME CWQG.

Furthermore, cadmium concentrations in surface water samples SW1 (upstream), SW2 (midstream), and SW3 (downstream), collected from the man-made ditch on the southwestern part of the site, was also reported below the CCME CWQG.

The complete analytical results for groundwater and surface water are presented in Table 7, Appendix D.

9.0 Quality Assurance Discussions

The Quality Assurance Reports provided by RPC indicated the matrix spike, the spiked blank, the certified reference materials and the reference blank samples are within acceptable quality control (QC) limits. The reports confirm the analytical results are within established tolerances and the data is considered to be representative. The QA reports are presented with the certificates of analysis, Appendix G.

10.0 Contaminant Distribution

10.1 The Joseph A. Ghiz Memorial Park

Cadmium

Although the groundwater monitoring program during the Phase II revealed elevated cadmium concentrations in MW23-02, re-sampling and surface water sampling programs during the Phase III showed cadmium levels below the CCME CWQG. The source of the cadmium remains uncertain, but it is likely associated with the infill material, considering cadmium's presence in pigments, plastics, coal, and certain minerals.

10.2 Administration Building and Emergency Shelters

Polycyclic Aromatic Hydrocarbons

PAHs concentrations were detected in SS-16 during the Phase II ESA's surface soil sampling program, further analysis through vertical and horizontal delineation test pits in the Phase III ESA revealed PAH concentrations below the CCME CSQG. These findings showed PAH concentrations to be consistent with those from previous test pits, without significant variations from the Phase II results. The origin of the PAH concentrations in SS-16 remains undetermined.

10.3 Former Highways Depot

Petroleum Hydrocarbons

During the Phase II ESA, concentrations of PHCs in soil near the former underground fuel oil tank, located on the northern side of the building, were found to exceed both Tier I RBSLs and ESLs in MW23-13. Efforts to delineate the extent of PHC exceedances in Phase III revealed that the impacts spread west to BH23-28, where concentrations of modified TPH also exceeded Tier I RBSLs and ESLs. Although the levels in BH23-28 exceeded these guidelines, the concentrations of modified TPH were notably lower at 370 mg/kg. The findings suggest that PHC contamination likely extends beneath the northwestern foundation of the building, as indicated in Figure 6.

The Phase III ESA revealed that all newly drilled boreholes (BH23-29 to BH-34) within the building exhibited PHCs concentrations below Tier I RBSLs, effectively reducing the estimated extent of the plume. The updated delineation of the PHC contamination is presented in Figure 6. Moreover, the test pit assessment to the east of the garage, beyond the fence adjacent to the highway, confirmed that PHC impacts from the garage have not extended to the assessed area. However, due to assessment constraints (e.g., preserving the oil-water separator's structural integrity and avoiding potential underground sewer lines), further assessments are recommended, particularly if the oil-water separator undergoes decommissioning. This would identify if soil has been impacted by the former USTs to the east or directly associated with the oil-water separator itself.

Given the extent of the PHC contamination above acceptable criteria, remedial action is required in order to achieve a state where future development of the garage building and the adjacent contaminated areas outside the building can proceed as per regulations. Refer to Section 6.0 for details regarding applicable environmental quality standards.

11.0 Conclusion & Recommendations

Based on the information gathered and on observations made during this assessment, the Phase III ESA has revealed the following:

Former Queens County Highways Depot (APEC#1):

Delineation efforts north of the building showed PHC migration westward to BH23-28, where modified TPH concentrations still exceeded Tier I RBSLs and ESLs at 370mg/kg. Though at a lesser concentration than BH23-25 (3400mg/kg), this suggests PHC contamination could extend under or near the northwestern building foundation. Further delineation is required and can be undertaken during remediation.

Inside the building and to the east, the delineation program has modified the PHC plume's extent. However, due to internal access limitations in the building and services location limitations during the test pitting program, additional assessment is required to further delineate the PHC plume to the east and can be achieved if the oil water separator is to be decommissioned.

Remedial action is required to achieve a state where future development of the garage building and the adjacent contaminated areas outside the building can proceed as per regulations. Refer to Section 6.0 for details regarding applicable environmental quality standards.

Former Imperial Oil Bulk Plant (APEC#6):

Based on the re-sampling of MW23-02 and surface water sampling program, the concentrations of cadmium were below the CCME CWQG. No further assessment in this area is required.

Former Concrete Plant (APEC#10):

Vertical and horizontal delineation test pits in the Phase III ESA revealed PAH concentrations below the CCME CSQG. These findings showed PAH concentrations to be consistent with those from previous test pits, without significant variations from the Phase II results. The origin of the PAH concentrations in SS-16 remains undetermined. No further assessment in this area is required.

12.0 Limitations

This report has been completed for the exclusive use of PEI DTI. Any other person or entity may not rely on this report without the express written consent of ALL-TECH. Any use which a third party makes of this report, or any reliance on decisions made based on it, are the responsibility of such third parties. ALL-TECH accepts no responsibility for damages, decisions made or actions taken, if any, suffered by any third party as a result of the unauthorized reuse, redistribution of, or reliance on this report. No portion of this report may be used as a separate entity; it is to be read in its entirety and shall include all supporting drawings and appendices.

The evaluation and conclusions contained in this report are based upon conditions at the time the work was conducted. In evaluating the Site, ALL-TECH has relied in good faith on representation and written/verbal information provided by The Client and by other individuals, parties or entities identified in this report. ALL-TECH has made reasonable attempts, wherever possible, to obtain a minimum of two confirmatory sources of information for verification purposes. In instances where more than one source of information was not available, ALL-TECH has assumed the information provided by others is factual and

accurate; and as a result, has not independently verified, and accordingly shall have no responsibility for, the accuracy, completeness, workmanship or any other aspect of the information described above. Furthermore, ALL-TECH accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted.

ALL-TECH makes no other representations, and no warranties or representations of any kind, either expressed or implied, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

The conclusions and recommendations presented represent the best judgement of trained professional and technical staff at ALL-TECH based on the data obtained during the assessment, and in accordance with generally accepted engineering and scientific practices current at the time the work was performed. Due to the nature of assessment and the limited data available, ALL-TECH cannot warrant undiscovered environmental liabilities. Conclusions and recommendations presented in this report should not be construed as legal advice.

Should additional information become available which differs significantly from our understanding of the conditions presented in this report, we request that this information be brought to our attention so that we may reassess the conclusions provided herein.

Closing

We trust this report is sufficient for your purposes at this time. However, if you have any questions or concerns, please do not hesitate to contact either of the undersigned at your convenience.

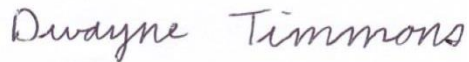
Respectively Submitted,



Victor Nowicki M.Sc., P.Geo., FGC, FEC (Hon)
Senior Consultant
ALL-TECH Environmental Services Limited



Vlad Trajkovic, P.Tech.
Environmental Consultant
ALL-TECH Environmental Services Limited



Dwayne Timmons, B.SC., P.Eng.
Environmental Engineer
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References

Atlantic Risk-Based Corrective Action (RBCA). 2012. Atlantic Risk-Based Corrective Action (RBCA) for Petroleum Impacted Sites in Atlantic Canada (Version 4) User Guidance. July, 2012 (Updated January 2021).

Canadian Council of Ministers of the Environment (CCME). 2016. Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment – Volume 1 Guidance Manual. PN 1551, ISBN 978-1-77202-026-7.

Prince Edward Island Surficial Geology, Canadian Geoscience Map 345, Scale 1:50, 000

Prince Edward Island Bedrock Geology, Department of Mines and Technical Surveys, Map 34-1961


Phase I Environmental Site Assessment, Queens County Highway Depot, Charlottetown, PE (Stantec, December 2020)

Phase II Environmental Site Assessment, Queens County Highway Depot, Charlottetown, PEI (ALL-TECH, February 2024)

Prince Edward Island, Environmental Protection Act (Chapter E-9). Updated September 2015. Petroleum Hydrocarbon Remediation Regulations

Appendix A Figures



	TOPO MAP # :	11L03	PROJECT:	PHASE III ENVIRONMENTAL SITE ASSESSMENT FORMER QUEEN'S COUNTY HIGHWAYS DEPOT CHARLOTTETOWN, PEI	DATE:	FEBRUARY 2024
	SCALE :	NTS			PROJECT #:	PE23251
	DRAWN BY :	SA	DRAWING TITLE:	SITE LOCATION MAP	FIGURE #:	1
	CLIENT: PEI TRANSPORTATION AND INFRASTRUCTURE	CHECKED BY :	RF			

- LEGEND:
- - - - - APPROXIMATE SITE BOUNDARY
 - PID BOUNDARY
 - x - x - x - x - FENCELINE
 - APPROXIMATE MANMADE DITCH
 - PID XXXXXX PID NUMBER

DRAWING TITLE:
SITE AND SURROUNDING AREAS

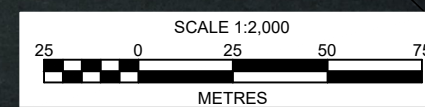
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PEI TRANSPORTATION AND INFRASTRUCTURE

PROJECT:
**PHASE III ENVIRONMENTAL SITE ASSESSMENT
QUEEN'S COUNTY HIGHWAY DEPOT
CHARTLOTTETOWN, PEI**

DATE: FEBRUARY 2024	PROJECT #: PE23442
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SCALE: 1:2,000	FIGURE #: 2
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DRAWN BY: SA	2
CHECKED BY: RF	





- LEGEND:
- - - - - APPROXIMATE SITE BOUNDARY
 - PID BOUNDARY
 - x - x - x - x - FENCELINE
 - APPROXIMATE MANMADE DITCH
 - BHXX-XX BOREHOLE LOCATION
 - SS-XX SHALLOW SOIL SAMPLE LOCATION
 - MWXX-XX MONITORING WELL LOCATION
 - SWX SURFACE WATER SAMPLE LOCATION

DRAWING TITLE:
SAMPLE LOCATIONS - JOSEPH A. GHIZ MEMORIAL PARK

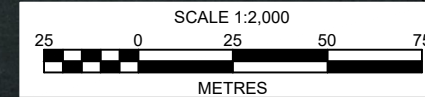
CLIENT:
PEI TRANSPORTATION AND INFRASTRUCTURE

PROJECT:
 PHASE III ENVIRONMENTAL SITE ASSESSMENT
 QUEEN'S COUNTY HIGHWAY DEPOT
 CHARLOTTETOWN, PEI

DATE: FEBRUARY 2024	PROJECT #: PE23442
------------------------	-----------------------

SCALE: 1:2,000	FIGURE #: 3
DRAWN BY: SA	

CHECKED BY: RF	
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LEGEND:

	APPROXIMATE SITE BOUNDARY
	PID BOUNDARY
	FENCELINE
	APPROXIMATE MANMADE DITCH
	BHXX-XX BOREHOLE LOCATION
	SS-XX SHALLOW SOIL SAMPLE LOCATION
	MWXX-XX MONITORING WELL LOCATION
	TPX TEST PIT LOCATION

DRAWING TITLE:
SAMPLE LOCATIONS - FORMER HIGHWAYS DEPOT GARAGE, ADMINISTRATIVE BUILDING AND EMERGENCY SHELTER(S)

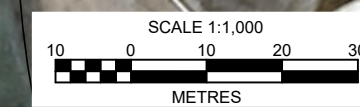
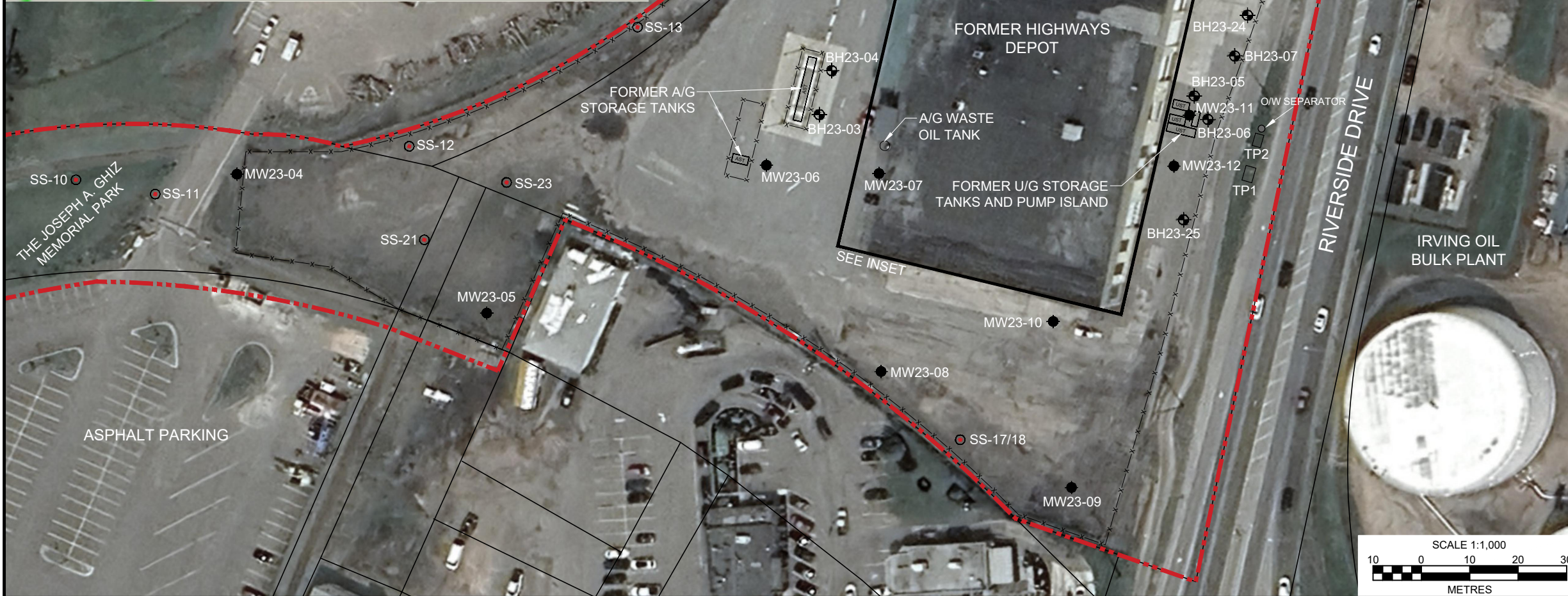
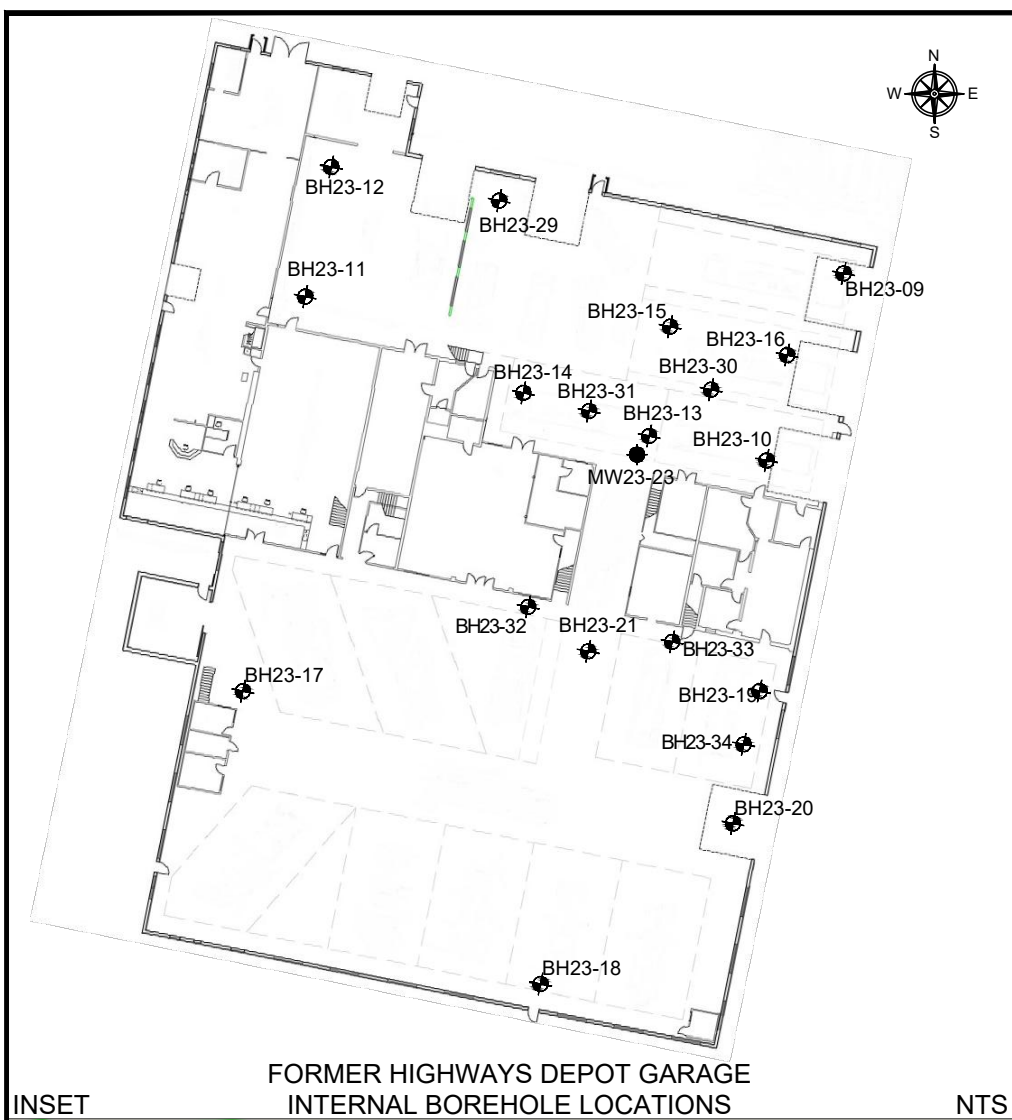
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PEI TRANSPORTATION AND INFRASTRUCTURE

PROJECT:
**PHASE III ENVIRONMENTAL SITE ASSESSMENT
 QUEEN'S COUNTY HIGHWAY DEPOT
 CHARTLOTTETOWN, PEI**

DATE: FEBRUARY 2024	PROJECT #: PE23442
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SCALE: 1:1,000	FIGURE #: 4
DRAWN BY: SA	

CHECKED BY: RF





LEGEND:

- - - - - APPROXIMATE SITE BOUNDARY
- PID BOUNDARY
- FENCELINE
- APPROXIMATE MANMADE DITCH
- APPROX METAL, PAH, AND PETROLEUM HYDROCARBON EXCEEDANCES IN SHALLOW SOIL
- APPROX METAL EXCEEDANCES IN SOIL
- APPROX METAL AND PETROLEUM HYDROCARBON EXCEEDANCES IN SOIL
- ◆ BHXX-XX BOREHOLE LOCATION
- SS-XX SHALLOW SOIL SAMPLE LOCATION
- MWXX-XX MONITORING WELL LOCATION
- SWX SURFACE WATER SAMPLE LOCATION

DRAWING TITLE:

IMPACTED AREAS - JOSEPH A. GHIZ MEMORIAL PARK

CLIENT:

PEI TRANSPORTATION AND INFRASTRUCTURE

PROJECT:

PHASE III ENVIRONMENTAL SITE ASSESSMENT
 QUEEN'S COUNTY HIGHWAY DEPOT
 CHARLOTTETOWN, PEI

DATE:

FEBRUARY 2024

PROJECT #:

PE23442

SCALE:

1:2,000

FIGURE #:

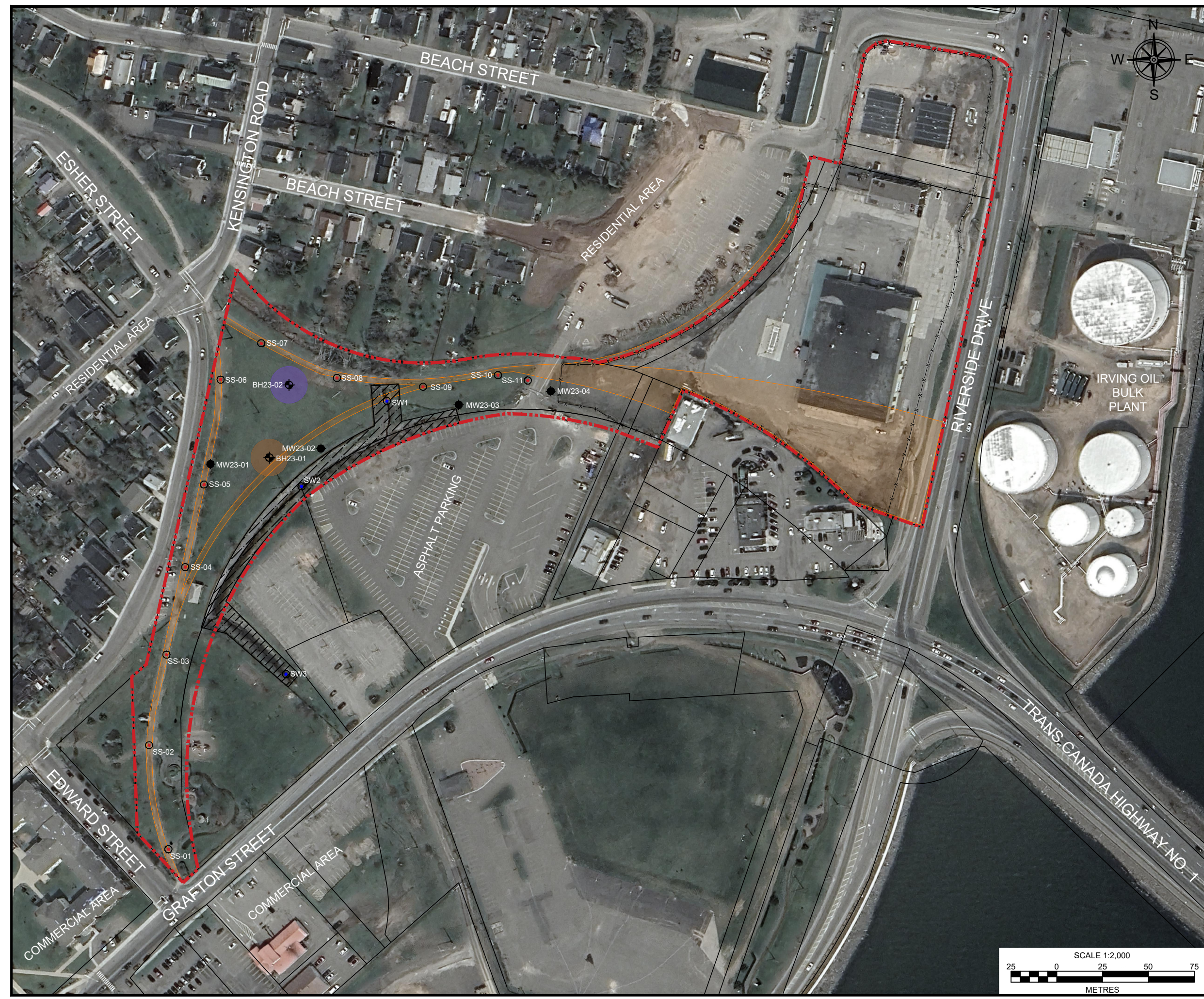
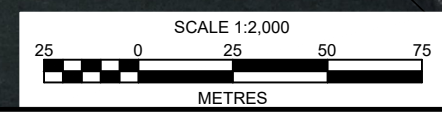
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DRAWN BY:

SA

CHECKED BY:

RF



- LEGEND:**
- - - - - APPROXIMATE SITE BOUNDARY
 - PID BOUNDARY
 - FENCELINE
 - APPROXIMATE MANMADE DITCH
 - APPROX PHC EXCEEDANCES IN SOIL (RESIDENTIAL)
 - APPROX PHC EXCEEDANCES IN SOIL (COMMERCIAL)
 - METAL EXCEEDANCES IN SOIL (RESIDENTIAL)
 - PAH EXCEEDANCES IN SOIL (RESIDENTIAL AND COMMERCIAL)
 - METAL AND PAH EXCEEDANCES IN SOIL
 - + BHXX-XX BOREHOLE LOCATION
 - o SS-XX SHALLOW SOIL SAMPLE LOCATION
 - MWXX-XX MONITORING WELL LOCATION
 - TPX TEST PIT LOCATION
 - 0.000 m/m AVERAGE HYDRAULIC GRADIENT AND FLOW DIRECTION

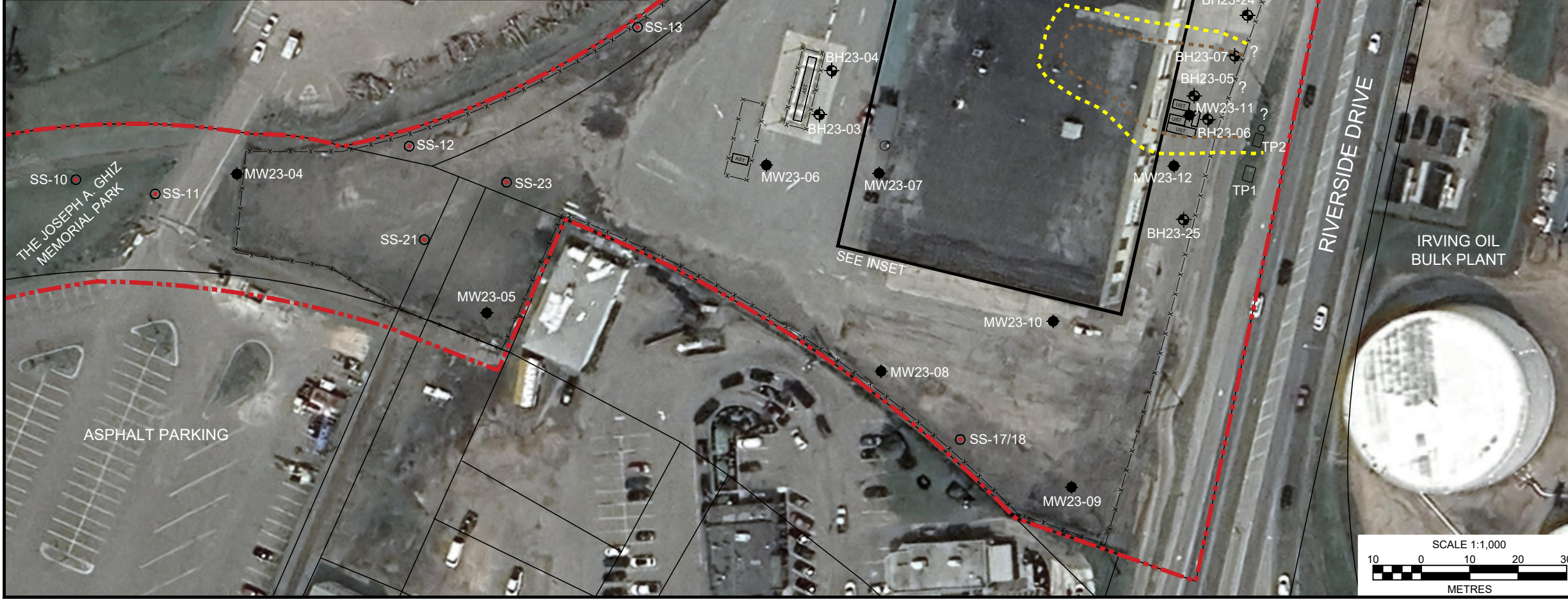
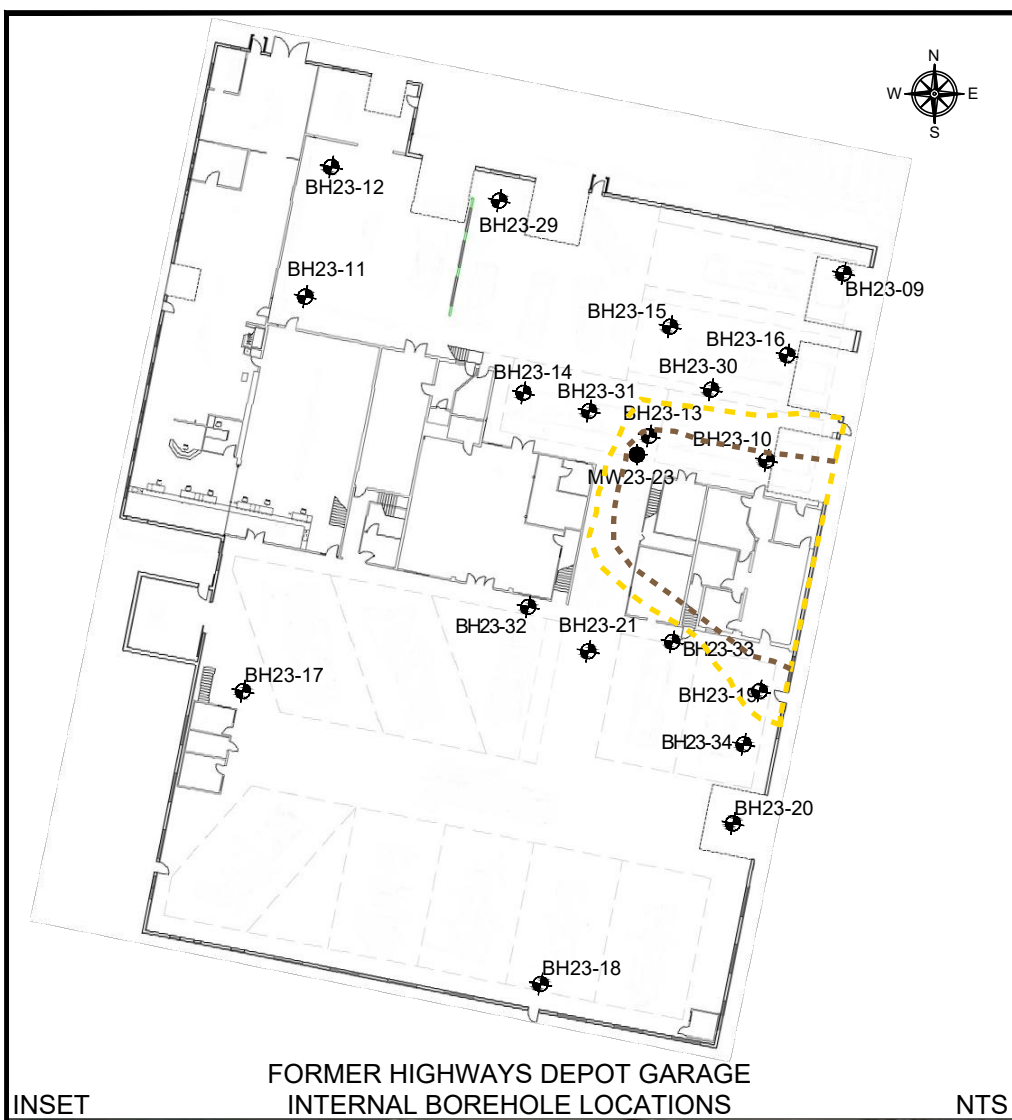
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CLIENT:
PEI TRANSPORTATION AND INFRASTRUCTURE

PROJECT:
 PHASE III ENVIRONMENTAL SITE ASSESSMENT
 QUEEN'S COUNTY HIGHWAY DEPOT
 CHARLOTTETOWN, PEI

DATE: FEBRUARY 2024	PROJECT #: PE23442
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SCALE: 1:1,000	6
DRAWN BY: SA	
CHECKED BY: RF	



Appendix B Photographs



1. Looking southeast towards the north side of the government garage building.



2. Looking east towards the west side of the government garage building.



3. Looking north towards the south side of the government garage building.



4. Looking south along the west side of the government garage building.



5. Looking east across the interior of the garage.



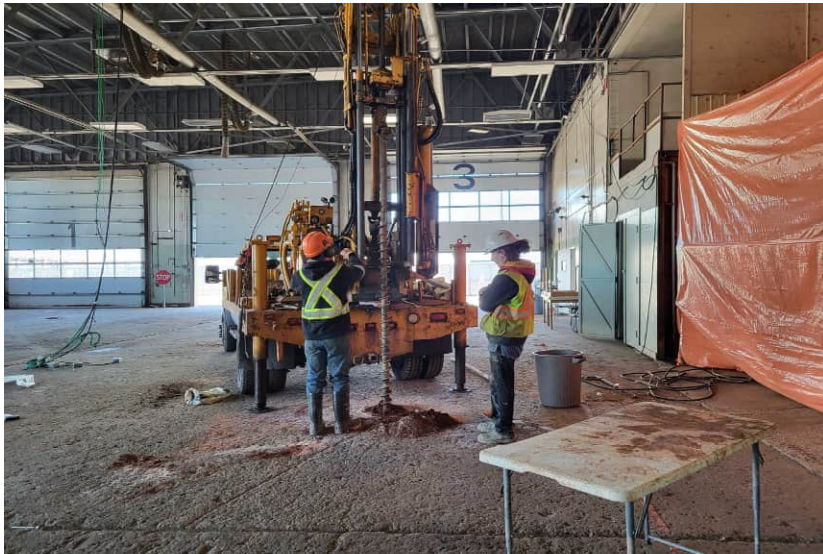
6. Looking west across the interior of the garage.



7. Looking west across the interior of the garage.



8. Interior oil water separator collection pit.



9. Looking towards the drill rig, auguring through the concrete floor.



10. Looking towards MW23-23.



11. Looking east towards BH23-33.



12. Looking west towards BH23-30.



13. Looking east towards the excavator, excavating TP1.



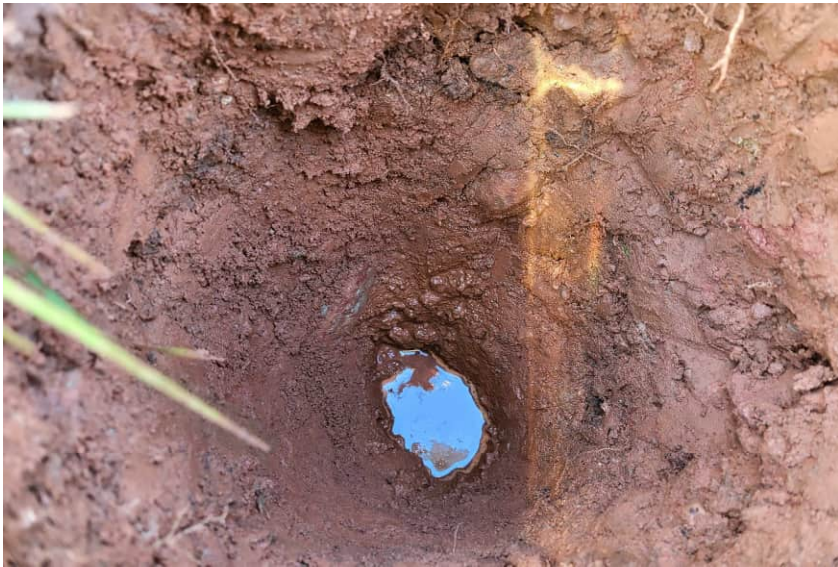
14. Looking at TP1.



15. Looking at TP2, pea gravel observed in the shallow test pit.



16. Looking south towards the backfilled test pit locations.



17. Looking at sample location SS-24.



18. Looking at sample location SS-25.



19. Looking at sample location SS-26.



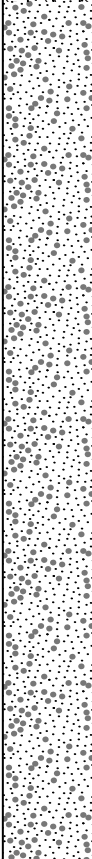
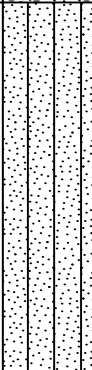


20. Looking at sample location SS-27.

Appendix C Borehole, Monitoring Well, and Test Pit Logs



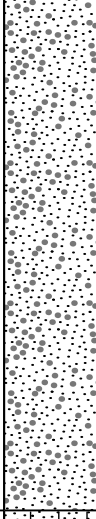
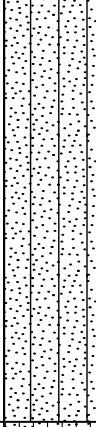
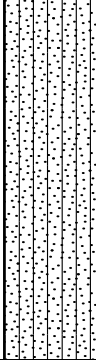
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Project: Phase II ESA	Drilling Method: Standard Auger	Date Completed: November 28, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Split Spoon	Observer: Vlad Trajkovic
Client: PEI DTI	Borehole Diameter (mm): 100	Checked By: Randy Fancey
	Borehole Depth (m): 3.04	

Comments:

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	N Value	Recovery %	Completion Detail
	Concrete							
	Sandy GRAVEL Grey sandy gravel, some slit.							
0.5	Sandy SILT Reddish brown sandy silt, medium to fine-grained, some gravel.			0	SS	5	25	
1				0	SS	7	41	
1.5				15	SS	5	50	
2	Wet at 2.13 m. Slight hydrocarbon odour at 2.21 m.		SA1	25	SS	6	41	
2.5	SILT Reddish brown silt, some fine-grained sand and clay, trace gravel and organic material. Clay content increases as depth increases.							
3				20	SS	14	79	
	End of borehole at 3.04 m.							



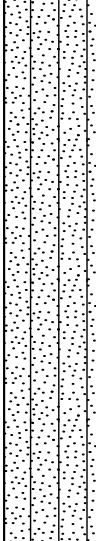
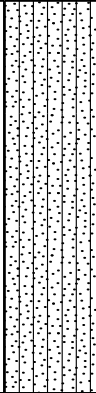
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Project: Phase II ESA	Drilling Method: Standard Auger	Date Completed: November 28, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Split Spoon	Observer: Vlad Trajkovic
Client: PEI DTI	Borehole Diameter (mm): 100	Checked By: Randy Fancey
	Borehole Depth (m): 3.04	

Comments:

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	N Value	Recovery %	Completion Detail
	Concrete							
	Sandy GRAVEL Grey sandy gravel, some slit.							
0.5	Sandy SILT Reddish brown sandy silt, medium to fine-grained, some gravel.			0	SS	20	41	
1				10	SS	15	70	
1.5	SILT Reddish brown silt, some fine-grained sand and clay, trace gravel and organic material.			20	SS	24	83	
2	Wet at 2.2 m.		SA1	25	SS	19	75	
2.5	Clayey SILT Reddish brown clayey silt, trace fine-grained sand. Clay content increases as depth increases.			30	SS	17	70	
3	Saturated at 2.83 m. No obvious indications of impacts throughout borehole.							
	End of borehole at 3.04 m.							



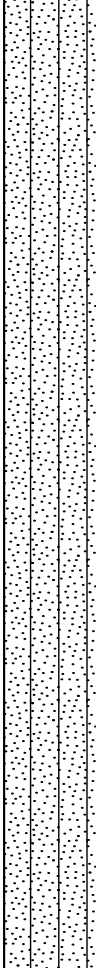
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Project: Phase II ESA	Drilling Method: Standard Auger	Date Completed: November 28, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Split Spoon	Observer: Vlad Trajkovic
Client: PEI DTI	Borehole Diameter (mm): 100	Checked By: Randy Fancey
	Borehole Depth (m): 3.04	

Comments: Augured to 1.21 m.

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	N Value	Recovery %	Completion Detail
	Concrete							
	Sandy GRAVEL Grey sandy gravel, some slit.							
0.5	SILT Reddish brown silt, some fine-grained sand and clay, trace gravel.				SA			
1								
1.5	Clay content increases as depth increases.			20	SS	14	75	
2	Wet at 2.13 m.		SA1	40	SS	11	80	
2.5	Clayey SILT Reddish brown clayey silt, trace fine-grained sand.							
3	Saturated at 2.94 m. No obvious indications of impacts throughout borehole.			35	SS	11	75	
	End of borehole at 3.04 m.							



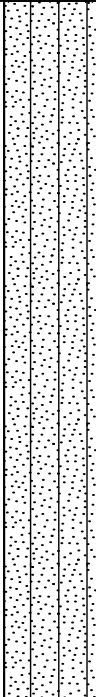
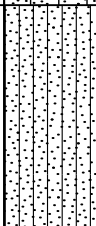
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Project: Phase II ESA	Drilling Method: Standard Auger	Date Completed: November 28, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Split Spoon	Observer: Vlad Trajkovic
Client: PEI DTI	Borehole Diameter (mm): 100	Checked By: Randy Fancey
	Borehole Depth (m): 3.04	

Comments: Augured to 1.21 m.

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	N Value	Recovery %	Completion Detail
	Concrete							
	Sandy GRAVEL Grey sandy gravel, some slit.							
0.5	SILT Reddish brown silt, some fine-grained sand and clay, trace gravel.				SA			
1								
1.5	Clay content increases as depth increases.			10	SS	14	87	
2	Wet at 2.13 m.		SA1	50	SS	18	95	
2.5	Clayey SILT Reddish brown clayey silt, trace fine-grained sand.							
3	Saturated at 2.94 m. No obvious indications of impacts throughout borehole.			20	SS	12	83	
	End of borehole at 3.04 m.							



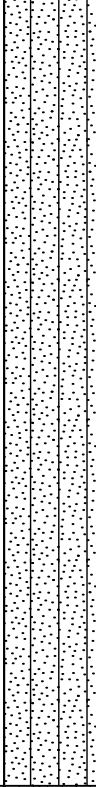
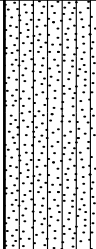
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Project: Phase II ESA	Drilling Method: Standard Auger	Date Completed: November 28, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Split Spoon	Observer: Vlad Trajkovic
Client: PEI DTI	Borehole Diameter (mm): 100	Checked By: Randy Fancey
	Borehole Depth (m): 3.04	

Comments: Augured to 1.21 m.

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	N Value	Recovery %	Completion Detail
	Concrete							
	Sandy GRAVEL Grey sandy gravel, some slit.							
0.5	SILT Reddish brown silt, some fine-grained sand and clay, trace gravel.				SA			
1	Clay content increases as depth increases.							
1.5				20	SS	15	83	
2	Clayey SILT Reddish brown clayey silt, trace fine-grained sand.		SA1	30	SS	21	50	
	Wet at 2.28 m.							
2.5				30	SS	18	87	
	Saturated at 2.84 m.							
3	No obvious indications of impacts throughout borehole.							
	End of borehole at 3.04 m.							



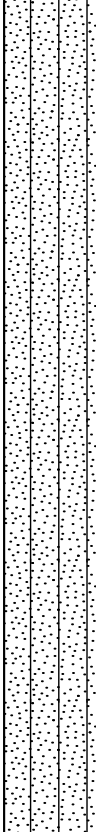
Project Name: PE23442	Drilling Contractor: Q Drilling	Date Started: November 28, 2023
Project: Phase II ESA	Drilling Method: Standard Auger	Date Completed: November 28, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Split Spoon	Observer: Vlad Trajkovic
Client: PEI DTI	Borehole Diameter (mm): 100	Checked By: Randy Fancey
	Borehole Depth (m): 3.04	

Comments: Augured to 1.21 m.

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	N Value	Recovery %	Completion Detail
	Concrete							
	Sandy GRAVEL Grey sandy gravel, some slit.							
0.5	SILT Reddish brown silt, some fine-grained sand and clay, trace gravel. Clay content increases as depth increases.				SA			
1								
1.5				15	SS	28	62	
2	Clayey SILT Reddish brown clayey silt, trace fine-grained sand. Wet at 2.28 m.		SA1	20	SS	15	70	
2.5								
3	No obvious indications of impacts throughout borehole.			30	SS	15	50	
	End of borehole at 3.04 m.							



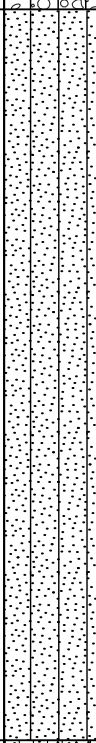
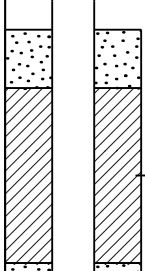
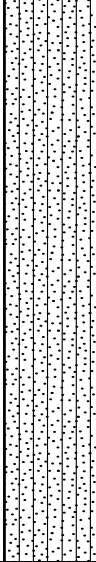
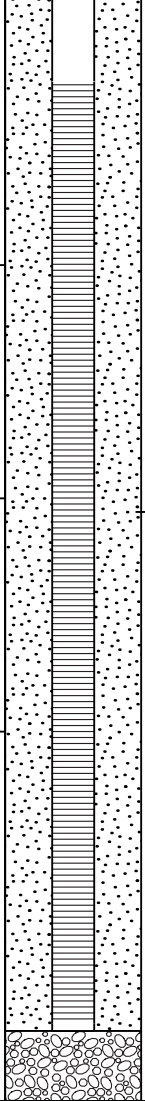
Project Name: PE23442	Drilling Contractor: Q Drilling	Date Started: November 28, 2023
Project: Phase II ESA	Drilling Method: Standard Auger	Date Completed: November 28, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Split Spoon	Observer: Vlad Trajkovic
Client: PEI DTI	Borehole Diameter (mm): 100	Checked By: Randy Fancey
	Borehole Depth (m): 3.04	

Comments: Augured to 1.21 m.

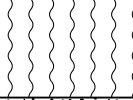
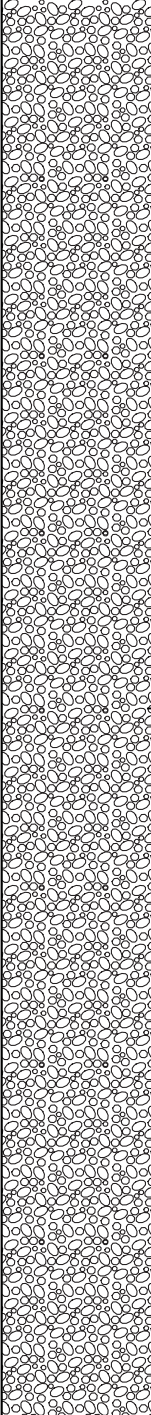
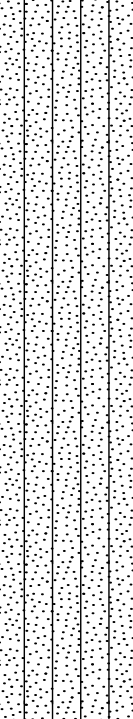
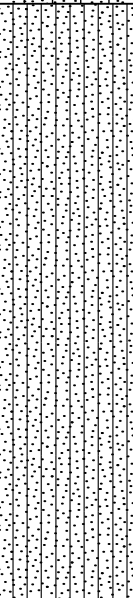
Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	N Value	Recovery %	Completion Detail
	Concrete							
	Sandy GRAVEL Grey sandy gravel, some slit.							
0.5	SILT Reddish brown silt, some fine-grained sand and clay, trace gravel.				SA			
1	Clay content increases as depth increases.							
1.5	Sandstone chunks encountered at 1.62 - 1.80 m.			0	SS	27	87	
2	Clayey SILT Reddish brown clayey silt, trace fine-grained sand. Wet at 2.28 m.		SA1	10	SS	10	83	
2.5	No obvious indications of impacts throughout borehole.			10	SS	11	58	
3	End of borehole at 3.04 m.							

Project Name: PE23442	Drilling Contractor: Q Drilling	Date Started: November 28, 2023
Project: Phase II ESA	Drilling Method: Standard Auger	Date Completed: November 28, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Split Spoon	Observer: Vlad Trajkovic
Client: PEI DTI	Borehole Diameter (mm): 100	Checked By: Randy Fancey
	Borehole Depth (m): 3.65	

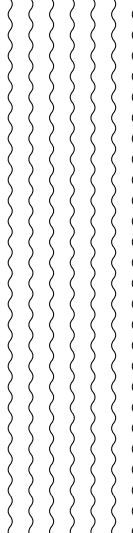
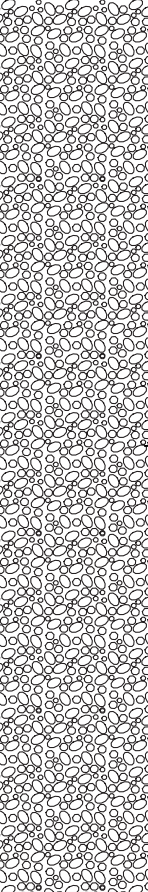

Comments: MW23-23 was drilled and installed next to BH23-13, augured to 3.65 m.

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	N Value	Recovery %	Completion Details
	Concrete							
	Sandy GRAVEL Grey sandy gravel, some silt.							
0.5	SILT Reddish brown silt, some fine-grained sand and clay, trace gravel and organic material.				SA			 Bentonite
1								
1.5								
2	Wet at 1.80 m Grey staining and strong hydrocarbon odour at 1.92 m.		SA1	90	SS	22	66	
2.5	Clayey SILT Reddish brown clayey silt, trace fine-grained sand. Saturated at 2.44 m.				SS	20	80	 Filter Pack: No.2 Silica
3								
3.5					SA			
	End of borehole at 3.65 m.							

Project Name: PE23442	Contractor: GNL Environmental LTD.	Date Started: November 29, 2023
Project: Phase III ESA	Method: Excavator	Date Completed: November 29, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: Grab	Observer: Vlad Trajkovic
Client: PEI DTI	Excavation Dimensions (m): 2.43 x 0.76	Checked By: Victor Nowicki
	Excavation Depth (m): 2.59	

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	Completion Details
	TOPSOIL Dark reddish brown topsoil with grass, roots, and organic material.					 Backfill
0.5	SILT Reddish brown silt, some fine-grained sand, trace gravel and organic material.					
1						
1.5	Clayey SILT Reddish brown clayey silt, trace fine-grained sand.					
2						
2.5	Wet at 2.3 m.. No obvious indications of impacts throughout borehole.		TP1	10	Grab	
	End of test pit at 2.59 m.					

Project Name: PE23442	Contractor: GNL Environmental LTD.	Date Started: November 29, 2023
Project: Phase III ESA	Method: Excavator	Date Completed: November 29, 2023
Location: 64 Park Street, Charlottetown, PE	Sampling Method: N/A	Observer: Vlad Trajkovic
Client: PEI DTI	Excavation Dimensions (m): 2.43 x 0.76	Checked By: Victor Nowicki
	Excavation Depth (m): 0.3	

Depth Scale (m)	Material Description	Stratigraphy	Soil Samples	Vapour Readings	Method	Completion Details
0.1	TOPSOIL Dark reddish brown topsoil with grass, roots, and organic material.					 Backfill
0.2	GRAVEL Reddish brown gravel, trace sand and silt.					
0.3	End of test pit at 0.3 m.					
0.4						

Surface Soil Sample Descriptions

Phase II & III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, Prince Edward Island



Surface Soil Sample ID	Sample Date (Y/M/D)	Slag Observed (Y/N)	Soil Horizon Depth (m)	Soil Horizon Description
SS-01	2023-07-19	Y	0.00-0.08	Grey-brown crushed stone (trail surface material)
			0.08-0.25	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter)
			0.25-0.51*	Slag (black material), continues past maximum depth
SS-02	2023-07-19	N	0.00-0.09	Grey-brown crushed stone (trail surface material)
			0.09-0.42	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter), some suspected gypsum
SS-03	2023-07-19	Y	0.00-0.08	Grey-brown crushed stone (trail surface material)
			0.08-0.15	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter), some suspected gypsum
			0.15-0.44	Slag (black material), continues past maximum depth
SS-04	2023-07-19	Y	0.00-0.09	Grey-brown crushed stone (trail surface material)
			0.09-0.36	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter)
			0.36-0.50*	Slag (black material), continues past maximum depth
SS-05	2023-07-19	Y	0.00-0.09	Grey-brown crushed stone (trail surface material)
			0.09-0.20	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter)
			0.20-0.38*	Slag (black material), continues past maximum depth
SS-06	2023-07-19	Y	0.00-0.10	Grey-brown crushed stone (trail surface material)
			0.10-0.27	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 diameter), some suspected gypsum
			0.27-0.43*	Slag (black material), continues past maximum depth
SS-07	2023-07-19	Y	0.00-0.07	Organics (grass and roots)
			0.07-0.46	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter), some suspected gypsum
			0.46-0.55*	Slag (black material), continues past maximum depth
SS-08	2023-07-19	Y	0.00-0.07	Organics (grass and roots)
			0.07-0.45	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter), some gypsum
			0.45-0.55*	Slag (black material)
			0.55-0.59	Clay-silt, crushed siltstone and rocks (coarse)
SS-09	2023-07-20	Y	0.00-0.07	Organics (grass and roots)
			0.07-0.45	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter)
			0.45-0.60*	Slag (black material), continues past maximum depth
SS-19 (BFD of SS-09)	2023-07-20	Y	0.00-0.07	Organics (grass and roots)
			0.07-0.45	Clay-silt, crushed siltstone and rocks (coarse, up to 0.08 m diameter)
			0.45-0.60*	Slag (black material), continues past maximum depth
SS-10	2023-07-20	N	0.00-0.07	Organics (grass and roots)
			0.07-0.67	Clay-silt, fewer rocks (most small diameter i.e. <0.03 m)
SS-11	2023-07-20	N	0.00-0.07	Organics (grass and roots)
			0.07-0.55	Clay-silt, fewer rocks (most small diameter i.e. <0.03 m)
SS-12	2023-07-21	N	0.00-0.23	Gravel, organics (weeds and roots), bits of asphalt and cement
			0.23-0.34	Clay-silt, some rounded and angular rocks (<0.05 m diameter)
			0.34-0.58	Lots of rounded and angular rocks (<0.05 m diameter), clay-silt
			0.58-0.67	Silt, larger rounded siltstone. Moist horizon
SS-13	2023-07-21	N	0.00-0.11	Asphalt, gravel, organics (weeds and roots)
			0.11-0.38	Angular and rounded rocks and siltstone (<0.10 m diameter), silt
			0.38-0.45	Chunk of asphalt
			0.45-0.59*	Rounded and angular rocks, silt
SS-14	2023-07-21	N	0.00-0.10	Organics (grass and roots)
			0.10-0.58	Silt, round and angular rocks, some siltstone (<0.10 m diameter)
SS-15	2023-07-19	N	0.00-0.10	Organics (grass and roots)
			0.10-0.52	Silt, round and angular rocks, some siltstone (<0.10 m diameter)
			0.52-0.62	Crushed rock (suspected concrete)
			0.62-0.80	Silt, rounded and angular rocks
SS-16	2023-07-19	N	0.00-0.10	Organics (grass and roots)
			0.10-0.44*	Silt, round and angular rocks, some siltstone (<0.10 m diameter). Note: soil sample collected from 0.25-0.44 m depth
			0.44-0.56	Crushed rock (suspected concrete)
SS-17	2023-07-25	Y	0.00-0.10	Organics (grass and roots)
			0.10-0.32	Clay-silt, crushed siltstone and rocks (coarse, up to 0.10 m diameter)
			0.32-0.39*	Slag (black material)
			0.39-0.45	Clay-silt, crushed siltstone and rocks (coarse)
SS-18 (BFD of SS-17)	2023-07-25	Y	0.00-0.10	Organics (grass and roots)
			0.10-0.32	Clay-silt, crushed siltstone and rocks (coarse, up to 0.10 m diameter)
			0.32-0.39*	Slag (black material)
			0.39-0.45	Clay-silt, crushed siltstone and rocks (coarse)
SS-21	2023-07-21	N	0.00-0.08	Mixed asphalt and gravel
			0.08-0.11	Silt, rounded rocks
			0.11-0.17	Silt, asphalt pieces, gravel
			0.17-0.56*	Compact silt, rounded rocks, some angular rocks, traces of asphalt. Moisture increasing with depth
			0.56-0.61*	Organics (roots, bits of wood). Note: soil sample collected from 0.41-0.61 m depth
SS-22	2023-07-21	N	0.00-0.10	Organics (grass and roots)
			0.10-0.37	Silt, rounded and angular rocks, chunk of asphalt
			0.37-0.56	Crushed rock (suspected concrete)
SS-23	2023-07-21	Y	0.00-0.13	Gravel, organics (weeds and roots), bits of asphalt and cement
			0.13-0.46*	Compact silt, small rounded and angular rocks, bits of asphalt and cement, traces of slag
			0.46-0.57	Less compact silt, small rounded (<0.05 m diameter) and angular rocks, dark organics (roots and wood fibers). Moist horizon
SS-24	2023-11-27	N	0.00-0.10	Organics (grass and roots)
			0.10-0.44	Silt, round and angular rocks, some siltstone (<0.10 m diameter).
			0.44-0.56	Crushed rock (suspected concrete)
SS-25	2023-11-27	N	0.00-0.10	Organics (grass and roots)
			0.10-0.52	Silt, round and angular rocks, some siltstone (<0.10 m diameter)
			0.52-0.62	Crushed rock (suspected concrete)
			0.62-0.65	Silt, rounded and angular rocks
SS-26	2023-11-27	Y	0.00-0.10	Organics (grass and roots)
			0.10-0.32	Clay-silt, crushed siltstone and rocks (coarse, up to 0.10 m diameter)
			0.32-0.39*	Slag (black material)
SS-27	2023-11-27	N	0.39-0.45	Clay-silt, crushed siltstone and rocks (coarse)
			0.00-0.10	Organics (grass and roots)
			0.10-0.49	Silt, round and angular rocks, some siltstone (<0.10 m diameter)
			0.49-0.50	Crushed rock (suspected concrete)
			0.50-0.65	Silt, rounded and angular rocks

*Surface soil sample submitted for analysis

BFD: Blind field duplicate

Appendix D Tables

TABLE 2: Petroleum Hydrocarbons in Soil (Tier I RBSLs)
Phase III Environmental Site Assessment
Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID Depth (m) Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	PHRR Tier I RBSLs - Soil		Soil Samples																		
						BH23-02, SA1	BH23-04, SA2	BH23-05, SA1	BH23-06, SA1	BH23-07, SA1	BH23-08, SA1	BH23-09, SA1	BH23-10, SA1	BH23-11, SA1	BH23-13, SA1	BH23-14, SA1	BH23-15, SA1	BH23-16, SA1	BH23-17, SA1	BH23-17, SA1, LD	BH23-18, SA1	BH23-19, SA1		
						0.61-1.22	1.83-2.44	3.96-4.57	2.13-2.74	2.13-2.74	1.22-1.83	1.83-2.44	1.83-2.44	1.83-2.44	1.52-2.13	1.52-2.13	1.52-2.13	1.52-2.13	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	
						2023-07-19	2023-07-19	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	
				Residential	Commercial	491969-01	491969-02	491969-03	491969-04	491969-05	491969-06	491969-07	491969-08	491969-09	491969-10	491969-11	491969-12	491969-13	491969-14	491969-14	491969-15	491969-16		
Benzene	mg/kg	0.005	0.099	2.5	0.064	< 0.005	< 0.005	1	0.06	< 0.005	< 0.005	0.08	< 0.005	2.7	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17		
Toluene	mg/kg	0.05	77	10,000	0.12	< 0.05	< 0.05	< 0.2*	< 0.1*	< 0.05	< 0.05	1.90	< 0.05	25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Ethylbenzene	mg/kg	0.01	30	10,000	0.01	< 0.01	< 0.01	150	30	< 0.01	< 0.01	3.5	< 0.01	17	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3.50		
Xylenes	mg/kg	0.05	8.8	110	0.09	< 0.05	< 0.05	190	45	< 0.05	< 0.05	24	< 0.05	120	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	5.2		
C6 - C10 (less BTEX)	mg/kg	2.5	-	-	< 2.5	< 2.5	< 2.5	3100	850	< 2.5	< 2.5	1100	< 2.5	2600	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	190		
>C10-C16 Hydrocarbons	mg/kg	12	-	-	< 12	< 12	< 12	720	910	< 12	< 12	2400	< 12	7000	< 12	< 12	< 12	< 12	< 12	< 12	< 12	1600		
>C16-C21 Hydrocarbons	mg/kg	12	-	-	< 12	< 12	< 12	250	350	< 12	< 12	1000	< 12	3800	< 12	< 12	< 12	< 12	< 12	< 12	< 12	850		
>C21-<C32 Hydrocarbons	mg/kg	12	-	-	33	< 12	24	70	99	< 12	< 12	6400	< 12	23000	< 12	< 12	< 12	< 12	< 12	< 12	< 12	93		
Modified TPH	mg/kg	21	74 (Gasoline) 270 (Fuel Oil) 1,100 (Lube Oil)	870 (Gasoline) 4,000 (Fuel Oil) 10,000 (Lube Oil)	33	< 21	24	4100 (Gasoline)	2200 (Gasoline)	< 21	< 21	11000 (Fuel Oil)	< 21	36000 (Fuel Oil)	< 21	< 21	< 21	< 21	< 21	< 21	< 21	2700 (Fuel Oil)		
Return to Baseline at C32	NA	NA	NA	NA	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Resemblance	NA	NA	NA	NA	PLO	ND	PLO	PG.WFO	PG.WFO	ND	ND	OP.FO.LO	ND	OP.FO.LO	ND	ND	ND	ND	ND	ND	ND	WFO		

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Risk Based Screening Levels for Soil (residential and commercial / non-potable / coarse-grained)

FO: Fuel oil

FO.LO: Fuel oil and lube oil fraction

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

OP: One product (unidentified)

PAH: Possible PAHs detected

PG: Possible gasoline fraction

PLO: Possible lube oil fraction

PWFO: Possible weathered fuel oil fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

< 0.005: Concentration is less than reportable detection limit of 0.005 mg/kg

* Elevated RDL's due to sample dilution

-: No established guideline

Bold: Concentration exceeds Tier I RBSLs for residential land use

Bold: Concentration exceeds Tier I RBSLs for residential and commercial land use

TABLE 2: Petroleum Hydrocarbons in Soil (Tier I RBSLs)
Phase III Environmental Site Assessment
Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID Depth (m) Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	Soil Samples																			
				PHRR Tier I RBSLs - Soil		BH23-20, SA1	BH23-21, SA1	BH23-22, SA1	BH23-22, SA1, LD	BH23-23, SA1	BH23-24, SA1	BH23-25, SA1	BH23-26, SA1	BH23-27, SA1	BH23-28, SA1	BH23-29, SA1	BH23-30, SA1	BH23-31, SA1	BH23-32, SA1	BH23-33, SA1	BH23-34, SA1	TP1	
				Residential	Commercial	1.83-2.44	1.52-2.13	1.83-2.44	1.83-2.44	1.83-2.44	1.22-1.83	1.83-2.44	0.61-1.22	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	2.44-2.60
				2023-07-21	2023-07-21	2023-07-24	2023-07-24	2023-07-24	2023-07-25	2023-07-25	2023-07-25	2023-07-25	2023-07-25	2023-07-25	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-29
Benzene	mg/kg	0.005	0.099	2.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.021	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		
Toluene	mg/kg	0.05	77	10,000	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Ethylbenzene	mg/kg	0.01	30	10,000	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.04	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		
Xylenes	mg/kg	0.05	8.8	110	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
C6 - C10 (less BTEX)	mg/kg	2.5	-	-	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	4	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5		
>C10-C16 Hydrocarbons	mg/kg	12	-	-	14	< 12	< 12	< 12	< 12	< 12	< 12	100	< 12	31	< 12	< 12	< 12	< 12	< 12	< 12	< 12		
>C16-C21 Hydrocarbons	mg/kg	12	-	-	< 12	< 12	< 12	< 12	< 12	< 12	< 12	440	< 12	74	< 12	< 12	< 12	< 12	< 12	< 12	< 12		
>C21-<C32 Hydrocarbons	mg/kg	12	-	-	< 12	< 12	13	19	< 12	< 12	< 12	2900	< 12	260	< 12	< 12	< 12	< 12	< 12	< 12	< 12		
Modified TPH	mg/kg	21	74 (Gasoline) 270 (Fuel Oil) 1,100 (Lube Oil)	870 (Gasoline) 4,000 (Fuel Oil) 10,000 (Lube Oil)	< 21	< 21	< 21	< 21	< 21	< 21	< 21	3400 (Fuel Oil)	< 21	370 (Fuel Oil)	< 21	< 21	< 21	< 21	< 21	< 21	< 21		
Return to Baseline at C32	NA	NA	NA	NA	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	
Resemblance	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	WFO.LO	ND	WFO.LO	ND	ND	ND	ND	ND	ND	ND	ND	

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Risk Based Screening Levels for Soil (residential and commercial / non-potable / coarse-grained)

- FO: Fuel oil
- FO.LO: Fuel oil and lube oil fraction
- LD: Laboratory duplicate
- LO: Lube oil
- NA: Not applicable
- ND: Not detected
- OP: One product (unidentified)
- PAH: Possible PAHs detected
- PG: Possible gasoline fraction
- PLO: Possible lube oil fraction
- PWFO: Possible weathered fuel oil fraction
- RDL: Reportable detection limit
- WFO: Weathered fuel oil fraction
- < 0.005: Concentration is less than reportable detection limit of 0.005 mg/kg
- * Elevated RDL's due to sample dilution
- : No established guideline

Concentration exceeds Tier I RBSLs for residential land use

Concentration exceeds Tier I RBSLs for residential and commercial land use

TABLE 2: Petroleum Hydrocarbons in Soil (Tier I RBSLs)
Phase III Environmental Site Assessment
Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID Depth (m) Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	PHRR Tier I RBSLs - Soil		Soil Samples																		
						TP1, LD	MW23-01, SA1	MW23-01, SA2	MW23-02, SA1	MW23-02, SA2	MW23-03, SA2	MW23-04, SA2	MW23-05, SA2	MW23-05, SA3	MW23-06, SA1	MW23-06, SA1, LD	MW23-07, SA1	MW23-08, SA1	MW23-08, SA2	MW23-09, SA1	MW23-10, SA1	MW23-11, SA3		
						2.44-2.60	0.61-1.22	0.61-1.22	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	2.44-3.05
						2023-11-29	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-19	2023-07-19	2023-07-19	2023-07-19	2023-07-19
				Residential	Commercial	506996-08	491990-01	491990-02	491990-03	491990-04	491990-05	491990-06	491990-07	491990-08	491990-09	491990-10	491990-11	491990-12	491990-13	491990-14	491990-15			
Benzene	mg/kg	0.005	0.099	2.5	< 0.005	0.02	< 0.005	0.097	0.75	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.1*			
Toluene	mg/kg	0.05	77	10,000	< 0.05	< 0.05	< 0.05	0.39	1.7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1*			
Ethylbenzene	mg/kg	0.01	30	10,000	< 0.01	0.03	< 0.01	0.03	0.09	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	12			
Xylenes	mg/kg	0.05	8.8	110	< 0.05	0.2	< 0.05	0.27	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	13			
C6 - C10 (less BTEX)	mg/kg	2.5	-	-	< 2.5	2.5	< 2.5	< 2.5	3.8	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	710			
>C10-C16 Hydrocarbons	mg/kg	12	-	-	< 12	< 12	< 12	< 12	< 12	16	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	2500			
>C16-C21 Hydrocarbons	mg/kg	12	-	-	< 12	25	< 12	< 12	< 12	18	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	1100			
>C21-<C32 Hydrocarbons	mg/kg	12	-	-	< 12	73	< 12	33	25	59	37	19	< 12	< 12	< 12	< 12	< 12	26	< 12	< 12	260			
Modified TPH	mg/kg	21	74 (Gasoline) 270 (Fuel Oil) 1,100 (Lube Oil)	870 (Gasoline) 4,000 (Fuel Oil) 10,000 (Lube Oil)	< 21	100 (Lube Oil)	< 21	33	29	93 (Lube Oil)	37	< 21	< 21	< 21	< 21	< 21	< 21	26	< 21	< 21	4600 (Fuel Oil)			
Return to Baseline at C32	NA	NA	NA	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes		
Resemblance	NA	NA	NA	NA	ND	PAH.PLO	ND	PLO	PG.PAH.PLO	PAH.PLO	LO	ND	ND	ND	ND	ND	ND	LO	ND	ND	WFO			

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Risk Based Screening Levels for Soil (residential and commercial / non-potable / coarse-grained)

FO: Fuel oil

FO.LO: Fuel oil and lube oil fraction

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

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OP: One product (unidentified)

PAH: Possible PAHs detected

PG: Possible gasoline fraction

PLO: Possible lube oil fraction

PWFO: Possible weathered fuel oil fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

< 0.005: Concentration is less than reportable detection limit of 0.005 mg/kg

* Elevated RDL's due to sample dilution

-: No established guideline

Bold: Concentration exceeds Tier I RBSLs for residential land use

Bold: Concentration exceeds Tier I RBSLs for residential and commercial land use

TABLE 2: Petroleum Hydrocarbons in Soil (Tier I RBSLs)
Phase III Environmental Site Assessment
Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID Depth (m) Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	Soil Samples																	
				PHRR Tier I RBSLs - Soil		MW23-12, SA3	MW23-13, SA1	MW23-13, SA3	MW23-13, SA4	MW23-14, SA1	MW23-15, SA1	MW23-15, SA2	MW23-16, SA1	MW23-17, SA1	MW23-17, SA2	MW23-18, SA1	MW23-18, SA2	MW23-19, SA1	MW23-20, SA1	MW23-21, SA2	MW23-22, SA1
				Residential	Commercial	1.83-2.44	1.22-1.83	2.44-3.05	2.44-3.05	1.83-2.44	1.83-2.44	1.83-2.44	1.22-1.83	1.83-2.44	1.83-2.44	1.22-1.83	1.22-1.83	0.61-1.22	1.83-2.44	1.22-1.83	1.22-1.83
				2023-07-19	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-21	2023-07-21	2023-07-21	2023-07-24	2023-07-24	2023-07-24	2023-07-24	2023-07-24
Benzene	mg/kg	0.005	0.099	2.5	< 0.005	< 0.005	< 0.005	0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.087	0.009	< 0.005	< 0.005	
Toluene	mg/kg	0.05	77	10,000	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05	< 0.05	< 0.05	
Ethylbenzene	mg/kg	0.01	30	10,000	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.07	< 0.01	< 0.01	< 0.01	
Xylenes	mg/kg	0.05	8.8	110	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.36	0.05	< 0.05	< 0.05	
C6 - C10 (less BTEX)	mg/kg	2.5	-	-	< 2.5	< 2.5	< 2.5	17	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	10	< 2.5	< 2.5	< 2.5	
>C10-C16 Hydrocarbons	mg/kg	12	-	-	< 12	< 12	140	350	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	28	< 12	< 12	< 12	
>C16-C21 Hydrocarbons	mg/kg	12	-	-	< 12	15	250	630	< 12	< 12	18	< 12	< 12	< 12	< 12	< 12	43	< 12	< 12	< 12	
>C21-<C32 Hydrocarbons	mg/kg	12	-	-	< 12	74	990	2400	< 12	53	130	< 12	< 12	< 12	< 12	< 12	240	67	< 12	< 12	
Modified TPH	mg/kg	21	74 (Gasoline) 270 (Fuel Oil) 1,100 (Lube Oil)	870 (Gasoline) 4,000 (Fuel Oil) 10,000 (Lube Oil)	< 21	89 (Lube Oil)	1400 (Fuel Oil)	3400 (Fuel Oil)	< 21	53	150 (Fuel Oil)	< 21	< 21	< 21	< 21	< 21	320 (Fuel Oil)	67	< 21	< 21	
Return to Baseline at C32	NA	NA	NA	NA	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	
Resemblance	NA	NA	NA	NA	ND	PAH.LO	WFO.LO	WFO.LO	ND	LO	WFO.LO	ND	ND	ND	ND	ND	WFO.PAH.LO	LO	ND	ND	

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Risk Based Screening Levels for Soil (residential and commercial / non-potable / coarse-grained)

FO: Fuel oil

FO.LO: Fuel oil and lube oil fraction

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

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PAH: Possible PAHs detected

PG: Possible gasoline fraction

PLO: Possible lube oil fraction

PWFO: Possible weathered fuel oil fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

< 0.005: Concentration is less than reportable detection limit of 0.005 mg/kg

* Elevated RDL's due to sample dilution

-: No established guideline

Bold: Concentration exceeds Tier I RBSLs for residential land use

Bold: Concentration exceeds Tier I RBSLs for residential and commercial land use

TABLE 3: Petroleum Hydrocarbons in Surface Soil (Tier I SESLs - Plants/Invertebrates)

Phase III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID Depth (m)	UNITS	RDL	PHRR Tier I SESLs - Plants/Invertebrates Direct Soil Contact		Soil Samples																	
						BH23-02, SA1	BH23-04, SA2	BH23-05, SA1	BH23-06, SA1	BH23-07, SA1	BH23-08, SA1	BH23-09, SA1	BH23-10, SA1	BH23-11, SA1	BH23-13, SA1	BH23-14, SA1	BH23-15, SA1	BH23-16, SA1	BH23-17, SA1	BH23-17, SA1, LD	BH23-18, SA1	BH23-19, SA1	
						0.61-1.22	1.83-2.44	3.96-4.57	2.13-2.74	2.13-2.74	1.22-1.83	1.83-2.44	1.83-2.44	1.83-2.44	1.52-2.13	1.52-2.13	1.52-2.13	1.52-2.13	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44
						2023-07-19	2023-07-19	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21	2023-07-21
RPC Sample ID				Residential	Commercial	491969-01	491969-02	491969-03	491969-04	491969-05	491969-06	491969-07	491969-08	491969-09	491969-10	491969-11	491969-12	491969-13	491969-14	491969-15	491969-16		
Benzene		mg/kg	0.005	31	180	0.064	< 0.005	< 0.005	1	0.06	< 0.005	< 0.005	0.08	< 0.005	2.7	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17	
Toluene		mg/kg	0.05	75	250	0.12	< 0.05	< 0.05	< 0.2*	< 0.1*	< 0.05	< 0.05	1.9	< 0.05	25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Ethylbenzene		mg/kg	0.01	55	300	0.01	< 0.01	< 0.01	150	30	< 0.01	< 0.01	3.5	< 0.01	17	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3.5	
Xylenes		mg/kg	0.05	95	350	0.1	< 0.05	< 0.05	190	45	< 0.05	< 0.05	24	< 0.05	120	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	5.2	
F1 (C6 - C10)		mg/kg	2.5	210	320	< 2.5	< 2.5	< 2.5	3100	850	< 2.5	< 2.5	1100	< 2.5	2600	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	190	
F2 (C10-C16)		mg/kg	12	150	260	< 12	< 12	< 12	720	910	< 12	< 12	2400	< 12	7000	< 12	< 12	< 12	< 12	< 12	< 12	1600	
F3 (C16-C32)		mg/kg	12	300	1700	33	< 12	24	320	449	< 12	< 12	7400	< 12	26800	< 12	< 12	< 12	< 12	< 12	< 12	943	
Return to Baseline at C32		NA	NA	NA	NA	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Resemblance		NA	NA	NA	NA	PLO	ND	PLO	PG.WFO	PG.WFO	ND	ND	OP.FO.LO	ND	OP.FO.LO	ND	ND	ND	ND	ND	ND	WFO	

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Soil Ecological Screening Levels for the Protection of Plants and Soil Invertebrates, Direct Soil Contact (residential and commercial / non-potable / coarse-grained)

FO: Fuel oil

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

OP: One product (unidentified)

PG: Possible gasoline fraction

PLO: Possible lube oil fraction

PWFO: Possible weathered fuel oil fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

* Elevated RDL's due to sample dilution

< 0.05: Concentration is less than reportable detection limit of 0.05 mg/kg

-: No established guideline

Bold: Concentration exceeds Tier I SESLs for residential land use

Bold: Concentration exceeds Tier I SESLs for residential and commercial land use

TABLE 3: Petroleum Hydrocarbons in Surface Soil (Tier I SESLs - Plants/Invertebrates)

Phase III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID Depth (m)	UNITS	RDL	PHRR Tier I SESLs - Plants/Invertebrates Direct Soil Contact		Soil Samples																	
						BH23-20, SA1	BH23-21, SA1	BH23-22, SA1	BH23-22, SA1, LD	BH23-23, SA1	BH23-24, SA1	BH23-25, SA1	BH23-26, SA1	BH23-27, SA1	BH23-28, SA1	BH23-29, SA1	BH23-30, SA1	BH23-31, SA1	BH23-32, SA1	BH23-33, SA1	BH23-34, SA1	TP1	
						1.83-2.44	1.52-2.13	1.83-2.44	1.83-2.44	1.83-2.44	1.22-1.83	1.83-2.44	0.61-1.22	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	2.44-2.60
						2023-07-21	2023-07-21	2023-07-24	2023-07-24	2023-07-24	2023-07-25	2023-07-25	2023-07-25	2023-07-25	2023-07-25	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-28	2023-11-28
RPC Sample ID				Residential	Commercial	491969-17	491969-18	491969-19	491969-19	491969-20	491969-21	491969-22	491969-23	491969-24	506996-01	506996-02	506996-03	506996-04	506996-05	506996-06	506996-07	506996-08	
Benzene		mg/kg	0.005	31	180	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.021	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Toluene		mg/kg	0.05	75	250	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Ethylbenzene		mg/kg	0.01	55	300	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.04	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylenes		mg/kg	0.05	95	350	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
F1 (C6 - C10)		mg/kg	2.5	210	320	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	4	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
F2 (C10-C16)		mg/kg	12	150	260	14	< 12	< 12	< 12	< 12	< 12	< 12	100	< 12	31	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12
F3 (C16-C32)		mg/kg	12	300	1700	< 12	< 12	13	19	< 12	< 12	< 12	3340	< 12	334	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12
Return to Baseline at C32		NA	NA	NA	NA	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes
Resemblance		NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	WFO.LO	ND	WFO.LO	ND	ND	ND	ND	ND	ND	ND	ND

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Soil Ecological Screening Levels for the Protection of Plants and Soil Invertebrates, Direct Soil Contact (residential and commercial / non-potable / coarse-grained)

FO: Fuel oil

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

OP: One product (unidentified)

PG: Possible gasoline fraction

PLO: Possible lube oil fraction

PWFO: Possible weathered fuel oil fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

* Elevated RDL's due to sample dilution

< 0.05: Concentration is less than reportable detection limit of 0.05 mg/kg

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Bold: Concentration exceeds Tier I SESLs for residential land use

Bold: Concentration exceeds Tier I SESLs for residential and commercial land use

TABLE 3: Petroleum Hydrocarbons in Surface Soil (Tier I SESLs - Plants/Invertebrates)

Phase III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID Depth (m)	UNITS	RDL	PHRR Tier I SESLs - Plants/Invertebrates Direct Soil Contact		Soil Samples																	
						TP1, LD	MW23-01, SA1	MW23-01, SA2	MW23-02, SA1	MW23-02, SA2	MW23-03, SA2	MW23-04, SA2	MW23-05, SA2	MW23-05, SA3	MW23-06, SA1	MW23-06, SA1, LD	MW23-07, SA1	MW23-08, SA1	MW23-08, SA2	MW23-09, SA1	MW23-10, SA1	MW23-11, SA3	
						2.44-2.60	0.61-1.22	0.61-1.22	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.22-1.83	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	1.83-2.44	2.44-3.05
						2023-11-29	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-18	2023-07-19	2023-07-19	2023-07-19	2023-07-19	2023-07-19	2023-07-19
RPC Sample ID			Residential	Commercial	506996-08	491990-01	491990-02	491990-03	491990-04	491990-05	491990-06	491990-07	491990-08	491990-09	491990-10	491990-11	491990-12	491990-13	491990-14	491990-15			
Benzene		mg/kg	0.005	31	180	< 0.005	0.02	< 0.005	0.097	0.75	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.1*		
Toluene		mg/kg	0.05	75	250	< 0.05	< 0.05	< 0.05	0.39	1.70	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1*		
Ethylbenzene		mg/kg	0.01	55	300	< 0.01	0.03	< 0.01	0.03	0.09	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	12		
Xylenes		mg/kg	0.05	95	350	< 0.05	0.2	< 0.05	0.3	1.0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	13		
F1 (C6 - C10)		mg/kg	2.5	210	320	< 2.5	3	< 2.5	< 2.5	4	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	710		
F2 (C10-C16)		mg/kg	12	150	260	< 12	< 12	< 12	< 12	16	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	2500		
F3 (C16-C32)		mg/kg	12	300	1700	< 12	98	< 12	33	25	77	37	19	< 12	< 12	< 12	< 12	26	< 12	< 12	1360		
Return to Baseline at C32		NA	NA	NA	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
Resemblance		NA	NA	NA	NA	ND	PAH.PLO	ND	PLO	PG.PAH.PLO	PAH.PLO	LO	ND	ND	ND	ND	ND	LO	ND	ND	WFO		

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Soil Ecological Screening Levels for the Protection of Plants and Soil Invertebrates, Direct Soil Contact (residential and commercial / non-potable / coarse-grained)

FO: Fuel oil

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

OP: One product (unidentified)

PG: Possible gasoline fraction

PLO: Possible lube oil fraction

PWFO: Possible weathered fuel oil fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

* Elevated RDL's due to sample dilution

< 0.05: Concentration is less than reportable detection limit of 0.05 mg/kg

-: No established guideline

Bold: Concentration exceeds Tier I SESLs for residential land use

Bold: Concentration exceeds Tier I SESLs for residential and commercial land use

TABLE 3: Petroleum Hydrocarbons in Surface Soil (Tier I SESLs - Plants/Invertebrates)

Phase III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID Depth (m)	UNITS	RDL	PHRR Tier I SESLs - Plants/Invertebrates Direct Soil Contact	Soil Samples															
					MW23-12, SA3	MW23-13, SA1	MW23-13, SA3	MW23-13, SA4	MW23-14, SA1	MW23-15, SA1	MW23-15, SA2	MW23-16, SA1	MW23-17, SA1	MW23-17, SA2	MW23-18, SA1	MW23-18, SA2	MW23-19, SA1	MW23-20, SA1	MW23-21, SA2	MW23-22, SA1
					1.83-2.44	1.22-1.83	2.44-3.05	2.44-3.05	1.83-2.44	1.83-2.44	1.83-2.44	1.22-1.83	1.83-2.44	1.83-2.44	1.22-1.83	1.22-1.83	0.61-1.22	1.83-2.44	1.22-1.83	1.22-1.83
					2023-07-19	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-20	2023-07-21	2023-07-21	2023-07-24	2023-07-24	2023-07-24	2023-07-24	2023-07-24	2023-07-24
RPC Sample ID			Residential	Commercial	491990-16	491990-17	491420-1	491420-2	491990-18	491990-19	491990-20	491990-21	491990-22	491990-23	491990-24	491990-25	491990-26	491990-27	491990-28	491990-29
Benzene		mg/kg	0.005	31 180	< 0.005	< 0.005	< 0.005	0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.087	0.009	< 0.005	< 0.005
Toluene		mg/kg	0.05	75 250	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05	< 0.05	< 0.05
Ethylbenzene		mg/kg	0.01	55 300	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.07	< 0.01	< 0.01	< 0.01
Xylenes		mg/kg	0.05	95 350	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.4	0.1	< 0.05	< 0.05
F1 (C6 - C10)		mg/kg	2.5	210 320	< 2.5	< 2.5	< 2.5	17	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	10	< 2.5	< 2.5	< 2.5
F2 (C10-C16)		mg/kg	12	150 260	< 12	< 12	140	350	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12	28	< 12	< 12	< 12
F3 (C16-C32)		mg/kg	12	300 1700	< 12	89	1240	3030	< 12	53	148	< 12	< 12	< 12	< 12	< 12	283	67	< 12	< 12
Return to Baseline at C32		NA	NA	NA NA	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Resemblance		NA	NA	NA NA	ND	PAH.LO	WFO.LO	WFO.LO	ND	LO	WFO.LO	ND	ND	ND	ND	ND	WFO.PAH.LO	LO	ND	ND

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Soil Ecological Screening Levels for the Protection of Plants and Soil Invertebrates, Direct Soil Contact (residential and commercial / non-potable / coarse-grained)

FO: Fuel oil

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

OP: One product (unidentified)

PG: Possible gasoline fraction

PLO: Possible lube oil fraction

PWFO: Possible weathered fuel oil fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

* Elevated RDL's due to sample dilution

< 0.05: Concentration is less than reportable detection limit of 0.05 mg/kg

-: No established guideline

Bold: Concentration exceeds Tier I SESLs for residential land use

Bold: Concentration exceeds Tier I SESLs for residential and commercial land use

TABLE 4: Polycyclic Aromatic Hydrocarbons in Shallow Soil (<1.0 m)
Phase III Environmental Site Assessment
Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE

Parameter	Sample ID	UNITS	RDL	CCME CSQG		Shallow Soil Samples																			
						SS-01	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-19 (BFD of SS-09)	SS-13	SS-16	SS-17	SS-18 (BFD of SS-17)	SS-21	SS-21, LD	SS-23	SS-24	SS-25	SS-26	SS-27	SS-27, LD
						0.25-0.51	0.36-0.50	0.20-0.38	0.27-0.43	0.46-0.55	0.45-0.55	0.45-0.60	0.45-0.60	0.45-0.59	0.25-0.44	0.32-0.39	0.32-0.39	0.41-0.61	0.41-0.61	0.13-0.46	0.44-0.56	0.62-0.65	0.39-0.45	0.50-0.65	0.50-0.65
						2023-07-19	2023-07-19	2023-07-19	2023-07-19	2023-07-19	2023-07-19	2023-07-20	2023-07-20	2023-07-21	2023-07-21	2023-07-25	2023-07-25	2023-07-25	2023-07-21	2023-07-21	2023-07-21	2023-11-28	2023-11-28	2023-11-28	2023-11-28
RPC Sample ID				Residential/Parkland	Commercial	491916-01	491916-02	491916-03	491916-04	491916-05	491916-06	491916-07	491916-12	491916-08	491916-09	491916-10	491916-11	491916-13	491916-13	491916-14	506996-09	506996-10	506996-11	506996-12	506996-12
<i>Environmental Health Guidelines Based on Non-Carcinogenic Effects of PAHs</i>																									
Naphthalene	mg/kg	0.01	0.6	22	0.51	0.25	0.34	0.29	0.64	0.41	0.08	0.12	< 0.01	13	0.14	0.13	0.01	0.01	0.02	< 0.01	0.02	< 0.04	0.03	< 0.01	
Acenaphthylene	mg/kg	0.01	-	-	0.73	0.16	0.21	0.26	0.25	0.47	0.06	0.05	0.03	0.27	0.01	0.01	0.01	0.02	< 0.01	0.02	< 0.01	< 0.04	< 0.01	< 0.01	
Acenaphthene	mg/kg	0.01	-	-	0.06	0.01	0.05	0.05	0.04	0.02	0.13	0.07	0.02	14	0.06	0.09	0.01	0.02	0.07	< 0.01	0.02	< 0.04	0.09	< 0.01	
Fluorene	mg/kg	0.01	-	-	0.08	0.02	0.06	0.05	0.04	0.03	0.09	0.05	0.01	10	0.04	0.05	< 0.01	0.01	0.05	< 0.01	0.01	< 0.04	0.04	< 0.01	
Phenanthrene	mg/kg	0.01	5	50	1.1	0.41	0.76	0.91	0.62	0.45	0.72	0.43	0.14	73	0.47	0.72	0.07	0.1	0.52	0.06	0.14	< 0.04	0.52	0.04	
Anthracene	mg/kg	0.01	2.5	32	0.55	0.13	0.22	0.3	0.2	0.26	0.21	0.16	0.06	14	0.07	0.09	0.02	0.03	0.1	0.02	< 0.04	0.06	< 0.01		
Fluoranthene	mg/kg	0.01	50	180	3.1	0.94	1.1	2.1	1.7	1.7	1.3	1	0.42	79	0.51	0.91	0.16	0.22	0.81	0.12	0.21	0.06	0.68	0.06	
Pyrene	mg/kg	0.01	10	100	3.3	0.87	1	2.1	1.6	1.6	1.1	0.91	0.42	61	0.41	0.74	0.15	0.2	0.68	0.11	0.16	0.05	0.52	0.05	
Benzo(a)anthracene	mg/kg	0.01	1	10	1.7	0.48	0.65	1.3	0.99	1	0.58	0.53	0.2	29	0.2	0.35	0.09	0.13	0.34	0.08	0.09	< 0.04	0.27	0.03	
Chrysene/Triphenylene	mg/kg	0.01	-	-	1.5	0.44	0.58	1.2	0.92	1	0.59	0.41	0.2	24	0.17	0.34	0.09	0.09	0.29	0.07	0.08	< 0.04	0.26	0.02	
Benzo(b+j)fluoranthene	mg/kg	0.01	1	10	2.8	0.84	1.3	2.5	2.2	3.1	0.73	0.7	0.42	33	0.27	0.47	0.18	0.22	0.49	0.19	0.13	0.06	0.45	0.04	
Benzo(k)fluoranthene	mg/kg	0.01	1	10	0.96	0.3	0.47	0.75	0.73	0.92	0.25	0.24	0.13	13	0.1	0.18	0.06	0.07	0.16	0.06	0.06	< 0.04	0.15	0.01	
Benzo(e)pyrene	mg/kg	0.01	-	-	1.5	0.43	0.65	1.3	1.1	1.6	0.39	0.37	0.25	15	0.15	0.24	0.11	0.12	0.26	0.08	0.07	0.05	0.19	0.02	
Benzo(a)pyrene	mg/kg	0.01	20	72	1.8	0.49	0.77	1.5	1.4	1.9	0.55	0.55	0.25	29	0.19	0.34	0.13	0.17	0.41	0.12	0.1	< 0.04	0.29	0.03	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	1	10	1	0.33	0.53	1.1	0.82	1.4	0.21	0.21	0.17	14	0.1	0.14	0.09	0.11	0.23	0.09	0.08	< 0.04	0.21	0.02	
Benzo(g,h,i)perylene	mg/kg	0.01	-	-	1.1	0.27	0.4	0.89	0.64	1.2	0.19	0.2	0.19	12	0.09	0.13	0.09	0.1	0.21	0.08	0.09	0.07	0.2	0.02	
Dibenz(a,h)anthracene	mg/kg	0.01	1	10	0.45	0.08	0.15	0.32	0.21	0.34	0.05	0.05	0.03	3.3	0.02	0.03	0.02	0.02	0.05	0.02	0.01	< 0.04	0.04	< 0.01	
<i>Human Health Guidelines Based on Carcinogenic Effects of PAHs</i>																									
Benzo(a)pyrene Total Potency Equivalents (B[a]P TPE)	mg/kg	NA	5.3	5.3	2.92	0.77	1.22	2.41	2.10	2.90	0.78	0.77	0.38	41.56	0.28	0.49	0.19	0.24	0.59	0.18	0.15	0.10	0.44	0.05	

CCME: Canadian Council of Ministers of the Environment

CSQG: Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (residential/parkland and commercial)

BFD: Blind field duplicate

LD: Laboratory duplicate

NA: Not applicable

RDL: Reportable detection limit

< 0.01: Concentration is less than reportable detection limit of 0.01 mg/kg

-: No established guideline

Bold: Concentration exceeds CCME CSQG for residential/parkland land use

Bold: Concentration exceeds CCME CSQG for residential/parkland and commercial land use

TABLE 5: Petroleum Hydrocarbons in Groundwater (Tier I RBSLs)
Phase III Environmental Site Assessment
Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE



Parameter	Sample ID Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	PHRR Tier I RBSLs		Groundwater Samples																
						MW22-01	MW22-02	MW22-03	MW22-04	MW22-05	MW22-06	MW22-07	MW22-08	MW23-01	MW23-02	MW23-03	MW23-04	MW23-05	MW23-06	MW23-07	MW23-08	MW23-09
						2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-01	2023-08-01
				Residential	Commercial	493175-11	493175-12	493175-13	493175-14	493175-15	493175-16	493175-17	493175-18	493175-19	493175-20	493175-01	493175-02	493175-03	493175-04	493175-05	493175-06	493175-07
Benzene		mg/L	0.001	2.6	20	< 0.001	0.087	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Toluene		mg/L	0.001	20	20	< 0.001	0.004	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene		mg/L	0.001	20	20	< 0.001	0.083	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes		mg/L	0.001	20	20	< 0.001	0.068	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
C6 - C10 (less BTEX)		mg/L	0.01	-	-	< 0.01	0.44	0.06	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C10-C16 Hydrocarbons		mg/L	0.05	-	-	< 0.05	0.22	0.36	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
>C16-C21 Hydrocarbons		mg/L	0.05	-	-	< 0.05	< 0.05	0.22	< 0.05	0.09	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05
>C21-C32 Hydrocarbons		mg/L	0.1	-	-	< 0.1	< 0.1	0.20	0.10	0.20	0.10	< 0.1	0.30	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Modified TPH		mg/L	0.1	20 (Gas) 20 (Fuel Oil) 20 (Lube Oil)	20 (Gas) 20 (Fuel Oil) 20 (Lube Oil)	< 0.1	0.7	0.8	0.1	0.3	0.2	< 0.1	0.3	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Return to Baseline at C32		NA	NA	NA	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Resemblance		NA	NA	NA	NA	ND	G	PWG.WFO	LO	PWFO.LO	PWFO.LO	ND	LO	ND	ND	ND	PWG	ND	ND	ND	ND	ND

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Risk Based Screening Levels for Groundwater (residential and commercial / non-potable / coarse-grained)

BFD: Blind field duplicate

G: Gasoline fraction

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

PWFO: Possible weathered fuel oil fraction

PWG: Possible weathered gasoline fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

< 0.001: Concentration is less than reportable detection limit of 0.001 mg/L

-: No established guideline

Bold: Concentration exceeds Tier I RBSLs for residential land use

Bold: Concentration exceeds Tier I RBSLs for residential and commercial land use

TABLE 5: Petroleum Hydrocarbons in Groundwater (Tier I RBSLs)

Phase III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE



Parameter	Sample ID Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	PHRR Tier I RBSLs		Groundwater Samples															
						MW23-10	MW23-10, LD	MW23-11	MW23-12	MW23-13	MW23-14	MW23-15	MW23-16	MW23-17	MW23-18	MW23-18, LD	MW23-19	MW23-20	MW23-21	MW23-22	MW23-23
						2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-02	2023-08-02	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01
				Residential	Commercial	493175-08	493175-08	493175-09	493175-10	493175-21	493175-22	493175-23	493175-24	493175-25	493175-26	493175-26	493175-27	493175-28	493175-29	493175-30	506996-17
Benzene		mg/L	0.001	2.6	20	< 0.001	< 0.001	0.094	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.11
Toluene		mg/L	0.001	20	20	< 0.001	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.22
Ethylbenzene		mg/L	0.001	20	20	< 0.001	< 0.001	0.092	0.033	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.068
Xylenes		mg/L	0.001	20	20	< 0.001	< 0.001	0.074	0.036	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.5
C6 - C10 (less BTEX)		mg/L	0.01	-	-	< 0.01	< 0.01	0.49	0.28	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	0.06	< 0.01	< 0.01	< 0.01	2.4
>C10-C16 Hydrocarbons		mg/L	0.05	-	-	< 0.05	< 0.05	0.17	0.70	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.32	< 0.05	< 0.05	< 0.05	3.2
>C16-C21 Hydrocarbons		mg/L	0.05	-	-	0.10	0.10	< 0.05	0.55	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	0.21	0.07	< 0.05	< 0.05	1.9
>C21-C32 Hydrocarbons		mg/L	0.1	-	-	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	0.1	< 0.1	< 0.1	0.3	< 0.1	0.2	< 0.1	< 0.1	< 0.1	0.8
Modified TPH		mg/L	0.1	20 (Gas) 20 (Fuel Oil) 20 (Lube Oil)	20 (Gas) 20 (Fuel Oil) 20 (Lube Oil)	0.1	0.1	0.7	1.7	< 0.1	< 0.1	0.2	< 0.1	< 0.1	0.3	< 0.1	0.8	< 0.1	< 0.1	< 0.1	8.3
Return to Baseline at C32		NA	NA	NA	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Resemblance		NA	NA	NA	NA	WFO	WFO	G	G.WFO	ND	ND	PWFO.LO	ND	ND	LO	ND	PWG.WFO	ND	ND	ND	PG.WFO.LO

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Risk Based Screening Levels for Groundwater (residential and commercial / non-potable / coarse-grained)

BFD: Blind field duplicate

G: Gasoline fraction

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

PWFO: Possible weathered fuel oil fraction

PWG: Possible weathered gasoline fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

< 0.001: Concentration is less than reportable detection limit of 0.001 mg/L

--: No established guideline

Bold: Concentration exceeds Tier I RBSLs for residential land use

Bold: Concentration exceeds Tier I RBSLs for residential and commercial land use

TABLE 6: Petroleum Hydrocarbons in Groundwater (Tier I GESLs - Freshwater/Marine Aquatic Life, 140 m)

Phase III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE



Parameter	Sample ID Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	PHRR Tier I GESLs	Groundwater Samples																			
					MW22-01	MW22-02	MW22-03	MW22-04	MW22-05	MW22-06	MW22-07	MW22-08	MW23-01	MW23-02	MW23-03	MW23-04	MW23-05	MW23-06	MW23-07	MW23-08	MW23-09	MW23-10		
					2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-02	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01
					493175-11	493175-12	493175-13	493175-14	493175-15	493175-16	493175-17	493175-18	493175-19	493175-20	493175-01	493175-02	493175-03	493175-04	493175-05	493175-06	493175-07	493175-08	493175-09	493175-10
Benzene		mg/L	0.001	87	< 0.001	0.087	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			
Toluene		mg/L	0.001	79	< 0.001	0.004	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			
Ethylbenzene		mg/L	0.001	60	< 0.001	0.083	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			
Xylenes		mg/L	0.001	53	< 0.001	0.068	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			
C6 - C10 (less BTEX)		mg/L	0.01	-	< 0.01	0.44	0.06	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			
>C10-C16 Hydrocarbons		mg/L	0.05	-	< 0.05	0.22	0.36	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
>C16-C21 Hydrocarbons		mg/L	0.05	-	< 0.05	< 0.05	0.22	< 0.05	0.09	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	0.1			
>C21-<C32 Hydrocarbons		mg/L	0.1	-	< 0.1	< 0.1	0.2	0.1	0.2	0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			
Modified TPH		mg/L	0.1	467 (Gasoline) 20 (Fuel Oil) 20 (Lube Oil)	< 0.1	0.7	0.8	0.1	0.3	0.2	< 0.1	0.3	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1			
Return to Baseline at C32		NA	NA	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
Resemblance		NA	NA	NA	ND	G	PWG.WFO	LO	PWFO.LO	PWFO.LO	ND	LO	ND	ND	ND	PWG	ND	ND	ND	ND	WFO			

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Groundwater Ecological Screening Levels for the Protection of Freshwater and Marine Aquatic Life, adjusted for distance to receiving aquatic environment and soil type (140 m / non-potable / coarse-grained)

BFD: Blind field duplicate

G: Gasoline fraction

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

PWFO: Possible weathered fuel oil fraction

PWG: Possible weathered gasoline fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

< 0.001: Concentration is less than reportable detection limit of 0.001 mg/L

-: No established guideline

Bold: Concentration exceeds Tier I GESLs

TABLE 6: Petroleum Hydrocarbons in Groundwater (Tier I GESLs - Freshwater/Marine Aquatic Life, 140 m)

Phase III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE



Parameter	Sample ID Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	PHRR Tier I GESLs	Groundwater Samples														
					MW23-10, LD	MW23-11	MW23-12	MW23-13	MW23-14	MW23-15	MW23-16	MW23-17	MW23-18	MW23-18, LD	MW23-19	MW23-20	MW23-21	MW23-22	MW23-23
					2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-02	2023-08-02	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01	2023-08-01
					493175-08	493175-09	493175-10	493175-21	493175-22	493175-23	493175-24	493175-25	493175-26	493175-26	493175-27	493175-28	493175-29	493175-30	506996-17
Benzene		mg/L	0.001	87	< 0.001	0.094	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.11
Toluene		mg/L	0.001	79	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.22
Ethylbenzene		mg/L	0.001	60	< 0.001	0.092	0.033	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.068
Xylenes		mg/L	0.001	53	< 0.001	0.074	0.036	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.5
C6 - C10 (less BTEX)		mg/L	0.01	-	< 0.01	0.49	0.28	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	0.06	< 0.01	< 0.01	< 0.01	2.4
>C10-C16 Hydrocarbons		mg/L	0.05	-	< 0.05	0.17	0.7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.32	< 0.05	< 0.05	< 0.05	3.2
>C16-C21 Hydrocarbons		mg/L	0.05	-	0.1	< 0.05	0.55	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	0.21	0.07	< 0.05	< 0.05	1.9
>C21-<C32 Hydrocarbons		mg/L	0.1	-	< 0.1	< 0.1	0.2	< 0.1	< 0.1	0.1	< 0.1	< 0.1	0.3	< 0.1	0.2	< 0.1	< 0.1	< 0.1	0.8
Modified TPH		mg/L	0.1	467 (Gasoline) 20 (Fuel Oil) 20 (Lube Oil)	0.1	0.7	1.7	< 0.1	< 0.1	0.2	< 0.1	< 0.1	0.3	< 0.1	0.8	< 0.1	< 0.1	< 0.1	8.3
Return to Baseline at C32		NA	NA	NA	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Resemblance		NA	NA	NA	WFO	G	G.WFO	ND	ND	PWFO.LO	ND	ND	LO	ND	PWG.WFO	ND	ND	ND	PG.WFO.LO

PHRR: Petroleum Hydrocarbon Remediation Regulations (Prince Edward Island, Environmental Protection Act, 2015), Tier I Groundwater Ecological Screening Levels for the Protection of Freshwater and Marine Aquatic Life, adjusted for distance to receiving aquatic environment and soil type (140 m / non-potable / coarse-grained)

BFD: Blind field duplicate

G: Gasoline fraction

LD: Laboratory duplicate

LO: Lube oil

NA: Not applicable

ND: Not detected

PWFO: Possible weathered fuel oil fraction

PWG: Possible weathered gasoline fraction

RDL: Reportable detection limit

WFO: Weathered fuel oil fraction

< 0.001: Concentration is less than reportable detection limit of 0.001 mg/L

-: No established guideline

Bold: Concentration exceeds Tier I GESLs

TABLE 7: Metals in Groundwater/Surface Water (CWQG - Protection of Aquatic Life, Marine)

Phase III Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, PE



Parameter	Sample ID Sample Date (Y/M/D) RPC Sample ID	UNITS	RDL	CCME CWQG (Marine)		Water Samples									
						MW23-02		MW23-03	MW23-04	MW23-18	MW23-19	MW23-20	SW1	SW2	SW3
						2023-08-02	2023-11-29	2023-08-02	2023-08-02	2023-08-01	2023-08-01	2023-08-01	2023-08-02	2023-11-29	2023-08-02
						Short Term	Long Term	493175-20	506996-13	493175-01	493175-02	493175-26	493175-27	493175-28	493175-20
Aluminum		µg/L	1	-	-	7		21	9	< 5	5	7			
Antimony		µg/L	0.1	-	-	1.1		0.2	< 0.5	< 0.5	0.3	< 0.5			
Arsenic		µg/L	1	-	12.5	< 1		< 1	< 5	< 5	< 2	< 5			
Barium		µg/L	1	-	-	164		115	118	397	109	139			
Beryllium		µg/L	0.1	-	-	< 0.1		< 0.1	< 0.5	< 0.5	< 0.2	< 0.5			
Bismuth		µg/L	1	-	-	< 1		< 1	< 5	< 5	< 2	< 5			
Boron		µg/L	1	-	-	176		299	48	78	274	106			
Cadmium		µg/L	0.01	-	0.12	0.76	0.01	< 0.01	< 0.05	0.08	< 0.02	< 0.05	0.02	0.02	0.03
Calcium		µg/L	50	-	-	72400		109000	84300	241000	98600	101000			
Chromium		µg/L	1	-	-	< 1		< 1	< 5	< 5	< 2	< 5			
Cobalt		µg/L	0.1	-	-	0.4		0.7	< 0.5	< 0.5	0.8	< 0.5			
Copper		µg/L	1	-	-	8		< 1	< 5	< 5	< 2	< 5			
Iron		µg/L	20	-	-	< 20		550	< 100	< 100	150	< 100			
Lead		µg/L	0.1	-	-	< 0.1		< 0.1	< 0.5	< 0.5	< 0.2	< 0.5			
Lithium		µg/L	0.1	-	-	10.6		9.4	2.6	4.3	2.9	3.6			
Magnesium		µg/L	10	-	-	25000		45100	35400	140000	6920	14400			
Manganese		µg/L	1	-	-	225		8420	1180	361	1170	5700			
Molybdenum		µg/L	0.1	-	-	2.4		1	2.3	0.5	1.1	0.7			
Nickel		µg/L	1	-	-	37		1	< 5	6	< 2	< 5			
Potassium		µg/L	20	-	-	11500		17700	7800	17400	13600	10800			
Rubidium		µg/L	0.1	-	-	12.6		16.2	5.9	4.2	20.7	12.3			
Selenium		µg/L	1	-	-	< 1		< 1	< 5	< 5	< 2	< 5			
Silver		µg/L	0.1	7.5	-	< 0.1		< 0.1	< 0.5	< 0.5	< 0.2	< 0.5			
Sodium		µg/L	50	-	-	43000		117000	653000	873000	379000	796000			

CCME: Canadian Council of Ministers of the Environment

CWQG: Canadian Water Quality Guidelines for the Protection of Aquatic Life, Marine (short term and long term)

RDL: Reportable detection limit

< 1: Concentration is less than reportable detection limit of 1 µg/L

-: No established guideline

Concentration exceeds CCME CWQG (Short Term)

Concentration exceeds CCME CWQG (Long Term)

TABLE 8: Water Levels and Elevations

Phase II Environmental Site Assessment

Former Queens County Highways Depot, Riverside Drive, Charlottetown, Prince Edward Island



Well ID	Locations and Elevations		Depth to Water (m)	Groundwater Elevation (m)
	Ground Elevation (m)	Top of Casing Elevation (m)		
MW23-01	99.08	98.97	0.67	98.30
MW23-02	99.12	99.00	0.95	98.05
MW23-03	99.35	99.28	1.14	98.14
MW23-04	99.49	99.32	1.18	98.15
MW23-05	100.02	99.92	1.95	97.97
MW23-06	100.40	100.25	2.12	98.13
MW23-07	100.38	100.19	2.20	97.99
MW23-08	100.16	100.06	2.17	97.89
MW23-09	100.15	99.95	0.20	99.75
MW23-10	100.21	100.09	2.26	97.83
MW23-11	100.27	100.16	2.29	97.87
MW23-12	100.20	100.12	2.26	97.86
MW23-13	100.23	100.10	2.00	98.10
MW23-14	100.05	99.94	2.03	97.91
MW23-15	100.19	100.06	2.08	97.98
MW23-16	100.03	99.88	1.76	98.12
MW23-17	100.23	100.06	1.91	98.15
MW23-18	100.34	100.18	1.64	98.54
MW23-19	100.01	99.84	2.08	97.77
MW23-20	100.19	100.08	2.07	98.01
MW23-21	100.18	100.08	1.96	98.12
MW23-22	100.33	100.20	1.99	98.21
MW23-23	-	-	2.05	-

Notes:

Elevation data collected by ALL-TECH on August 1 and August 2, 2023

Elevation Data relative, based on nearby utility poles (assumed elevation of 100.00 m)

Appendix E Certificates of Analysis

Report ID: 506996-OAS
 Report Date: 08-Dec-23
 Date Received: 30-Nov-23

CERTIFICATE OF ANALYSIS

for
 All-Tech Environmental Service
 Ltd
 162 Trider Crescent
 Dartmouth, NS B3B 1R6



921 College Hill Rd
 Fredericton NB
 Canada E3B 6Z9
 Tel: 506.452.1212
 Fax: 506.452.0594
 www.rpc.ca

Attention: Randy Fancey

Project #: PE23442

Location: PEI Government Garage

Hydrocarbon Analysis in Soil (Atlantic MUST)

RPC Sample ID:			506996-01	506996-02	506996-03	506996-04	506996-05	506996-06
Client Sample ID:			BH-23-28	BH-23-29	BH-23-30	BH-23-31	BH-23-32	BH-23-33
Date Sampled:			28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23
Matrix:			soil	soil	soil	soil	soil	soil
Analytes	Units	RL						
Benzene	mg/kg	0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Ethylbenzene	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylenes	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
VPH C6-C10 (Less BTEX)	mg/kg	2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
EPH >C10-C16	mg/kg	12	31	< 12	< 12	< 12	< 12	< 12
EPH >C16-C21	mg/kg	12	74	< 12	< 12	< 12	< 12	< 12
EPH >C21-C32	mg/kg	12	260	< 12	< 12	< 12	< 12	< 12
EPH (>C16-C32)	mg/kg	12	330	< 12	< 12	< 12	< 12	< 12
Modified TPH Tier 1	mg/kg	21	370	< 21	< 21	< 21	< 21	< 21
VPH Surrogate (IBB)	%		115	87	115	91	94	110
EPH Surrogate (IBB)	%		110	93	108	100	114	96
EPH Surrogate (C32)	%		comment	117	131	119	137	117
Resemblance			WFO.LO	ND	ND	ND	ND	ND
Return to Baseline at C32			No	Yes	Yes	Yes	Yes	Yes
Moisture Content	%		16	17	21	16	13	16

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit; Soil results are expressed on a dry weight basis.

Bruce Phillips
 Department Head
 Organic Analytical Services

ATLANTIC MUST SOIL

Steven Davenport
 Senior Technician
 Organic Analytical Services

Report ID: 506996-OAS
 Report Date: 08-Dec-23
 Date Received: 30-Nov-23

CERTIFICATE OF ANALYSIS

for
 All-Tech Environmental Service
 Ltd
 162 Trider Crescent
 Dartmouth, NS B3B 1R6



921 College Hill Rd
 Fredericton NB
 Canada E3B 6Z9
 Tel: 506.452.1212
 Fax: 506.452.0594
 www.rpc.ca

Attention: Randy Fancey

Project #: PE23442

Location: PEI Government Garage

Hydrocarbon Analysis in Soil (Atlantic MUST)

RPC Sample ID:			506996-07	506996-08	506996-08 Dup
Client Sample ID:			BH-23-34	TPI	TPI
Date Sampled:			28-Nov-23	29-Nov-23	29-Nov-23
Matrix:			soil	soil	soil
Analytes	Units	RL			
Benzene	mg/kg	0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Ethylbenzene	mg/kg	0.01	< 0.01	< 0.01	< 0.01
Xylenes	mg/kg	0.05	< 0.05	< 0.05	< 0.05
VPH C6-C10 (Less BTEX)	mg/kg	2.5	< 2.5	< 2.5	< 2.5
EPH >C10-C16	mg/kg	12	< 12	< 12	< 12
EPH >C16-C21	mg/kg	12	< 12	< 12	< 12
EPH >C21-C32	mg/kg	12	< 12	< 12	< 12
EPH (>C16-C32)	mg/kg	12	< 12	< 12	< 12
Modified TPH Tier 1	mg/kg	21	< 21	< 21	< 21
VPH Surrogate (IBB)	%		108	93	106
EPH Surrogate (IBB)	%		98	105	98
EPH Surrogate (C32)	%		111	119	107
Resemblance			ND	ND	ND
Return to Baseline at C32			Yes	Yes	Yes
Moisture Content	%		19	14	14

Report ID: 506996-OAS
Report Date: 08-Dec-23
Date Received: 30-Nov-23

CERTIFICATE OF ANALYSIS

for
All-Tech Environmental Service
Ltd
162 Trider Crescent
Dartmouth, NS B3B 1R6

rpc

921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Attention: Randy Fancey

Project #: PE23442

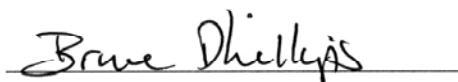
Location: PEI Government Garage

Hydrocarbon Analysis in Water (Atlantic MUST)

RPC Sample ID:	506996-17		
Client Sample ID:	MW23-23		
Date Sampled:	30-Nov-23		
Matrix:	water		
Analytes	Units	RL	
Benzene	mg/L	0.001	0.11
Toluene	mg/L	0.001	0.22
Ethylbenzene	mg/L	0.001	0.068
Xylenes	mg/L	0.001	0.50
VPH C6-C10 (Less BTEX)	mg/L	0.01	2.4 (comment)
EPH >C10 - C16	mg/L	0.05	3.2
EPH >C16 - C21	mg/L	0.05	1.9
EPH >C21-C32	mg/L	0.1	0.8
Modified TPH Tier 1	mg/L	0.1	8.3
VPH Surrogate (IBB)	%		103
EPH Surrogate (IBB)	%		115
EPH Surrogate (C32)	%		112
Resemblance			PG.WFO.LO
Return to Baseline at C32			Yes

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit



Bruce Phillips
Department Head
Organic Analytical Services



Steven Davenport
Senior Technician
Organic Analytical Services

ATLANTIC MUST WATER

Page 3 of 9

Report ID: 506996-OAS
 Report Date: 08-Dec-23
 Date Received: 30-Nov-23

CERTIFICATE OF ANALYSIS

for
 All-Tech Environmental Service
 Ltd
 162 Trider Crescent
 Dartmouth, NS B3B 1R6



921 College Hill Rd
 Fredericton NB
 Canada E3B 6Z9
 Tel: 506.452.1212
 Fax: 506.452.0594
 www.rpc.ca

Attention: Randy Fancey

Project #: PE23442

Location: PEI Government Garage

PAH in Soil

RPC Sample ID:			506996-09	506996-10	506996-11	506996-12	506996-12 Dup
Client Sample ID:			SS-24	SS-25	SS-26	SS-27	SS-27
Date Sampled:			28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23
Matrix:			soil	soil	soil	soil	soil
Analytes	Units	RL					
Naphthalene	mg/kg	0.01	< 0.01	0.02	< 0.04	0.03	< 0.01
Acenaphthylene	mg/kg	0.01	0.02	< 0.01	< 0.04	< 0.01	< 0.01
Acenaphthene	mg/kg	0.01	< 0.01	0.02	< 0.04	0.09	< 0.01
Fluorene	mg/kg	0.01	< 0.01	0.01	< 0.04	0.04	< 0.01
Phenanthrene	mg/kg	0.01	0.06	0.14	< 0.04	0.52	0.04
Anthracene	mg/kg	0.01	0.02	0.02	< 0.04	0.06	< 0.01
Fluoranthene	mg/kg	0.01	0.12	0.21	0.06	0.68	0.06
Pyrene	mg/kg	0.01	0.11	0.16	0.05	0.52	0.05
Benz(a)anthracene	mg/kg	0.01	0.08	0.09	< 0.04	0.27	0.03
Chrysene/Triphenylene	mg/kg	0.01	0.07	0.08	< 0.04	0.26	0.02
Benzo(b+j)fluoranthene	mg/kg	0.01	0.19	0.13	0.06	0.45	0.04
Benzo(k)fluoranthene	mg/kg	0.01	0.06	0.06	< 0.04	0.15	0.01
Benzo(e)pyrene	mg/kg	0.01	0.08	0.07	0.05	0.19	0.02
Benzo(a)pyrene	mg/kg	0.01	0.12	0.10	< 0.04	0.29	0.03
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	0.09	0.08	< 0.04	0.21	0.02
Benzo(g,h,i)perylene	mg/kg	0.01	0.08	0.09	0.07	0.20	0.02
Dibenz(a,h)anthracene	mg/kg	0.01	0.02	0.01	< 0.04	0.04	< 0.01
2-fluorobiphenyl (surrogate)	%		96	95	97	97	96
p-terphenyl-d14 (surrogate)	%		89	88	96	90	101
Moisture Content	%		13	11	10	14	15

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit; Soil results are expressed on a dry weight basis.

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PAH IN SOIL
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Method Summary

OAS-HC03: The Determination of Petroleum Hydrocarbons (Atlantic MUST) in Soil (VPH)
OAS-HC03: Determination of Petroleum Hydrocarbons (Atlantic MUST) in Soil (EPH)
OAS-HC04: The Determination of Petroleum Hydrocarbons (Atlantic MUST) in Water (VPH)
OAS-HC04: Determination of Petroleum Hydrocarbons (Atlantic MUST) in Water (EPH)
OAS-HC06: The Determination of Polynuclear Aromatic Hydrocarbons in Soil

Resemblance Legend

<u>Resemblance Code</u>	<u>Resemblance</u>	<u>Resemblance Code</u>	<u>Resemblance</u>
COMMENT	See General Report Comments	PAH	Possible PAHs Detected
FO	Fuel Oil Fraction	PG	Possible Gasoline Fraction
FO.LO	Fuel Oil and Lube Oil Fraction	PLO	Possible Lube Oil Fraction
G	Gasoline Fraction	PWFO	Possible Weathered Fuel Oil Fraction
LO	Lube Oil Fraction	PWG	Possible Weathered Gasoline Fraction
ND	Not Detected	TO	Transformer Oil
NR	No Resemblance (not-petrogenic in origin)	UP	Unknown Peaks
NRLR	No Resemblance in the lube oil range (>C21-C32).	WFO	Weathered Fuel Oil Fraction
OP	One Product (unidentified)	WG	Weathered Gasoline Fraction

General Report Comments

506996-17 - VPH C6-C10 result also includes chlorinated VOC's in the calculated result. The VOC with the most impact to the VPH C6-C10 result is 1,2-dichloroethylene (cis) (~ 0.8 mg/L). Low levels of trichloroethylene and tetrachloroethylene were also detected.
506996-12 - PAH duplicates exceed the acceptance limit due to sample inhomogeneity; repeated with similar results.
VPH / EPH surrogate(s) unavailable due to product interference/sample dilution.
506996-11 - Elevated PAH RL's due to sample dilution/sample matrix.
Return to Baseline: Samples are considered to have returned to baseline if the area from C32-C36 is less than 10% of the area from C10-C32.

COMMENTS

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Project #: PE23442

Location: PEI Government Garage

QA/QC Report

RPC Sample ID:			BLANKD8332	BLANKD8333	SPIKED8332	SPIKED8333
Type:			VPH	EPH	VPH	EPH
Matrix:			soil	soil	soil	soil
Analytes	Units	RL			% Recovery	% Recovery
Benzene	mg/kg	0.005	< 0.005	-	104%	-
Toluene	mg/kg	0.05	< 0.05	-	115%	-
Ethylbenzene	mg/kg	0.01	< 0.01	-	114%	-
Xylenes	mg/kg	0.05	< 0.05	-	111%	-
VPH C6-C10 (Less BTEX)	mg/kg	2.5	< 2.5	-	103%	-
EPH >C10-C16	mg/kg	12	-	< 12	-	-
EPH >C16-C21	mg/kg	12	-	< 12	-	-
EPH >C21-C32	mg/kg	12	-	< 12	-	-
EPH >C10-C32	mg/kg	21	-	-	-	89%

RL = Reporting Limit

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Project #: PE23442

Location: PEI Government Garage

QA/QC Report

RPC Sample ID:			BLANKD8313	BLANKD8358	SPIKED8313	SPIKED8357
Type:			EPH	VPH	EPH	VPH
Matrix:			water	water	water	water
Analytes	Units	RL			% Recovery	% Recovery
Benzene	mg/L	0.001	-	< 0.001	-	100%
Toluene	mg/L	0.001	-	< 0.001	-	96%
Ethylbenzene	mg/L	0.001	-	< 0.001	-	93%
Xylenes	mg/L	0.001	-	< 0.001	-	95%
VPH C6-C10 (Less BTEX)	mg/L	0.01	-	< 0.01	-	93%
EPH >C10 - C16	mg/L	0.05	< 0.05	-	-	-
EPH >C16 - C21	mg/L	0.05	< 0.05	-	-	-
EPH >C21-C32	mg/L	0.1	< 0.1	-	-	-
EPH >C10 - C32	mg/L		-	-	103%	-

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Project #: PE23442

Location: PEI Government Garage

QA/QC Report

RPC Sample ID:			BLANKD8352	SPIKED8351
Matrix:			soil	soil
Analytes	Units	RL		% Recovery
Naphthalene	mg/kg	0.01	< 0.01	103%
Acenaphthylene	mg/kg	0.01	< 0.01	106%
Acenaphthene	mg/kg	0.01	< 0.01	102%
Fluorene	mg/kg	0.01	< 0.01	98%
Phenanthrene	mg/kg	0.01	< 0.01	100%
Anthracene	mg/kg	0.01	< 0.01	95%
Fluoranthene	mg/kg	0.01	< 0.01	99%
Pyrene	mg/kg	0.01	< 0.01	100%
Benz(a)anthracene	mg/kg	0.01	< 0.01	100%
Chrysene/Triphenylene	mg/kg	0.01	< 0.01	101%
Benzo(b+j)fluoranthene	mg/kg	0.01	< 0.01	110%
Benzo(k)fluoranthene	mg/kg	0.01	< 0.01	105%
Benzo(e)pyrene	mg/kg	0.01	< 0.01	98%
Benzo(a)pyrene	mg/kg	0.01	< 0.01	98%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	< 0.01	98%
Benzo(g,h,i)perylene	mg/kg	0.01	< 0.01	98%
Dibenz(a,h)anthracene	mg/kg	0.01	< 0.01	98%

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Summary of Date Analyzed

RPC Sample ID	VPH		EPH		PAH	
	Extracted	Analyzed	Extracted	Analyzed	Extracted	Analyzed
506996-01	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-02	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-03	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-04	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-05	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-06	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-07	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-08	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-08 Dup	4-Dec-23	5-Dec-23	5-Dec-23	4-Dec-23	-	-
506996-09	-	-	-	-	4-Dec-23	6-Dec-23
506996-10	-	-	-	-	4-Dec-23	6-Dec-23
506996-11	-	-	-	-	6-Dec-23	7-Dec-23
506996-12	-	-	-	-	4-Dec-23	6-Dec-23
506996-12 Dup	-	-	-	-	6-Dec-23	7-Dec-23
506996-17	5-Dec-23	5-Dec-23	1-Dec-23	2-Dec-23	-	-

Report ID: 506996-IAS
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Project #: PE23442

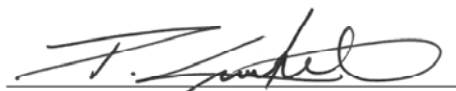
Location: PEI Government Garage

Analysis of Metals in Water

RPC Sample ID:	506996-13	506996-14	506996-15	506996-16		
Client Sample ID:	SW1	SW2	SW3	MW23-02		
Date Sampled:	29-Nov-23	29-Nov-23	29-Nov-23	29-Nov-23		
Analytes	Units	RL				
Cadmium	mg/L	0.00001	0.00002	0.00002	0.00003	0.00001

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit



Peter Crowhurst, B.Sc., C.Chem.
Director
Inorganic Analytical Chemistry



Brannen Burhoe
Supervisor
Inorganic Analytical Services

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Methods

<u>Analyte</u>	<u>RPC SOP #</u>	<u>Method Reference</u>	<u>Method Principle</u>
Cadmium	IAS-M01/IAS-M29	EPA 200.8/EPA 200.7	ICP-MS/ICP-ES