Ottawa-Carleton District School Board

Phase Two Environmental Site Assessment
745 Smyth Road
Ottawa, Ontario

ER1020

June 19, 2023

CM3 Environmental Inc.
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1.0 EXECUTIVE SUMMARY

CM3 Environmental Inc. (CM3) was retained by the Ottawa-Carleton District School Board (OCDSB) to complete a Phase Two Environmental Site Assessment (ESA) for the property located at 745 Smyth Road in Ottawa, Ontario. The purpose of the Phase Two ESA was to identify contaminants of concern, if present, in soil and groundwater, and to provide recommendations for the management of excess soil related to the construction of a bus loop on the south side of the subject building. The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application for the construction of the bus loop. The Phase Two ESA was not completed in support of a record of site condition.

Previous investigations have identified soil and/or groundwater contamination at and surrounding the boiler room. CM3 completed a Phase One ESA in April, 2023 that identified the former underground storage tank (UST) and historic contaminant release from the UST near the boiler room as a potentially contaminating activity (PCA) and as area of potential environmental concern (APEC) 1. The contaminants of concern were identified as petroleum hydrocarbons (PHCs) (F1-F4) and benzene, toluene, ethylbenzene and xylenes (BTEX). Environmental concerns were not identified in the area of the proposed bus loop.

The investigation included the advancement of six boreholes, two of which were converted to monitoring wells to assess the soil and groundwater conditions on-site. The overburden soil generally encountered at the site consisted of asphalt and grass underlain by silty sands or silty clays to a maximum observed depth of 3.05 m below grade (m bg). Bedrock was not encountered during the investigation. Groundwater was present in monitoring well MW1 at 1.199 m below the top of well pipe (TOC) and in well MW2 at 1.331 m below the TOC. On-site groundwater flow could not be determined based on the information obtained in this assessment. The inferred regional groundwater flow direction was west towards the Rideau River based on topography and the presence of local water bodies.

Two soil samples (MW1 S3 and MW2 S2) were collected from APEC 1 and analyzed for contaminants of concern. Concentrations were either non-detectable or below the MECP Table 3 SCS (Ontario Regulation (O.Reg.) 153/04). Four soil samples (BH1 S1, BH2 S2, BH3 S1, and BH4 S2) were collected from the proposed bus loop location and analyzed for contaminants of concern. Concentrations were either non-detectable of below the MECP Table 3 SCS (O.Reg. 1534/04) and Table 1 SCS (O.Reg. 406/19). Two groundwater samples (MW1 and MW2) were collected from APEC 1 and analyzed for contaminants of concern. Concentrations were either non-detectable or below the MECP Table 3 SCS.

The results of the soil analysis indicate that the excess soil generated during construction of the bus loop could be reused on-site for landscaping, re-grading, etc.

If the soil is to be disposed of, the soil would be suitable for use as Table 1 soil as per O.Reg. 406/19. If excess soil is to be removed from the project area, the project leader must meet the following requirements to be in compliance with O.Reg. 406/19:

1. Preparation of an assessment of past uses (Phase One ESA complete – no further action required);
2. Preparation of a sample and analysis plan (Phase Two ESA and project specific soil testing complete – may require additional sampling to meet receiving site as per O.Reg. 406/19);
3. Preparation of a soil characterization report (Phase Two ESA and project specific testing report complete – may require additional reporting based on Item 2 above);
4. Preparation of an excess soil destination assessment report (receiving site); and
5. Development and implementation of a soil tracking system.

CM3 should be notified if there are changes to the scope of the project as the above requirements may be impacted.

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2.0 INTRODUCTION

CM3 Environmental Inc. (CM3) was retained by the Ottawa-Carleton District School Board (OCDSB) to complete a Phase Two Environmental Site Assessment (ESA) for the property located at 745 Smyth Road in Ottawa, Ontario. The purpose of the Phase Two ESA was to identify contaminants of concern, if present, in soil and groundwater, and to provide recommendations for the management of excess soil related to the construction of a bus loop on the south side of the subject building. The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application for the construction of the bus loop. The Phase Two ESA was not completed in support of a record of site condition.

2.1 Site Description

The subject property is located on the north side of Smyth Road in Ottawa, Ontario. The civic address for the subject property is 745 Smyth Road. The legal description is Part Hastings Ave Plan 370 Lots 53-117 Plan 370, Pt Shaftsbury St & East Street Plan 370, as in OT24067 & OT24976 and the PIN # is 04258-0299 (LT). The current site land use designation is minor institutional.

The subject property is roughly square in shape and is bound by Smyth Road to the south and residential properties in all other directions. The site is located in an area primarily consisting of residential and institutional properties. One main building is located on-site and has been used as a public school since it opened in 1958 which is likely the first developed use of the land. Smaller outbuildings are present on the west and east sides of the school and are used for storage. Approximately 60 percent of the site is grass covered with the remaining area being asphalt covered. The total area of the subject property is 38,444.29 m^2. Much of the property's boundaries are lined by trees. Three vehicle access points are present from Smyth Road and Edgecomb Street to the parking lot on the west side of the subject building. An additional vehicle access point is present on the east side of the building from Smyth Road, this access point is not open to the public. The location of the site is provided on **Figure 1**, the site plan is provided on **Figure 2**.

2.2 Property Ownership

The subject property is currently owned and operated by the OCDSB. CM3's main point of contact at the OCDSB for the Phase Two ESA was Mr. Daniel Fournier, the contact information for Mr. Fournier is provided below:

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Project Officer Architectural & Engineering, Design & Construction
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2.3 Current and Proposed Future Uses

The property is currently used as an educational institution. There are no proposed plans to change the property use.

2.4 Applicable Site Condition Standard

The environmental condition of the subject property was evaluated in comparison to the Ontario Ministry of Environment, Conservation and Parks (MECP) *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act,* under O. Reg. 153/04 and/or On-Site and Excess Soil Management Regulations (O.Reg 406/19). The following site conditions were used in the selection of the appropriate site condition standards:

- No environmentally sensitive areas were located on site or in the immediate vicinity;
- The site is not considered a shallow soil property (i.e., bedrock is greater than 2 metres below grade);
- The site was not located within 30 m of a water body;
- Municipal water is used as the potable water source in the area;
- Land use at the site was considered institutional; and
- Surrounding land use was considered residential.

For the purposes of the Phase Two ESA, the Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition and institutional land use with coarse soils were selected for evaluation of the analytical results, based on the above.

For the purposes of excess soil management for the bus loop project, the soil results were also evaluated using the O.Reg 406/19 Table 1 Full Depth Background Site Condition Standards.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

The site sits at an approximate elevation of 74.88 meters above sea level (m asl) and is relatively flat lying with a gently slope to the east-north-east. The areas surrounding the subject property slope from south to north from 78 m asl to 77 m asl and from west to east from 82 m asl to 75 m asl. A water course was identified on the Ontario Base Map (OBM); however, the location of the water course is now an institutional complex. Wetlands are present to the north-west on the border of the Phase One study area boundary. The regional groundwater flow direction was inferred based on the local topography and the presence of local water bodies. The inferred regional groundwater flow direction was west toward the Rideau River.

Surface drainage at the subject property is likely controlled by surface coverings (grass and pavement) and site grading. It is likely that most of the surface drainage is by infiltration in the grass covered areas and by overland flow to storm water catch basins located on the north side of the subject building and on Smyth Road on the pavement covered areas.

Surface soils within the Phase One study area were described as offshore marine deposits of clay and silt of the quaternary age (Champlain Sea) with low permeability. Bedrock geology within the Phase One study area was described as shale, limestone, dolostone, and siltstone of the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member, and Eastview Member.

Areas of natural and scientific interest (ANSI) were not identified within the Phase One study area. No wells were observed during the site visit. No wellhead protection areas were identified within the study area.

The subject property and properties within the study area were served by the municipal drinking water system.

3.2 Past Investigations

The following environmental reports were available for review and are summarized below:

1. **CM3 Environmental. *Environmental Sampling and System Removal*, Vincent Massey Public School, 745 Smyth Road, Ottawa, Ontario. August 2011.**

CM3 Environmental Inc. was hired by the OCDSB to conduct an environmental assessment at Vincent Massey Public School. The assessment involved three main components: remedial system removal, monitoring well inspection, and groundwater sampling.

CM3 supervised the removal and disposal of unused remediation equipment from the boiler room of the school. The work was completed by Triangle Pump Service of Ottawa, Ontario.

CM3 completed an inspection of 12 of the 14 monitoring wells and system recovery wells previously known to be on the site. Two monitoring wells were not found and are assumed to have been destroyed or removed. Four monitoring wells and two recovery wells were compromised and should be decommissioned according to Ontario Ministry of Environment (MOE) Regulation 903 (O.Reg 903). One monitoring well had a slightly compromised cover but was otherwise in good condition.

CM3 personnel measured the depth to liquid phase hydrocarbons (LPH) and collected groundwater samples from six monitoring wells. LPH was not detected in any of the wells. Groundwater samples were analyzed for BTEX and PHCs F1 to F4 fractions. Three wells had concentrations below the MOE Table 3 standards, but two wells had concentrations in excess of the standards for PHC in the F2 and/or F3 range.

Based on the assessment results, CM3 recommended that the damaged monitoring and recovery wells be decommissioned, a semi-annual groundwater monitoring program be started for the remaining wells, and oxygen releasing compound (ORC) socks be installed in the two wells with elevated PHC concentrations.

2. **CM3 Environmental. *Environmental Monitoring and Sampling*. Vincent Massey Public School, 745 Smyth Road, Ottawa, Ontario. October 2012.**

CM3 was retained by the OCDSB to decommission damaged monitoring wells previously outlined in a report issued by CM3 in 2011. In addition to decommissioning, CM3 conducted groundwater monitoring and sampling on two occasions and applied ORC socks in six remaining monitoring wells.

On November 18, 2011, CM3 hired OGS Drilling Inc. to decommission the monitoring wells as per O.Reg. 903. Monitoring wells MW1, MW03-2, MW3, and MW8, as well as two recovery wells, were decommissioned.

Groundwater sampling was conducted on November 18, 2011, from all accessible monitoring wells except MW11. The groundwater samples were tested for BTEX and PHCs in the F1 to F4 fractions. The laboratory analysis did not reveal detectable concentrations of BTEX and/or PHCs in the F1 to F4 fractions for all samples, which would be in compliance with the MOE Table 3 Standards a that time.

Groundwater sampling was conducted again on July 27, 2012, from MW2, MW4, MW5, MW6, and MW7. MW11 and MW12 were not accessible. Groundwater samples were collected and tested for BTEX and PHCs F1 to F4 fractions, and the analytical results did not reveal detectable concentrations of BTEX and/or PHCs in the F1 to F4 fractions for all samples. These results would be in compliance with the MOE Table 3 Standards at the time.

ORC socks were applied in MW2, MW4, MW5, MW7, MW11, and MW12, and were replaced on a monthly basis from September 2011 to August 2012. Based on the results, CM3 recommended that the semi-annual groundwater monitoring well program should continue for at least one more

year, and ORC socks should be installed in the remaining six monitoring wells to prevent the concentrations of PHC's in these wells.

3. **CM3 Environmental. *Environmental Monitoring and Sampling*. Vincent Massey Public School, 745 Smyth Road, Ottawa, Ontario. August 2013.**

The report provides an overview of the results of two semi-annual groundwater monitoring and remedial activities conducted by CM3 on behalf of the OCDSB. The monitoring was conducted to assess the groundwater in several monitoring wells at a site. The monitoring was conducted on December 6, 2012, and July 12, 2013.

During the monitoring, CM3 personnel measured the depth to LPH and groundwater in MW2, MW4, MW5, MW6, MW7, MW11, and MW12. The depth to groundwater ranged from 0.378 to 1.612 meters from the top of the casing. LPH was not detected in any of the wells during both monitoring events.

Groundwater samples were collected from all accessible monitoring wells on both occasions, except for MW11 and MW12, which were inaccessible. The samples were analyzed for BTEX, and PHCs in the F1 to F4 fractions. The analytical results did not reveal detectable concentrations of BTEX and/or PHCs in the F1 to F4 fractions for all samples.

CM3 recommended continuing the semi-annual groundwater monitoring program for at least one more year, post ORC sock application. The ORC socks were applied in MW2, MW4, MW5, MW6, and MW7 as per CM3's Ontario Ministry of Environment Certificate of Approval (C of A) 3283-8KEKZQ. CM3 also recommended that if the groundwater concentrations remain at the same levels, the monitoring program should cease, and the monitoring wells should be decommissioned.

4. **CM3 Environmental. Phase One Environmental Site Assessment. Vincent Massey Public School, 745 Smyth Road, Ottawa, ON. April 2023.**

CM3 completed a Phase One ESA in April, 2023 that identified three PCAs on-site related to transformer use and a former underground storage tank. One off-site PCA was identified related to a fuel oil spill at 673 Smyth Road. The following APEC and COCs were identified on the subject property:

APEC	Location	Cause of Concern	COCs
1	The boiler room and surrounding area.	Former underground storage tank (UST) related to historic contaminant release on-site.	BTEX, PHCs F1-F4

BTEX Benzene, toluene, ethylbenzene, xylenes
PHCs F1-F4 Petroleum hydrocarbons F1 to F4 fractions

The findings of the Phase One ESA identified one APEC on the subject property due to a former UST and historic contaminant release from the UST, **Figure 2**. The contaminants of concern were identified as BTEX and PHCs F1-F4. The Phase Two ESA was undertaken to characterize soil and groundwater conditions and assess the presence of contaminants at the APEC.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of Site Investigation

The purpose of the investigation was to assess the presence of potential contaminants of concern at one APEC, identified in the Phase One ESA, and to assess the soil quality at the location of a proposed bus loop. The site investigation was completed following the Canadian Standards Association (CSA) Standard Z769-00 (R2008) and in general accordance with O.Reg. 153/04. The scope of work for the investigation included:

- The determination of the locations of all underground utilities by a third-party utility locator;
- The advancement of six boreholes, two of which were completed as monitoring wells;
- The continuous collection of soil samples during the drilling of boreholes for soil logging and on-site field screening;
- The selection of soil samples from all boreholes for laboratory analysis of one or more of PHCs (F1-F4), BTEX, PAHs, pH, and metals;
- The measurement of the depth to LPH (if present) and groundwater in all newly installed monitoring wells; and,
- The collection of groundwater samples from all newly installed monitoring wells for laboratory analysis of PHCs (F1-F4), BTEX, and PAHs.
- The evaluation of the analytical results with respect to applicable MECP SCS (O.Reg. 153/04) and excess soil SCS (O.Reg. 406/19).
- Provide recommendations regarding excess soil management during construction of the bus loop.

4.2 Media Investigated

The Phase Two ESA included the investigation of soil and groundwater at APEC 1, and soil at the location of the proposed bus loop. Soil and groundwater were selected as the media of investigation based on the findings of the Phase One ESA and contamination identified in previous environmental investigations. Soil samples were collected from boreholes completed at APEC 1 and the bus loop. Groundwater samples were collected from monitoring wells installed at APEC 1. Sediment was not present at the subject property.

4.3 Phase One Conceptual Site Model

Three PCAs were identified on-site related to transformer use and a former underground storage tank. One off-site PCA was identified related to a fuel oil spill at 673 Smyth Road. Only one on-site PCA (former underground storage tank) resulted in an APEC on the subject property. The contaminants of concern included are BTEX and PHCs F1-F4.

Underground services (gas and water) are provided to the site and likely come from the south from Smyth Road. Stormwater catch basins were identified along Smyth Road and Edgecomb Street. One stormwater catch basin was located on the north side of the subject building. Drainage

on the subject property is likely by infiltration on the grass covered areas and overland flow to the catch basins on the asphalt covered areas.

4.4 Deviations From Sampling and Analysis Plan

The analysis of PAHs was added to the sampling and analysis plan for all soil and groundwater samples.

4.5 Impediments

The playground area and utility corridor on the east side of the building limited the borehole drilling locations in relation to the historic contaminant release. Based on the review of previous environmental reports, the monitoring wells installed as part of this Phase Two ESA were within the historic contaminated zone.

5.0 INVESTIGATION METHOD

5.1 General

CM3 was on-site with Ohlman Geotechnical Services Inc. (OGS) on May 11, 2023 to drill four boreholes. CM3 collected soil sample during the drilling for soil logging, field screening, and potentially the submission to a laboratory for the analysis of COCs. Two boreholes were converted to monitoring wells. CM3 collected groundwater samples after developing and purging the wells for the submission to a laboratory for the analysis of COCs.

5.2 Drilling and Excavating

A total of six boreholes (BH1 through BH4 and MW1 and MW2) advanced on May 11, 2023. Two of the six boreholes were converted to monitoring wells (MW1 and MW2). The borehole drilling was completed by OGS of Almonte, Ontario, under the supervision of CM3. The boreholes were advanced using a truck mounted auger drill equipped with hollow stem augers. Boreholes MW1 and MW2 were advanced at APEC 1, identified in the Phase One ESA. Boreholes BH1 through BH4 were advanced to address the excess soil management for the proposed bus loop project. The borehole and monitoring well locations are provided on **Figure 3** and **Figure 4**.

5.3 Soil: Sampling

Soil samples were collected from 0.0 meters m bg to a maximum of 3.05 m bg using a 60 cm long, 5.1 cm diameter split spoon sampler. Soil samples were logged at the time of drilling for grain size, colour, moisture content, and visual or olfactory evidence of impacts. The sampling equipment was washed and rinsed between each sample interval and borehole location to prevent cross contamination.

At the time of recovery, a portion of each sample was placed into a polyethylene bag for headspace combustible vapour analysis. The remainder of each sample was placed into the appropriate laboratory supplied sample containers for the required analysis following MECP sampling protocols. The sample containers were placed into an ice chilled cooler pending submission to the laboratory for analysis.

5.4 Field Screening Measurements

The bagged soil samples were allowed to equilibrate to ambient temperature prior to combustible vapour readings being collected. The vapour concentrations were measured and recorded from the bag sample headspace using an RKI Eagle combustible vapour meter calibrated to hexane and operated in methane elimination mode. The intake probe of the vapour meter was inserted into the plastic bag and the highest vapour reading from each sample was recorded in parts per million (ppm). The results of the vapour analysis and field screening were used in the selection of samples for laboratory analysis.

5.5 Ground Water: Monitoring Well Installation

Boreholes MW1 and MW2 were converted to monitoring wells. Monitoring well construction consisted of 50 mm outside diameter, flush-threaded schedule 40 PVC well screens and risers. At each borehole, a 10-slot well screen was placed with the intention of intercepting the water table to allow for the detection of LPH, if present. A silica sand pack was placed around the outside of the well screen in the annular space of the borehole to a minimum of 0.3 m above the screened interval. A bentonite seal was placed above the sand pack to approximately 0.3 m bg. Monitoring wells were finished below grade with a protective steal flush mount cover.

5.6 Ground Water: Field Measurement of Water Quality Parameters

Water quality parameters such as pH, specific conductance, and temperature were not measured as part of this assessment.

5.7 Ground Water: Sampling

Groundwater was measured in all monitoring wells on May 12, 2023, using a Heron Instruments Inc. water level meter with fixed probe. The depth to LPH (if present) and groundwater were measured the nearest millimetre from the highest point of the well riser. The interface probe was cleaned and rinsed with distilled water between each well to prevent cross contamination. Liquid phase hydrocarbons were not observed.

5.8 Analytical Testing

Soil and groundwater samples selected for analysis were submitted to Paracel Laboratories Limited (Paracel) of Ottawa, Ontario. Samples were submitted on the day of collection for regular turnaround.

Nine sub surface soil samples were collected from two boreholes at APEC 1 and two samples were submitted for analysis of PHCs (F1-F4), BTEX, and PAHs. Four soil samples collected from boreholes completed in the location of the proposed bus loop were submitted for analysis of PHCs (F1-F4), BTEX, PAHs, and metals.

Two groundwater samples were collected from two monitoring wells in APEC 1, for analysis of PHCs (F1-F4), BTEX, and PAHs.

5.9 Residue Management Procedures

Soil cuttings from drilling and water from well development and purging was left in a 200 L metal drum on-site pending testing and pickup for disposal.

5.10 Elevation Surveying

The locations of all newly installed monitoring wells were referenced to existing site buildings and structures. The ground surface and monitoring well top of pipe elevations were referenced to a

permanent structure (gas meter pad) using a TopCon AT-B4 automatic level. The ground surface and top of pipe elevations are included in Table 1 and within the borehole logs (Appendix A).

5.11 Quality Assurance and Quality Control Measures

CM3 followed a quality assurance and quality control (QA/QC) program to ensure that the results of the Phase II ESA were representative of site conditions. The QA/QC program included general field procedures to maintain sample integrity to demonstrate that the field sampling techniques were capable of yielding reproducible results. The general field QA/QC procedures included, but were not limited to:

- A new pair of disposable nitrile gloves was used for each sample collected;
- Sampling equipment was either single use or was dedicated to a specific location (i.e. LDPE tubing for monitoring well sampling);
- Equipment that came into contact with the media to be collected (interface probe, stainless-steel trowel, etc.) was decontaminated between each monitoring location or sample;
- Clean, laboratory prepared sample containers containing the required preservatives were obtained from the laboratory for the proposed analyses;
- Sample containers were labelled prior to sample collection;
- Samples were placed in the appropriate sample containers for the selected analyses, following CM3 standard operating procedures and MECP protocols;
- Immediately following collection, all samples were stored in laboratory supplied coolers with the appropriate packing materials and ice packs, pending shipment to the laboratory; and
- Chain of Custody forms with CM3 contact information, date sampled, sample matrix, number and type of containers, and requested analyses travelled with all samples delivered to the laboratory for analysis.

All samples collected by CM3 were given unique sample identification and field staff recorded the location and identification of each sample collected using field logs and/or notebooks. Chain of Custody forms were filled out on site and travelled with all samples placed in coolers delivered to the laboratory for analysis. Each Chain of Custody included the CM3 contact information, date sampled, sample matrix, number and type of containers, and requested analyses.

Paracel is a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory that uses Ministry of Environment recognized methods to conduct analyses and follows an in-house QA/QC program. Paracel employs method blanks, control standard samples, certified reference material standards, method spikes, replicates, duplicates and instrument blanks as part of their internal QA/QC programs. The results of the laboratory QA/QC are reported in the laboratory certificates. If the internal QA/QC criteria are not met, the laboratory either re-analyses the affected samples or qualifies the results.

6.0 REVIEW AND EVALUATION

6.1 Geology

The site geology was determined based on the borehole drilling and soil logging. Surface materials included asphalt and grass, typically underlain by a silty sand or silty clay observed to a maximum depth of 3.05 m bg. Bedrock was not encountered during the investigation. The site stratigraphy is provided on the borehole logs, Appendix A.

6.2 Groundwater: Elevations and Flow Direction

Groundwater flow direction could not be calculated based on the information collected as part of this assessment. Groundwater elevations in the monitoring wells are provided in **Table 1**. The regional groundwater flow direction was inferred to be west toward the Rideau River based on local topography and the presence of water bodies.

6.3 Groundwater: Hydraulic Gradients

The hydraulic gradient was not calculated as part of this assessment.

6.4 Fine-Medium Soil Texture

Based on visual observations, the soil at the site consists of both coarse grained and medium to fine grained soils. The soils were considered coarse grained for the O.Reg. 153/04 SCS. The stratigraphy observed at the site is provided on the borehole logs, **Appendix A**.

6.5 Soil: Field Screening

A total of 17 soil samples were collected from boreholes for field screening and combustible vapour analysis. The samples showed combustible vapour concentrations ranging from 0 ppm (not detected) to 25 ppm. The soil combustible vapour concentrations are included on the borehole logs (**Appendix A**).

6.6 Soil Quality

A total of six soil samples were analysed for one or more COCs. Soil samples MW1 S3 and MW2 S2, collected from boreholes completed at APEC 1, were analysed for of PHCs (F1-F4), BTEX, and PAHs. Soil samples BH1 S1, BH2 S2, BH3 S1 and BH4 S2, collected from boreholes in the proposed bus loop were analysed for of PHCs (F1-F4), BTEX, PAHs and metals. Soil samples BH1 S1 and BH4 S2 were also analyzed for pH. The soil sample analytical results are summarized in **Table 2**. The borehole locations and soil quality are provided on **Figure 3**. The soil sample laboratory reports are provided in **Appendix B**.

APEC 1 – Boiler Room and Surrounding Area

Boreholes MW1 and MW2 were advanced at APEC 1 and soil samples MW1 S3 and MW2 S2, were analysed for of PHCs (F1-F4), BTEX, and PAHs. The laboratory results showed:

- MW1 S3: BTEX, PHCs (F1-F4), BTEX, and PAHs met the MECP Table 3 SCS.
- MW2 S2: BTEX, PHCs (F1-F4), BTEX, and PAHs met the MECP Table 3 SCS.

Proposed Bus Loop Location

Boreholes BH1 through BH4 were advanced at the proposed bus loop location on the south side of the subject building. Soil samples BH1 S1, BH2 S2, BH3 S1 and BH4 S2, were analysed for of PHCs (F1-F4), BTEX, PAHs and metals. The laboratory results showed:

- BH1 S1: BTEX, PHCs (F1-F4), BTEX, PAHs and metals met the MECP Table 3 SCS and the O.Reg. 406/19 Table 1 SCS.
- BH2 S2: BTEX, PHCs (F1-F4), BTEX, PAHs and metals met the MECP Table 3 SCS and the O.Reg. 406/19 Table 1 SCS.
- BH3 S1: BTEX, PHCs (F1-F4), BTEX, PAHs and metals met the MECP Table 3 SCS and the O.Reg. 406/19 Table 1 SCS.
- BH4 S2: BTEX, PHCs (F1-F4), BTEX, PAHs and metals met the MECP Table 3 SCS and the O.Reg. 406/19 Table 1 SCS.

Soil samples BH1 S1 and BH4 S2 were also submitted for pH analysis to determine the pH of the soil at the site. The reported pH values ranged from 6.71 to 6.89 pH units. The MECP pH range for non-sensitive sites is 5 to 9 pH units in surface soil and 5 to 11 pH units in subsurface soil. The site was not considered environmentally sensitive based on the above values. The results of the pH analyses are provided on the laboratory reports, **Appendix B**.

6.7 Ground Water Quality

Monitoring wells MW1 and MW2 were installed at APEC 1. Groundwater samples MW1 and MW2 were analysed for PHCs (F1-F4), BTEX, and PAHs. Groundwater sampling was not completed at the proposed bus loop. The groundwater sample analytical results are summarized in Table 3. The monitoring well locations and groundwater quality are provided on Figure 4. The groundwater sample laboratory reports are provided in Appendix B.

APEC 1 – Boiler Room and Surrounding Area

Groundwater samples MW1 and MW2 were submitted for analysis of PHCs (F1-F4), BTEX, and PAHs. The laboratory results showed:

- MW1: PHCs (F1-F4), BTEX, and PAHs were not detected, meeting the MECP Table 3 SCS.
- MW2: PHCs (F1-F4), BTEX, and PAHs were not detected, meeting the MECP Table 3 SCS

6.8 Quality Assurance and Quality Control Results

Filed duplicates were not collected during the Phase Two ESA, due to budgetary constraints. However, all samples were collected following industry protocols and CM3's internal QA/QC procedures. All samples were received by the laboratory withing the specified holding time for the requested analyses. The laboratory did not identify any samples that did not meet the appropriate protocols with respect to container type, preservation method, or storage requirement.

The laboratory employs method blanks, control standard samples, certified reference material standards, method spikes, replicates, duplicates, and instrument blanks as part of their internal QA/QC programs. The results of the laboratory QA/QC are reported in the laboratory certificates. If the internal QA/QC criteria are not met, the laboratory either re-analyses the affected samples or qualifies the results.

The groundwater laboratory report included a qualifier on the results indicating that the surrogate recovery for the samples were outside of the established control limits due to a sample matrix effect. The accepted range of percent recovery is 50% to 140%, the surrogate recovery for 2-Fluorobiphenyl was 37.8% for MW1 and 47% for MW2. Because the surrogate recovery for Terphenyl-d14 was within the accepted range and the results of the analysis were non-detect for all parameters, it is of CM3's opinion that the analytical results are accurate. The method quality control blanks, method spikes and laboratory duplicate results reported as part of the laboratory QA/QC measures were within the laboratory accepted criteria. No qualifiers were provided for any of the soil analysis. The laboratory QA/QC results for the soil and groundwater analyses are provided in the laboratory reports, **Appendix B**.

6.9 Phase Two Conceptual Site Model

Three PCAs were identified on-site related to transformer use and a former underground storage tank. One off-site PCA was identified related to a fuel oil spill at 673 Smyth Road. Only one on-site PCA (former underground storage tank) resulted in an APEC on the subject property. Underground services (gas and water) are provided to the site and likely come from the south from Smyth Road. Stormwater catch basins were identified along Smyth Road and Edgecomb Street. One stormwater catch basin was located on the north side of the subject building. Drainage on the subject property is likely by infiltration on the grass covered areas and overland flow to the catch basins on the asphalt covered areas.

Section 35 of O.Reg. 153, Non-potable site condition standards, are applicable to the subject property based on the following:

- The subject properties are not in a designated wellhead protection area.

Section 41 of O.Reg. 153, Site Condition Standards, Environmentally Sensitive Areas, does not apply to the subject property based on the following:

- the subject property:
    - was not within an area of natural significance,

- did not include or is adjacent to an area of natural significance,
- did not include land within 30 metres of an area of natural significance.

Section 43.1 of O.Reg. 153, Site condition standards, shallow soil property or water body, is not applicable to the subject property base don the following:

- The subject properties are not within 30 m of a water body.

The site geology was determined based on the borehole drilling and soil logging. Surface materials included asphalt and grass, typically underlain by a silty sand or silty clay observed to a maximum depth of 3.05 m bg. Bedrock was not encountered during the investigation. Bedrock geology within the Phase One study area was described as shale, limestone, dolostone, and siltstone of the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member, and Eastview Member. Groundwater was identified at 1.199 m below the top of casing for MW1 and 1.331 m below the top of casing for MW2.

The proposed development of the bus loop is located south of the main building and north of Smyth Road.

The Phase Two ESA did not identify contaminants of concern in soil or groundwater within the APEC or in soil in the work area of the proposed bus loop.

7.0 EXCESS SOIL MANAGEMENT

7.1 Soil Volume and Quality

An accurate soil volume estimate could not be made by CM3 at this stage in the project. Based on the soil sampling and analysis completed to date, the soil expected to be affected by the bus loop project meets the O.Reg. 406/19 Table 1 Full Depth Background Site Condition Standards for all listed land uses.

7.2 Receiving Site for Final Placement

The results of the soil analysis indicate that the soil could remain on-site if it can be used for landscaping, re-grading, etc. If the soil is to be disposed of, the soil would be suitable for use as Table 1 soil as per O.Reg. 406/19.

7.3 Additional Requirements

Before removing excess soil from the project area, the project leader must meet the following requirements to be in compliance with O.Reg. 406/19:

1. Preparation of an assessment of past uses (Phase One ESA complete – no further action required);
2. Preparation of a sample and analysis plan (Phase Two ESA and project specific soil testing complete – may require additional sampling to meet receiving site as per O.Reg. 406/19);
3. Preparation of a soil characterization report (Phase Two ESA and project specific testing report complete – may require additional reporting based on Item 2 above);
4. Preparation of an excess soil destination assessment report (receiving site); and
5. Development and implementation of a soil tracking system.

CM3 should be notified if there are changes to the scope of the project as the above requirements may be impacted.

8.0 CONCLUSIONS

CM3 Environmental Inc. was retained by the OCDSB to complete a Phase Two ESA for the property located at 745 Smyth Road in Ottawa, Ontario. The purpose of the Phase Two ESA was to identify contaminants of concern, if present, in soil and groundwater, and to provide recommendations for the management of excess soil related to the construction of a bus loop on the south side of the subject building. The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application for the construction of the bus loop. The Phase Two ESA was not completed in support of a record of site condition.

The investigation included the advancement of six boreholes, two of which were converted to monitoring wells to assess the soil and groundwater conditions on-site. The results of the Phase Two ESA and project specific soil sampling are summarized as follows:

Site Characterization

- The overburden soil generally encountered at the site consisted of asphalt and grass underlain by silty sands or silty clays to a maximum observed depth of 3.05 m bg. Bedrock was not encountered during the investigation.
- Groundwater was present in MW1 at 1.199 m below the TOC and in MW2 at 1.331 m below the TOC.
- On-site groundwater flow could not be determined based on the information obtained in this assessment. The inferred regional groundwater flow direction was west towards the Rideau River based on topography and the presence of local water bodies.

Soil Quality

- Two soil samples (MW1 S3 and MW2 S2) were collected from APEC 1 and analyzed for contaminants of concern. Concentrations were either non-detectable or below the MECP Table 3 SCS (O.Reg. 153/04).
- Four soil samples (BH1 S1, BH2 S2, BH3 S1, and BH4 S2) were collected from the proposed bus loop location and analyzed for contaminants of concern. Concentrations were either non-detectable of below the MECP Table 1 SCS (O.Reg. 406/19).

Groundwater Quality

- Two groundwater samples (MW1 and MW2) were collected from APEC 1 and analyzed for contaminants of concern. Concentrations were either non-detectable or below the MECP Table 3 SCS.

The Phase Two ESA did not identify any soil or groundwater impacts at the subject property. The analytical results showed that all COCs were either not detected or were at concentrations that met the applicable MECP Table 3 (O.Reg. 153/04) SCS. The COCs in soil from the location of the proposed bus loop also met the Table 1 (O.Reg. 406/19) SCS. Excess soil generated during construction of the bus loop could be reused on-site for landscaping, re-grading, etc. If the soil is to be disposed of, the soil would be suitable for use as Table 1 soil as per O.Reg. 406/19. The

9.0 LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by CM3 Environmental Inc. for the OCDSB. It is intended for the sole and exclusive use of the OCDSB, its affiliated companies and partners and their respective insurers, agents, employees and advisors. Any use, reliance on, or decision made by any person other than the OCDSB based on this report is the sole responsibility of such other person. CM3 Environmental Inc. and the OCDSB make no representation or warranty to any other person with regard to this report and the work referred to in this report, and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by CM3 Environmental Inc. with respect to this report and any conclusions or recommendations made in this report reflect CM3 Environmental Inc.'s judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site and substances addressed by the investigation may exist in areas of the site not investigated.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

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removal of the excess soil from the subject property must follow the requirements of O.Reg. 406/19.

8.1 Signatures

This Phase Two ESA was completed under supervision of Mr. Marc MacDonald, P.Eng. of CM3 Environmental Inc. Mr. MacDonald is a Qualified Person as defined in O.Reg. 153/04 and confirms that this report includes all findings and conclusions of the Phase Two ESA.

We trust that the above is satisfactory for your purposes at this time. Please feel free to contact the undersigned if you have any questions.

Yours sincerely,

CM3 Environmental Inc.

Prepared By:

Ethan Risk, B.Eng., EIT
Project Manager

Reviewed By:

Karl Bilyj, B.Sc. P. Geo., QP$_{ESA}$
Senior Geoscientist

Reviewed by:

Marc MacDonald, P.Eng. QP$_{ESA}$, EP
Principal

10.0 REFERENCES

Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended, Ontario Ministry of Environment, 2004.

Guide for Completing Phase Two Site Assessments under Ontario Regulation 153/04, Ontario Ministry of Environment, June 2011.

Guide for Completing Phase One Site Assessments under Ontario Regulation 153/04, Ontario Ministry of Environment, June 2011.

Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, Ontario Ministry of Environment, December 1996.

Ontario Regulation 153/04 (made under the Environmental Protection Act), as amended, Ontario Ministry of Environment, 2004.

Ontario Regulation 903 (made under Ontario Water Resources Act, R.S.O. 1990, c. O.40), as amended, Ontario Ministry of Environment, 2003.

Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Ontario Ministry of Environment, April, 2011.

FIGURES

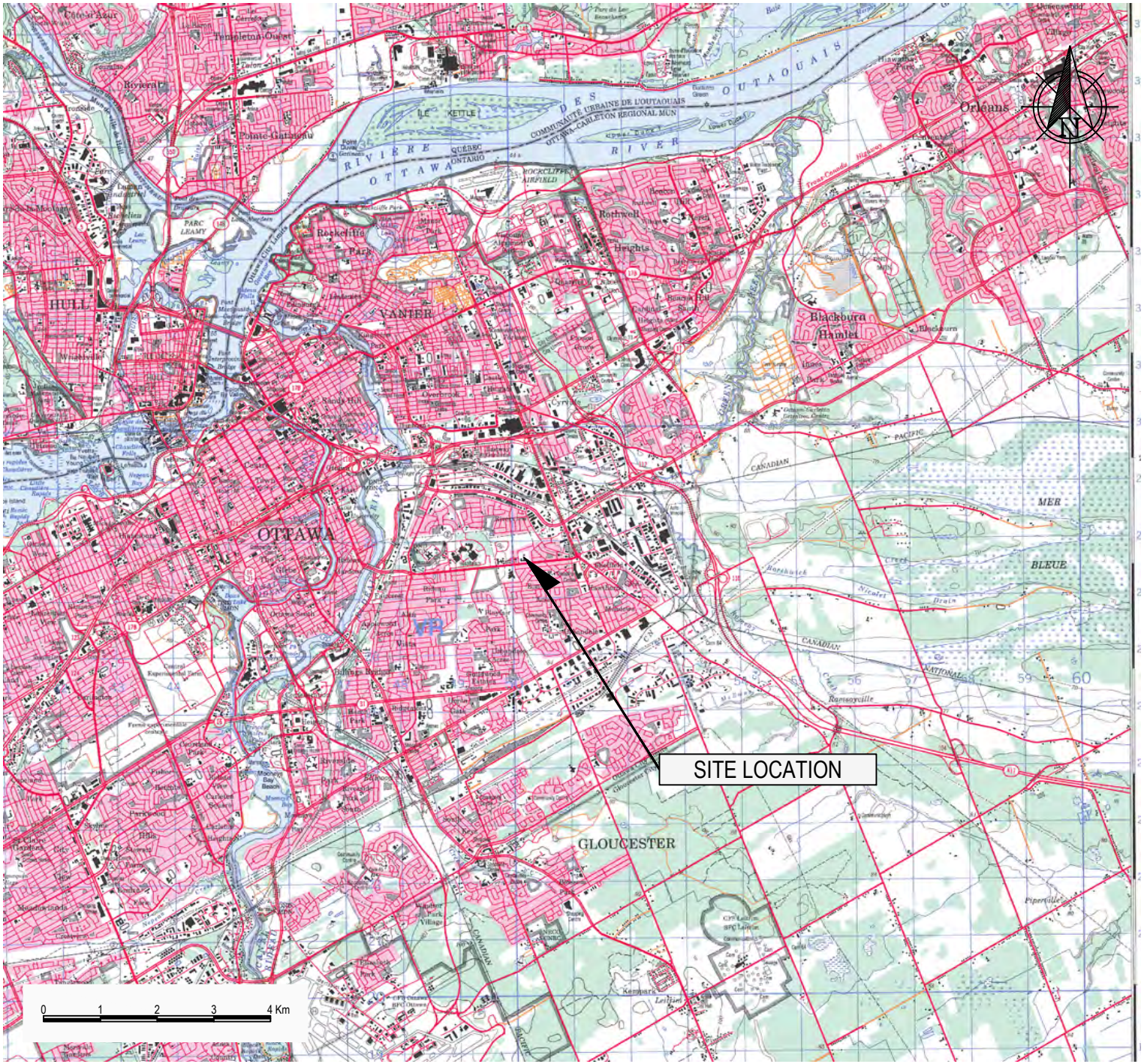
Phase Two Environmental Site Assessment

745 Smyth Road

Ottawa, Ontario

Ottawa-Carleton District School Board

ER1020



cm3 environmental

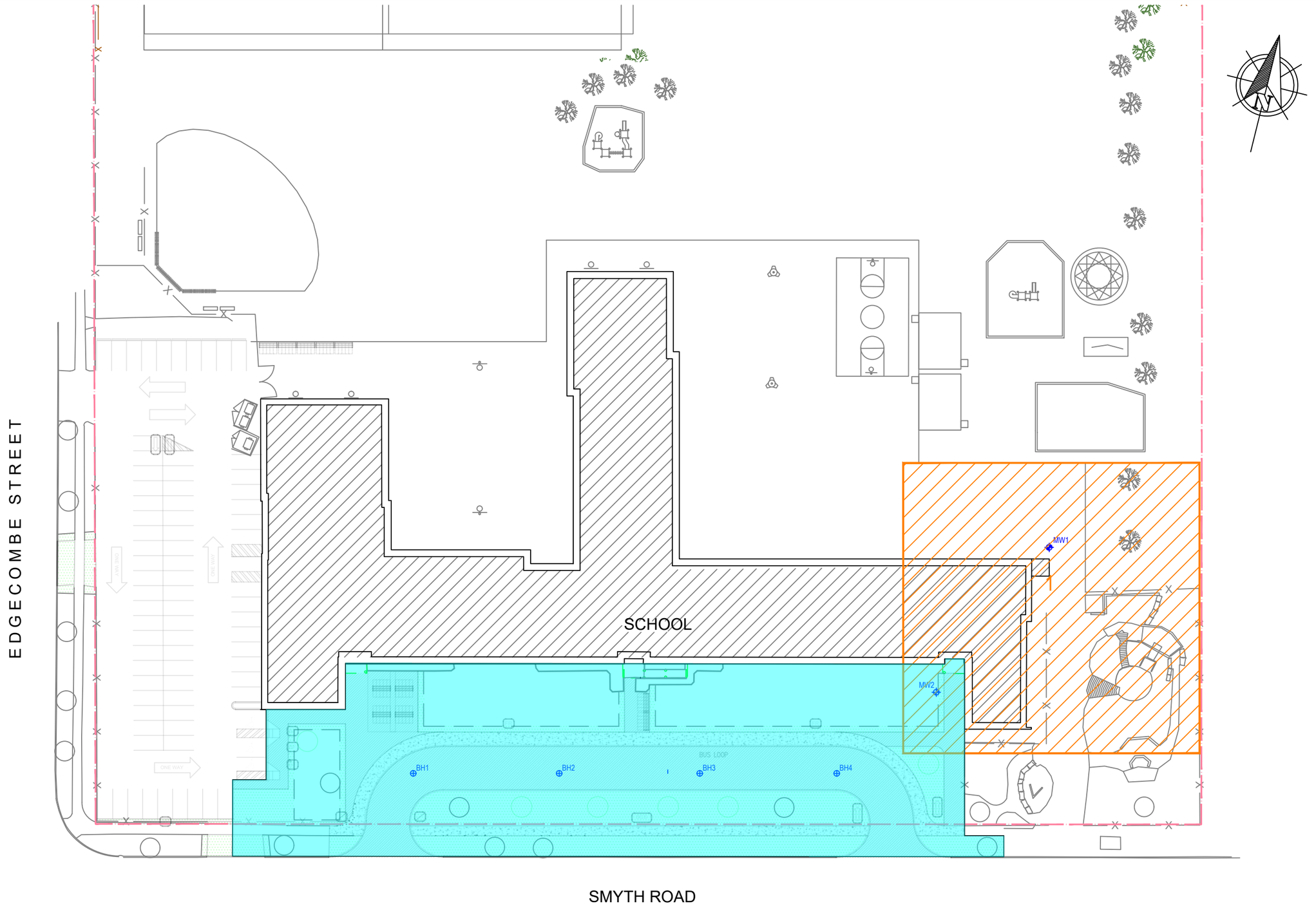
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

OTTAWA-CARLETON
DISTRICT SCHOOL BOARD

PHASE II
ENVIRONMENTAL SITE ASSESSMENT
VINCENT MASSEY HIGH SCHOOL
745 SMYTH ROAD,
OTTAWA, ONTARIO
K1G 1N9

SITE LOCATION

Project: ER1020	Drawn By: KS
Date: MAY 2023	Reviewed By: ER
Scale: AS SHOWN	Figure: 1



LEGEND

- PROPERTY BOUNDARY
- SITE
- APEC
  FORMER UNDERGROUND FUEL STORAGE TANK, HISTORIC ON-SITE RELEASE (PCA 4)
- PROPOSED BUS LOOP PROJECT AREA

*SITE PLAN PROVIDED BY OCDSB

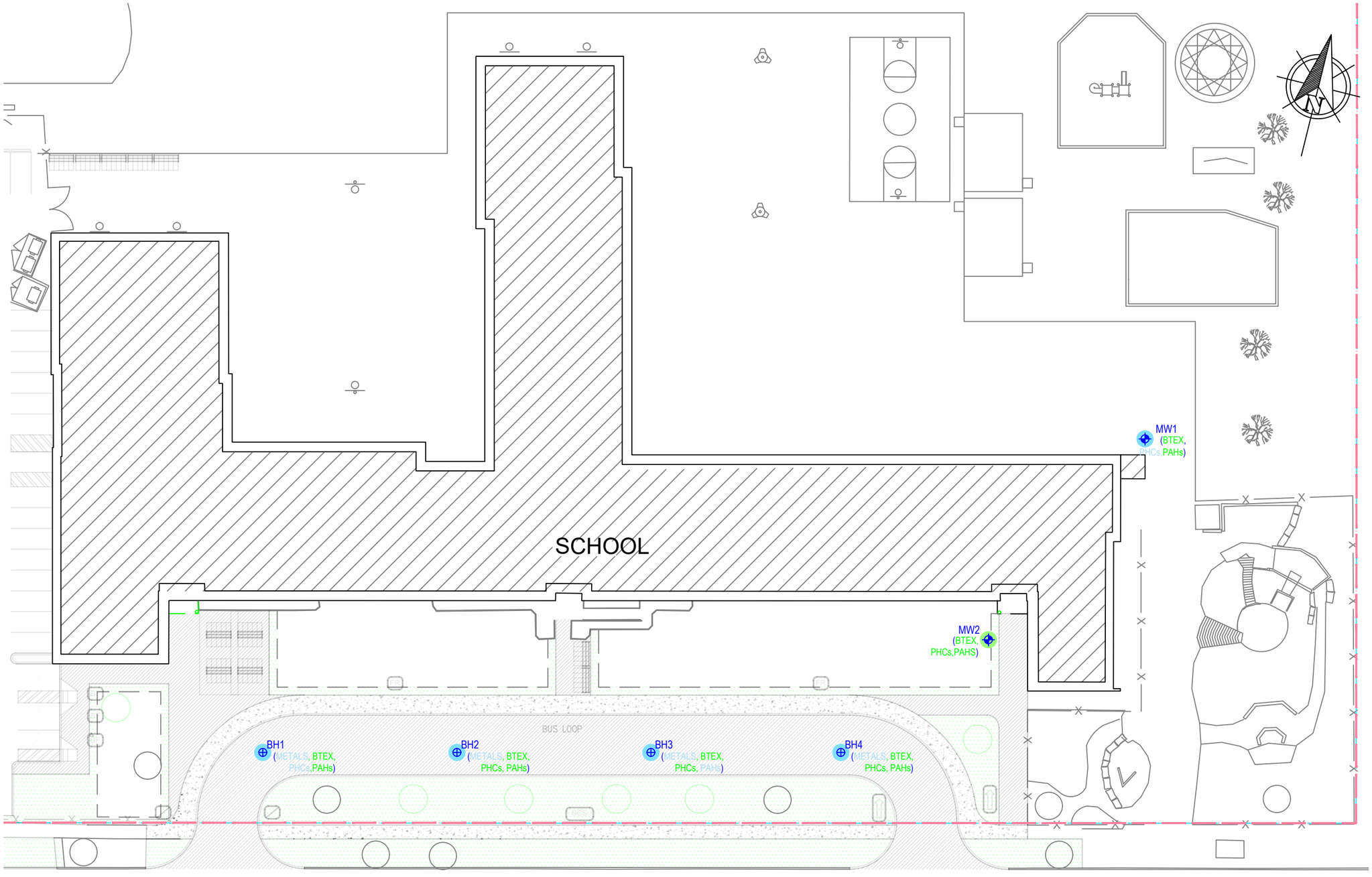
cm3 environmental
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

OTTAWA-CARLETON DISTRICT SCHOOL BOARD

PHASE II
ENVIRONMENTAL SITE ASSESSMENT
VINCENT MASSEY HIGH SCHOOL
745 SMYTH ROAD,
OTTAWA, ONTARIO
K1G 1N9

AREA OF POTENTIAL ENVIRONMENTAL CONCERN & PROPOSED BUS LOOP

Project:	Drawn By:
ER1020	KS
Date:	Reviewed By:
MAY 2023	ER
Scale:	Figure:
NTS	2



LEGEND

- PROPERTY BOUNDARY
- SITE
- 2023 BOREHOLE
- 2023 MONITORING WELL

SOIL SAMPLES ANALYSED FOR CONTAMINANTS OF CONCERN*:

- NOT DETECTED
- < MECP TABLE 1 AND TABLE 3 SCS
- > MECP TABLE 1 AND/OR TABLE 3 SCS

Scale 1:500

0 5 10 15 20 m

(Approx. When plotted 11x17)

SITE PLAN PROVIDED BY OCDSB

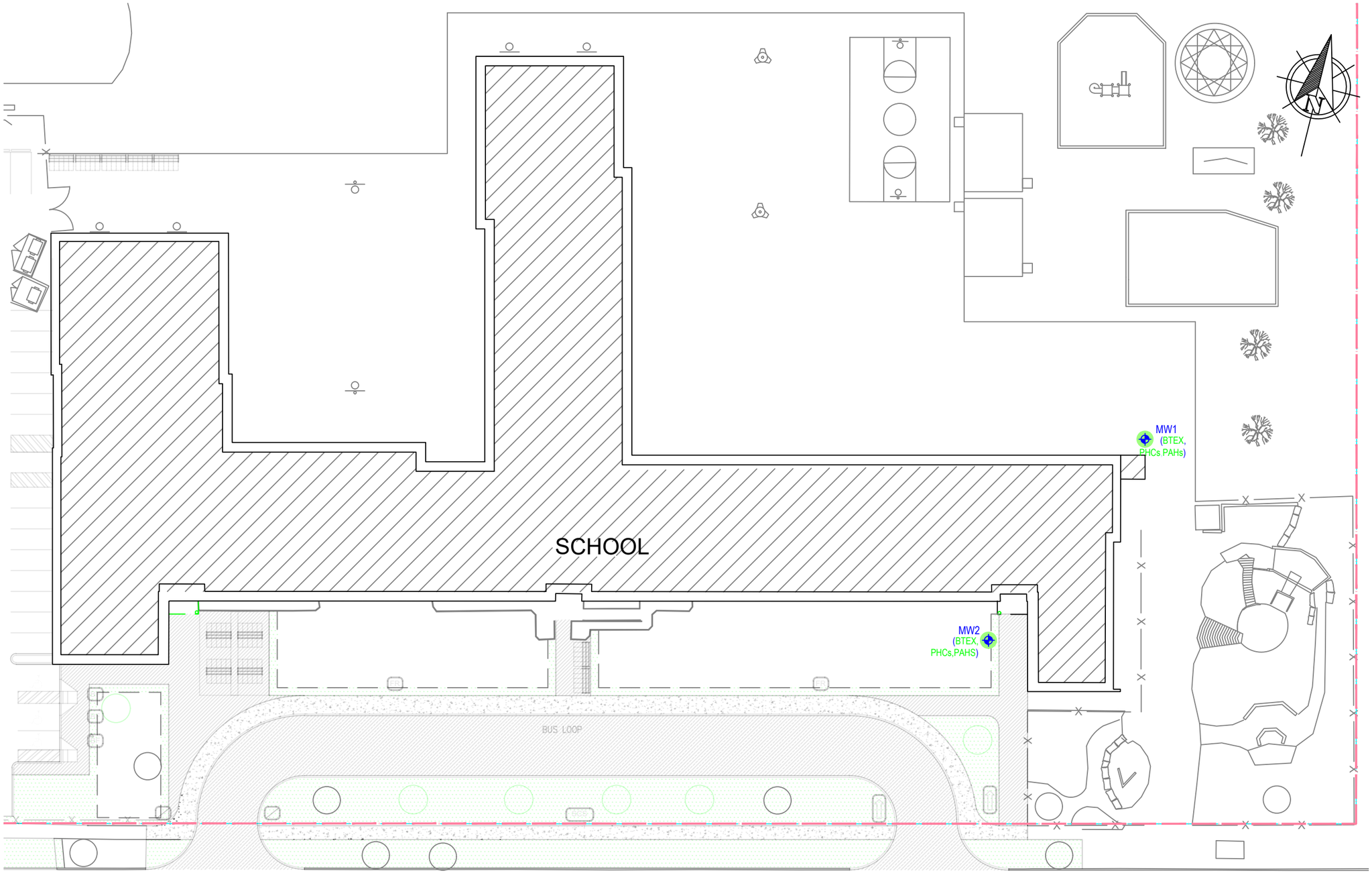
cm3 environmental
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

OTTAWA-CARLETON DISTRICT SCHOOL BOARD

PHASE II
ENVIRONMENTAL SITE ASSESSMENT
VINCENT MASSEY HIGH SCHOOL
745 SMYTH ROAD,
OTTAWA, ONTARIO
K1G 1N9

SOIL QUALITY

Project:	Drawn By:
ER1020	KS
Date:	Reviewed By:
MAY 2023	ER
Scale:	Figure:
1:500	3



LEGEND

- PROPERTY BOUNDARY
- SITE
- 2023 BOREHOLE
- 2023 MONITORING WELL

GROUNDWATER SAMPLES ANALYSED FOR CONTAMINANTS OF CONCERN*:

- NOT DETECTED
- < MECP TABLE 3 SCS
- > MECP TABLE 3 SCS

Scale 1:500

0 5 10 15 20 m

(Approx. When plotted 11x17)

*SITE PLAN PROVIDED BY OCDSB

cm3 environmental
5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

OTTAWA-CARLETON DISTRICT SCHOOL BOARD

PHASE II
ENVIRONMENTAL SITE ASSESSMENT
VINCENT MASSEY HIGH SCHOOL
745 SMYTH ROAD,
OTTAWA, ONTARIO
K1G 1N9

GROUNDWATER QUALITY

Project:	Drawn By:
ER1020	KS
Date:	Reviewed By:
MAY 2023	ER
Scale:	Figure:
1:500	4

TABLES

Phase Two Environmental Site Assessment

745 Smyth Road

Ottawa, Ontario

Ottawa-Carleton District School Board

ER1020

Table 1: Groundwater Level Measurements

Phase Two Environmental Site Assessment
745 Smyth Road, Ottawa, ON
ER1020

Well ID	Date	TOC (marl)	Grade (marl)	Depth to		Elevation	
				LPH (mbtoc)	GW (mbtoc)	LPH (marl)	GW (marl)
MW1	12-May-23	101.623	101.492	NV	1.199	--	100.424
MW2	12-May-23	101.010	100.891	NV	1.331	--	99.679

Notes:
TOC - top of casing
marl - metres above reference level
mbtoc - metres below top of casing
LPH - liquid phase hydrocarbons
GW - groundwater
NM - not measured
NV / -- - no value/LPH not present

TABLE 2: Summary of Soil Analytical Results

Phase Two Environmental Site Assessment
745 Smyth Road, Ottawa, ON
ER1020

Parameter / Sample ID >	MDL	MECP Table 3 SCS	MECP Table 1 SCS	MW1 S3	MW2 S2	BH1 S1	BH2 S2	BH3 S1	BH4 S2
Depth (m bg) >				1.22-1.83	1.22-1.83	0-0.61	0.61-1.22	0-0.61	0.61-1.22
HSVL (ppm) >				25	0	0	5	0	0
Sample Date >				11-May-23	11-May-23	11-May-23	11-May-23	11-May-23	11-May-23
pH				N/A	N/A	6.71	N/A	N/A	6.89
Metals									
Antimony	1	7.5	1.3	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Arsenic	1	18	18	N/A	N/A	1.9	3.3	1.6	5.1
Barium	1	390	220	N/A	N/A	36.5	111	25.6	153
Beryllium	0.5	5	2.5	N/A	N/A	ND (0.5)	0.6	ND (0.5)	0.6
Boron	5	120	36	N/A	N/A	ND (5.0)	ND (5.0)	ND (5.0)	5.1
Cadmium	0.5	1.2	1.2	N/A	N/A	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Chromium	5	160	70	N/A	N/A	20.9	38	15.8	50.9
Cobalt	1	22	21	N/A	N/A	4.8	10.3	3.5	14.5
Copper	5	180	92	N/A	N/A	8.3	13.5	ND (5.0)	21.9
Lead	1	120	120	N/A	N/A	7	7	2.1	15.4
Molybdenum	1	6.9	2	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Nickel	5	130	82	N/A	N/A	10.1	19.4	6.7	28.1
Selenium	1	2.4	1.5	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Silver	0.3	25	0.5	N/A	N/A	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)
Thallium	1	1	1	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Uranium	1	23	2.5	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Vanadium	10	86	86	N/A	N/A	25.6	50.5	27.1	62.6
Zinc	20	340	290	N/A	N/A	27.5	64.9	ND (20.0)	77.3
Volatiles									
Benzene	0.02	0.17	0.02	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Ethylbenzene	0.05	15	0.05	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Toluene	0.05	6	0.2	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
m/p-Xylene	0.05	NV	NV	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
o-Xylene	0.05	NV	NV	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Xylenes, total	0.05	25	0.05	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)

TABLE 2: Summary of Soil Analytical Results

Phase Two Environmental Site Assessment
745 Smyth Road, Ottawa, ON
ER1020

Parameter / Sample ID >	MDL	MECP Table 3 SCS	MECP Table 1 SCS	MW1 S3	MW2 S2	BH1 S1	BH2 S2	BH3 S1	BH4 S2
Depth (m bg) >				1.22-1.83	1.22-1.83	0-0.61	0.61-1.22	0-0.61	0.61-1.22
HSVL (ppm) >				25	0	0	5	0	0
Sample Date >				11-May-23	11-May-23	11-May-23	11-May-23	11-May-23	11-May-23
Hydrocarbons									
F1 PHCs (C6-C10)	7	65	25	ND (7)	ND (7)	ND (7)	ND (7)	ND (7)	ND (7)
F2 PHCs (C10-C16)	4	150	10	ND (4)	ND (4)	ND (4)	ND (4)	ND (4)	ND (4)
F3 PHCs (C16-C34)	8	1300	240	18	ND (8)	11	ND (8)	ND (8)	ND (8)
F4 PHCs (C34-C50)	6	5600	120	20	ND (6)	9	ND (6)	ND (6)	ND (6)
Semi-Volatiles									
Acenaphthene	0.02	58	0.072	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Acenaphthylene	0.02	0.17	0.093	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Anthracene	0.02	0.74	0.16	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Benzo[a]anthracene	0.02	0.63	0.36	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Benzo[a]pyrene	0.02	0.3	0.3	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Benzo[b]fluoranthene	0.02	0.78	0.47	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Benzo[g,h,i]perylene	0.02	7.8	0.68	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Benzo[k]fluoranthene	0.02	0.78	0.48	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Chrysene	0.02	7.8	2.8	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Dibenzo[a,h]anthracene	0.02	0.1	0.1	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Fluoranthene	0.02	0.69	0.56	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.03	ND (0.02)
Fluorene	0.02	69	0.12	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Indeno [1,2,3-cd] pyrene	0.02	0.48	0.23	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1-Methylnaphthalene	0.02	3.4	0.59	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
2-Methylnaphthalene	0.02	3.4	0.59	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Methylnaphthalene (1&2)	0.04	3.4	0.59	ND (0.04)	ND (0.04)	ND (0.04)	ND (0.04)	ND (0.04)	ND (0.04)
Naphthalene	0.01	0.75	0.09	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Phenanthrene	0.02	7.8	0.69	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.02	ND (0.02)
Pyrene	0.02	78	1	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)

Notes:

mg/kg - all concentrations provided in parts per million (milligrams per kilogram)
MDL - reported analytical method detection limit
HSVL - headspace vapour level (combustible vapour meter, calibrated to hexane)
m bg - metres below grade
ppm - parts per million
NV - no standard listed
"<" or "ND ( )" - less than detection limits indicated (refer to laboratory report)
NA - not applicable
MECP Table 3 SCS - Ontario Ministry of Environment, Conservation and Parks (MECP) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. April, 2011.
Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, institutional land use, fine textured soil.
Bold / Italic - indicates concentration above applicable MECP Table 3 SCS
0.5 - MDL above applicable MECP Table 3 SCS (refer to laboratory reports)

TABLE 3: Summary of Groundwater Analytical Results

Phase Two Environmental Site Assessment
745 Smyth Road, Ottawa, ON
ER1020

Parameter / Sample ID > / Sample Date >	MDL	MECP Table 3 SCS	MW1 18-May-23	MW2 18-May-23
Volatiles				
Benzene	0.5	**430**	ND (0.5)	ND (0.5)
Ethylbenzene	0.5	**2300**	ND (0.5)	ND (0.5)
Toluene	0.5	**18000**	ND (0.5)	ND (0.5)
m/p-Xylene	0.5	**NV**	ND (0.5)	ND (0.5)
o-Xylene	0.5	**NV**	ND (0.5)	ND (0.5)
Xylenes, total	0.5	**4200**	ND (0.5)	ND (0.5)
Hydrocarbons				
F1 PHCs (C6-C10)	25	**750**	ND (25)	ND (25)
F2 PHCs (C10-C16)	100	**150**	ND (100)	ND (100)
F3 PHCs (C16-C34)	100	**500**	ND (100)	ND (100)
F4 PHCs (C34-C50)	100	**500**	ND (100)	ND (100)
Semi-Volatiles				
Acenaphthene	0.05	**1700**	ND (0.05)	ND (0.05)
Acenaphthylene	0.05	**1.8**	ND (0.05)	ND (0.05)
Anthracene	0.01	**2.4**	ND (0.01)	ND (0.01)
Benzo[a]anthracene	0.01	**4.7**	ND (0.01)	ND (0.01)
Benzo[a]pyrene	0.01	**0.81**	ND (0.01)	ND (0.01)
Benzo[b]fluoranthene	0.05	**0.75**	ND (0.05)	ND (0.05)
Benzo[g,h,i]perylene	0.05	**0.2**	ND (0.05)	ND (0.05)
Benzo[k]fluoranthene	0.05	**0.4**	ND (0.05)	ND (0.05)
Chrysene	0.05	**1**	ND (0.05)	ND (0.05)
Dibenzo[a,h]anthracene	0.05	**0.52**	ND (0.05)	ND (0.05)
Fluoranthene	0.01	**130**	ND (0.01)	ND (0.01)
Fluorene	0.05	**400**	ND (0.05)	ND (0.05)
Indeno [1,2,3-cd] pyrene	0.05		ND (0.05)	ND (0.05)
1-Methylnaphthalene	0.05	**1800**	ND (0.05)	ND (0.05)
2-Methylnaphthalene	0.05	**1800**	ND (0.05)	ND (0.05)
Methylnaphthalene (1&2)	0.1	**1800**	ND (0.10)	ND (0.10)
Naphthalene	0.05	**6400**	ND (0.05)	ND (0.05)
Phenanthrene	0.05	**580**	ND (0.05)	ND (0.05)
Pyrene	0.01	**68**	ND (0.01)	ND (0.01)

Notes:

µg/L - all concentrations provided in micrograms per litre (parts per billion)
MDL - reported analytical method detection limit
ppm - parts per million
NV - no standard listed
"<" or "ND ( )" - less than detection limits indicated (refer to laboratory report)
NA - not applicable
MECP Table 3 SCS - Ontario Ministry of Environment, Conservation and Parks (MECP) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. April, 2011.
Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, institutional land use, fine textured soil.
Bold / Italic - indicates concentration above applicable MECP Table 3 SCS
0.5 - MDL above applicable MECP Table 3 SCS (refer to laboratory reports)

APPENDIX A

BOREHOLE LOGS

Phase Two Environmental Site Assessment

745 Smyth Road

Ottawa, Ontario

Ottawa-Carleton District School Board

ER1020

BOREHOLE LOG

cm3 environmental

CM³ JOB NO: ER1020

CLIENT:

PROJECT: **Phase II Environmental Site Assessment**
745 Smyth Road
Ottawa, Ontario

BOREHOLE NO: MW1

GROUND ELEVATION: *1.49 m*
TOP ELEVATION: *1.62 m*

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0.0					**ASPHALT**				flushmount in concrete	
		MW1 S1			**GRAVEL** sandy, loose, brown, dry				silica sand j-plug	1
					SAND and GRAVEL loose, brown, moist	5.0			bentonite seal; 50 mm solid PVC pipe	
1.0		MW1 S2						GW = 1.068 mbg (2023-05-12)		
		MW1 S3			**CLAY** silty, trace gravel, soft, grey/dark grey, wet	25.0				0
2.0		MW1 S4				25.0			50 mm 010 slot PVC pipe	-1
		MW1 S5				25.0				
3.0					End of borehole at 3.05 m				bottom cap	

Groundwater Information:
Depth to groundwater from TOP = 1.199 m (2023-05-12)

DRILL DATE: 2023 May 11
DRILLED BY: OGS Inc.
DRILLING METHOD: Hollow Stem Auger
BOREHOLE DIAMETER: 0.2 m (OD)
LOGGED BY: ER
CHECKED BY: MM

NOTES: SPLIT SPOON

BOREHOLE LOG

CLIENT:
PROJECT: **Phase II Environmental Site Assessment**
745 Smyth Road
Ottawa, Ontario

BOREHOLE NO: MW2

GROUND ELEVATION: *0.89 m*
TOP ELEVATION: *1.01 m*

CM³ JOB NO: ER1020

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0.0					**TOPSOIL** some grass, brown, dry				flushmount in concrete	1
		MW2 S1			**SAND** some organic matter, loose, brown, moist	0.0			silica sand j-plug	
									bentonite seal	
1.0									50 mm solid PVC pipe	0
								GW = 1.212 mbg (2023-05-12)		
		MW2 S2			**SAND** some organic matter, loose, brown, wet	0.0				
					SAND silty, soft, dark grey, moist					
2.0		MW2 S3			**CLAY** silty, soft, dark grey, moist	0.0			50 mm 010 slot PVC pipe	-1
					CLAY soft, grey, moist					
		MW2 S4				0.0				-2
3.0					End of borehole at 3.05 m				bottom cap	

Groundwater Information:
Depth to groundwater from TOP = 1.331 m (2023-05-12)

DRILL DATE: 2023 May 11
DRILLED BY: OGS Inc.
DRILLING METHOD: Hollow Stem Auger
BOREHOLE DIAMETER: 0.2 m (OD)
LOGGED BY: ER
CHECKED BY: MM

NOTES: SPLIT SPOON NO RECOVERY

BOREHOLE LOG

cm3 environmental

CLIENT:

PROJECT: **Phase II Environmental Site Assessment**
745 Smyth Road
Ottawa, Ontario

BOREHOLE NO: BH1

GROUND ELEVATION: *Not Surveyed*
TOP ELEVATION: *NA*

CM³ JOB NO: ER1020

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	BOREHOLE COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	DEPTH (m)
					TOPSOIL some grass, loose, brown, dry	10 100				
		BH1 S1			**SAND** loose, brown, dry	0.0				
		BH1 S2			**CLAY** firm, trace red staining, grey, moist	0.0				
1.0										1.0
					End of borehole at 1.22 m					

DRILL DATE: 2023 May 11
DRILLED BY: OGS Inc.
DRILLING METHOD: Hollow Stem Auger
BOREHOLE DIAMETER: 0.1 m (OD)
LOGGED BY: ER
CHECKED BY: MM

NOTES: SPLIT SPOON

BOREHOLE LOG

CLIENT:
PROJECT: **Phase II Environmental Site Assessment**
745 Smyth Road
Ottawa, Ontario

BOREHOLE NO: BH2
GROUND ELEVATION: *Not Surveyed*
TOP ELEVATION: *NA*

CM³ JOB NO: ER1020

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	BOREHOLE COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	DEPTH (m)
					TOPSOIL some grass, loose, brown, dry	10 100				
		BH2 S1			**SAND** loose, brown, dry	0.0				
1.0		BH2 S2			**CLAY** soft, grey, wet	5.0				1.0
					End of borehole at 1.22 m					

DRILL DATE: 2023 May 11
DRILLED BY: OGS Inc.
DRILLING METHOD: Hollow Stem Auger
BOREHOLE DIAMETER: 0.1 m (OD)
LOGGED BY: ER
CHECKED BY: MM

NOTES: SPLIT SPOON

BOREHOLE LOG

cm3 environmental

CLIENT:

PROJECT: **Phase II Environmental Site Assessment**
745 Smyth Road
Ottawa, Ontario

BOREHOLE NO: BH3

GROUND ELEVATION: *Not Surveyed*
TOP ELEVATION: *NA*

CM³ JOB NO: ER1020

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	BOREHOLE COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	DEPTH (m)
					TOPSOIL some grass, root at 0.13 m, loose, brown, dry	10 100				
		BH3 S1			**SAND** loose, brown, dry	0.0				
					SAND loose, brown, wet					
		BH3 S2			**CLAY** firm, trace red staining, dark grey, wet	0.0				
1.0										1.0
					End of borehole at 1.22 m					

DRILL DATE: 2023 May 11
DRILLED BY: OGS Inc.
DRILLING METHOD: Hollow Stem Auger
BOREHOLE DIAMETER: 0.1 m (OD)
LOGGED BY: ER
CHECKED BY: MM

NOTES: SPLIT SPOON

BOREHOLE LOG

CLIENT:
PROJECT: **Phase II Environmental Site Assessment**
745 Smyth Road
Ottawa, Ontario

BOREHOLE NO: BH4

GROUND ELEVATION: *Not Surveyed*
TOP ELEVATION: *NA*

CM³ JOB NO: ER1020

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	BOREHOLE COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	DEPTH (m)
					TOPSOIL some grass, loose, brown, dry	10 100				
		BH4 S1			**SAND** loose, brown, dry	0.0				
		BH4 S2			**CLAY** firm, dark grey, moist	0.0				
1.0										1.0
					End of borehole at 1.22 m					

DRILL DATE: 2023 May 11
DRILLED BY: OGS Inc.
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: ER
BOREHOLE DIAMETER: 0.1 m (OD)
CHECKED BY:

NOTES: SPLIT SPOON

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSIS

Phase Two Environmental Site Assessment

745 Smyth Road

Ottawa, Ontario

Ottawa-Carleton District School Board

ER1020

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Certificate of Analysis

CM3 Environmental Inc.

5710 Akins Road
Ottawa, ON K2S 1B8
Attn: Ethan Risk

Client PO: 745 Smyth Road
Project: ER1020
Custody: 139996

Report Date: 17-May-2023
Order Date: 11-May-2023

Order #: 2319364

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2319364-01	MW1 S3
2319364-02	MW2 S2
2319364-03	BH1 S1
2319364-04	BH2 S2
2319364-05	BH3 S1
2319364-06	BH4 S2

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: 745 Smyth Road

Report Date: 17-May-2023

Order Date: 11-May-2023

Project Description: ER1020

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	12-May-23	13-May-23
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	12-May-23	12-May-23
PHC F1	CWS Tier 1 - P&T GC-FID	12-May-23	13-May-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	12-May-23	16-May-23
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	16-May-23	16-May-23
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	11-May-23	14-May-23
Solids, %	CWS Tier 1 - Gravimetric	12-May-23	12-May-23

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: 745 Smyth Road

Report Date: 17-May-2023

Order Date: 11-May-2023

Project Description: ER1020

	Client ID:	MW1 S3	MW2 S2	BH1 S1	BH2 S2
	Sample Date:	11-May-23 09:00	11-May-23 09:00	11-May-23 09:00	11-May-23 09:00
	Sample ID:	2319364-01	2319364-02	2319364-03	2319364-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	85.3	73.6	84.0	81.3
General Inorganics					
pH	0.05 pH Units	-	-	6.71	-
Metals					
Antimony	1.0 ug/g dry	-	-	<1.0	<1.0
Arsenic	1.0 ug/g dry	-	-	1.9	3.3
Barium	1.0 ug/g dry	-	-	36.5	111
Beryllium	0.5 ug/g dry	-	-	<0.5	0.6
Boron	5.0 ug/g dry	-	-	<5.0	<5.0
Cadmium	0.5 ug/g dry	-	-	<0.5	<0.5
Chromium	5.0 ug/g dry	-	-	20.9	38.0
Cobalt	1.0 ug/g dry	-	-	4.8	10.3
Copper	5.0 ug/g dry	-	-	8.3	13.5
Lead	1.0 ug/g dry	-	-	7.0	7.0
Molybdenum	1.0 ug/g dry	-	-	<1.0	<1.0
Nickel	5.0 ug/g dry	-	-	10.1	19.4
Selenium	1.0 ug/g dry	-	-	<1.0	<1.0
Silver	0.3 ug/g dry	-	-	<0.3	<0.3
Thallium	1.0 ug/g dry	-	-	<1.0	<1.0
Uranium	1.0 ug/g dry	-	-	<1.0	<1.0
Vanadium	10.0 ug/g dry	-	-	25.6	50.5
Zinc	20.0 ug/g dry	-	-	27.5	64.9
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	85.9%	95.4%	85.1%	90.8%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	18	<8	11	<8
F4 PHCs (C34-C50)	6 ug/g dry	20	<6	9	<6

Certificate of Analysis

Report Date: 17-May-2023

Client: CM3 Environmental Inc.

Order Date: 11-May-2023

Client PO: 745 Smyth Road

Project Description: ER1020

	Client ID:	MW1 S3	MW2 S2	BH1 S1	BH2 S2
	Sample Date:	11-May-23 09:00	11-May-23 09:00	11-May-23 09:00	11-May-23 09:00
	Sample ID:	2319364-01	2319364-02	2319364-03	2319364-04
	MDL/Units	Soil	Soil	Soil	Soil
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [a] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [a] pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	<0.01	<0.01	<0.01	<0.01
Phenanthrene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
2-Fluorobiphenyl	Surrogate	65.3%	67.3%	60.0%	67.4%
Terphenyl-d14	Surrogate	84.7%	71.2%	68.4%	78.9%

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: 745 Smyth Road

Report Date: 17-May-2023

Order Date: 11-May-2023

Project Description: ER1020

	Client ID:	BH3 S1	BH4 S2	-	-
	Sample Date:	11-May-23 09:00	11-May-23 09:00	-	-
	Sample ID:	2319364-05	2319364-06	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	79.7	79.4	-	-
General Inorganics					
pH	0.05 pH Units	-	6.89	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	-	-
Arsenic	1.0 ug/g dry	1.6	5.1	-	-
Barium	1.0 ug/g dry	25.6	153	-	-
Beryllium	0.5 ug/g dry	<0.5	0.6	-	-
Boron	5.0 ug/g dry	<5.0	5.1	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	5.0 ug/g dry	15.8	50.9	-	-
Cobalt	1.0 ug/g dry	3.5	14.5	-	-
Copper	5.0 ug/g dry	<5.0	21.9	-	-
Lead	1.0 ug/g dry	2.1	15.4	-	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	-	-
Nickel	5.0 ug/g dry	6.7	28.1	-	-
Selenium	1.0 ug/g dry	<1.0	<1.0	-	-
Silver	0.3 ug/g dry	<0.3	<0.3	-	-
Thallium	1.0 ug/g dry	<1.0	<1.0	-	-
Uranium	1.0 ug/g dry	<1.0	<1.0	-	-
Vanadium	10.0 ug/g dry	27.1	62.6	-	-
Zinc	20.0 ug/g dry	<20.0	77.3	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene-d8	Surrogate	89.2%	89.0%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	-	-

Certificate of Analysis

Client: CM3 Environmental Inc.

Client PO: 745 Smyth Road

Report Date: 17-May-2023

Order Date: 11-May-2023

Project Description: ER1020

	Client ID:	BH3 S1	BH4 S2	-	-
	Sample Date:	11-May-23 09:00	11-May-23 09:00	-	-
	Sample ID:	2319364-05	2319364-06	-	-
	MDL/Units	Soil	Soil	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	-	-
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	-	-
Anthracene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	<0.02	-	-
Chrysene	0.02 ug/g dry	<0.02	<0.02	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	-	-
Fluoranthene	0.02 ug/g dry	0.03	<0.02	-	-
Fluorene	0.02 ug/g dry	<0.02	<0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	<0.02	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	-	-
Naphthalene	0.01 ug/g dry	<0.01	<0.01	-	-
Phenanthrene	0.02 ug/g dry	0.02	<0.02	-	-
Pyrene	0.02 ug/g dry	<0.02	<0.02	-	-
2-Fluorobiphenyl	Surrogate	70.5%	74.7%	-	-
Terphenyl-d14	Surrogate	80.0%	84.2%	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*1.15*		*ug/g*		*86.2*	*50-140*			
Surrogate: Terphenyl-d14	*1.37*		*ug/g*		*103*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.11*		*ug/g*		*97.2*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	7.60	0.05	pH Units	7.57			0.4	2.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	12	8	ug/g	10			17.9	30	
F4 PHCs (C34-C50)	12	6	ug/g	6			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	1.4	1.0	ug/g	1.5			5.0	30	
Barium	24.1	1.0	ug/g	23.6			2.1	30	
Beryllium	ND	0.5	ug/g	ND			NC	30	
Boron	ND	5.0	ug/g	ND			NC	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium	7.4	5.0	ug/g	7.0			5.9	30	
Cobalt	2.4	1.0	ug/g	2.5			1.9	30	
Copper	ND	5.0	ug/g	ND			NC	30	
Lead	2.2	1.0	ug/g	2.1			5.0	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	ND	5.0	ug/g	ND			NC	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	ND	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	16.2	10.0	ug/g	15.5			4.0	30	
Zinc	ND	20.0	ug/g	ND			NC	30	
Physical Characteristics									
% Solids	84.3	0.1	% by Wt.	85.2			1.1	25	
Semi-Volatiles									
Acenaphthene	ND	1.00	ug/g	ND			NC	40	
Acenaphthylene	ND	1.00	ug/g	ND			NC	40	
Anthracene	ND	1.00	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	1.00	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	1.00	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	1.00	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	1.00	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	1.00	ug/g	ND			NC	40	
Chrysene	ND	1.00	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	1.00	ug/g	ND			NC	40	
Fluoranthene	ND	1.00	ug/g	ND			NC	40	
Fluorene	ND	1.00	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	1.00	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	1.00	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	1.00	ug/g	ND			NC	40	
Naphthalene	ND	0.50	ug/g	ND			NC	40	
Phenanthrene	ND	1.00	ug/g	ND			NC	40	
Pyrene	ND	1.00	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.13*		*ug/g*		*82.3*	*50-140*			
Surrogate: Terphenyl-d14	*1.31*		*ug/g*		*95.3*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*3.06*		*ug/g*		*94.1*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	169	7	ug/g	ND	84.6	80-120			
F2 PHCs (C10-C16)	119	4	ug/g	ND	108	60-140			
F3 PHCs (C16-C34)	325	8	ug/g	10	116	60-140			
F4 PHCs (C34-C50)	189	6	ug/g	6	106	60-140			
Metals									
Arsenic	47.4	1.0	ug/g	ND	93.6	70-130			
Barium	52.0	1.0	ug/g	9.4	85.1	70-130			
Beryllium	42.0	0.5	ug/g	ND	83.8	70-130			
Boron	43.6	5.0	ug/g	ND	84.8	70-130			
Cadmium	44.3	0.5	ug/g	ND	88.6	70-130			
Chromium	50.5	5.0	ug/g	ND	95.5	70-130			
Cobalt	47.7	1.0	ug/g	1.0	93.5	70-130			
Copper	46.3	5.0	ug/g	ND	89.0	70-130			
Lead	44.9	1.0	ug/g	ND	88.0	70-130			
Molybdenum	42.4	1.0	ug/g	ND	84.6	70-130			
Nickel	46.7	5.0	ug/g	ND	90.0	70-130			
Selenium	42.3	1.0	ug/g	ND	84.1	70-130			
Silver	44.4	0.3	ug/g	ND	88.7	70-130			
Thallium	43.8	1.0	ug/g	ND	87.5	70-130			
Uranium	44.7	1.0	ug/g	ND	89.1	70-130			
Vanadium	54.4	10.0	ug/g	ND	96.4	70-130			
Zinc	47.6	20.0	ug/g	ND	84.5	70-130			
Semi-Volatiles									
Acenaphthene	0.186	0.02	ug/g	ND	112	50-140			
Acenaphthylene	0.191	0.02	ug/g	ND	115	50-140			
Anthracene	0.163	0.02	ug/g	ND	97.6	50-140			
Benzo [a] anthracene	0.157	0.02	ug/g	ND	94.4	50-140			
Benzo [a] pyrene	0.156	0.02	ug/g	ND	93.4	50-140			
Benzo [b] fluoranthene	0.194	0.02	ug/g	ND	117	50-140			
Benzo [g,h,i] perylene	0.168	0.02	ug/g	ND	101	50-140			
Benzo [k] fluoranthene	0.189	0.02	ug/g	ND	113	50-140			
Chrysene	0.145	0.02	ug/g	ND	86.7	50-140			
Dibenzo [a,h] anthracene	0.190	0.02	ug/g	ND	114	50-140			
Fluoranthene	0.176	0.02	ug/g	ND	105	50-140			
Fluorene	0.173	0.02	ug/g	ND	104	50-140			
Indeno [1,2,3-cd] pyrene	0.178	0.02	ug/g	ND	107	50-140			
1-Methylnaphthalene	0.172	0.02	ug/g	ND	103	50-140			
2-Methylnaphthalene	0.194	0.02	ug/g	ND	117	50-140			
Naphthalene	0.191	0.01	ug/g	ND	115	50-140			
Phenanthrene	0.209	0.02	ug/g	ND	126	50-140			
Pyrene	0.164	0.02	ug/g	ND	98.7	50-140			
Surrogate: 2-Fluorobiphenyl	*1.26*		*ug/g*		*94.6*	*50-140*			
Surrogate: Terphenyl-d14	*1.49*		*ug/g*		*111*	*50-140*			
Volatiles									
Benzene	2.61	0.02	ug/g	ND	65.4	60-130			
Ethylbenzene	3.35	0.05	ug/g	ND	83.8	60-130			
Toluene	3.21	0.05	ug/g	ND	80.3	60-130			
m,p-Xylenes	7.09	0.05	ug/g	ND	88.6	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
o-Xylene	3.90	0.05	ug/g	ND	97.5	60-130			
Surrogate: Toluene-d8	*2.64*		*ug/g*		*82.6*	*50-140*			

Qualifier Notes:

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

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Certificate of Analysis

CM3 Environmental Inc.

5710 Akins Road
Ottawa, ON K2S 1B8
Attn: Ethan Risk

Client PO: Vincent Massey P.S.
Project: ER1020
Custody: 71508

Report Date: 26-May-2023
Order Date: 18-May-2023

Order #: 2320378

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2320378-01	MW1
2320378-02	MW2

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: **CM3 Environmental Inc.**
Client PO: **Vincent Massey P.S.**

Report Date: 26-May-2023
Order Date: 18-May-2023
Project Description: ER1020

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	20-May-23	20-May-23
PHC F1	CWS Tier 1 - P&T GC-FID	19-May-23	20-May-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	24-May-23	25-May-23
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	24-May-23	24-May-23

Certificate of Analysis

Client: **CM3 Environmental Inc.**

Client PO: **Vincent Massey P.S.**

Report Date: 26-May-2023

Order Date: 18-May-2023

Project Description: ER1020

	Client ID:	MW1	MW2	-	-
	Sample Date:	18-May-23 09:00	18-May-23 09:00	-	-
	Sample ID:	2320378-01	2320378-02	-	-
	MDL/Units	Ground Water	Ground Water	-	-
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Toluene	0.5 ug/L	<0.5	<0.5	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	-	-
Toluene-d8	Surrogate	110%	112%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	-
Semi-Volatiles					
Acenaphthene	0.05 ug/L	<0.05	<0.05	-	-
Acenaphthylene	0.05 ug/L	<0.05	<0.05	-	-
Anthracene	0.01 ug/L	<0.01	<0.01	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	-	-
Chrysene	0.05 ug/L	<0.05	<0.05	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	-	-
Fluoranthene	0.01 ug/L	<0.01	<0.01	-	-
Fluorene	0.05 ug/L	<0.05	<0.05	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	-	-
Naphthalene	0.05 ug/L	<0.05	<0.05	-	-
Phenanthrene	0.05 ug/L	<0.05	<0.05	-	-
Pyrene	0.01 ug/L	<0.01	<0.01	-	-
2-Fluorobiphenyl	Surrogate	37.8% [1]	47.0% [1]	-	-
Terphenyl-d14	Surrogate	52.0%	56.6%	-	-

Certificate of Analysis
Client: **CM3 Environmental Inc.**
Client PO: **Vincent Massey P.S.**

Report Date: 26-May-2023
Order Date: 18-May-2023
Project Description: ER1020

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*17.4*		*ug/L*		*86.8*	*50-140*			
Surrogate: Terphenyl-d14	*20.8*		*ug/L*		*104*	*50-140*			
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	*89.4*		*ug/L*		*112*	*50-140*			

Certificate of Analysis
Client: **CM3 Environmental Inc.**
Client PO: **Vincent Massey P.S.**

Report Date: 26-May-2023
Order Date: 18-May-2023
Project Description: ER1020

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Volatiles									
Benzene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: Toluene-d8	*90.2*		*ug/L*		*113*	*50-140*			

Certificate of Analysis
Client: **CM3 Environmental Inc.**
Client PO: **Vincent Massey P.S.**

Report Date: 26-May-2023
Order Date: 18-May-2023
Project Description: ER1020

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	2070	25	ug/L	ND	103	68-117			
F2 PHCs (C10-C16)	1390	100	ug/L	ND	87.0	60-140			
F3 PHCs (C16-C34)	4200	100	ug/L	ND	107	60-140			
F4 PHCs (C34-C50)	2720	100	ug/L	ND	110	60-140			
Semi-Volatiles									
Acenaphthene	4.18	0.05	ug/L	ND	83.6	50-140			
Acenaphthylene	4.16	0.05	ug/L	ND	83.2	50-140			
Anthracene	4.36	0.01	ug/L	ND	87.2	50-140			
Benzo [a] anthracene	3.96	0.01	ug/L	ND	79.1	50-140			
Benzo [a] pyrene	4.20	0.01	ug/L	ND	83.9	50-140			
Benzo [b] fluoranthene	4.04	0.05	ug/L	ND	80.9	50-140			
Benzo [g,h,i] perylene	3.88	0.05	ug/L	ND	77.5	50-140			
Benzo [k] fluoranthene	3.50	0.05	ug/L	ND	69.9	50-140			
Chrysene	4.62	0.05	ug/L	ND	92.4	50-140			
Dibenzo [a,h] anthracene	3.66	0.05	ug/L	ND	73.2	50-140			
Fluoranthene	4.05	0.01	ug/L	ND	81.0	50-140			
Fluorene	4.42	0.05	ug/L	ND	88.4	50-140			
Indeno [1,2,3-cd] pyrene	3.59	0.05	ug/L	ND	71.7	50-140			
1-Methylnaphthalene	5.81	0.05	ug/L	ND	116	50-140			
2-Methylnaphthalene	6.00	0.05	ug/L	ND	120	50-140			
Naphthalene	4.44	0.05	ug/L	ND	88.8	50-140			
Phenanthrene	5.63	0.05	ug/L	ND	113	50-140			
Pyrene	4.00	0.01	ug/L	ND	80.0	50-140			
Surrogate: 2-Fluorobiphenyl	*18.8*		*ug/L*		*94.2*	*50-140*			
Surrogate: Terphenyl-d14	*22.7*		*ug/L*		*114*	*50-140*			
Volatiles									
Benzene	30.9	0.5	ug/L	ND	77.2	60-130			
Ethylbenzene	32.6	0.5	ug/L	ND	81.4	60-130			
Toluene	36.4	0.5	ug/L	ND	91.1	60-130			
m,p-Xylenes	73.4	0.5	ug/L	ND	91.7	60-130			
o-Xylene	31.6	0.5	ug/L	ND	79.0	60-130			
Surrogate: Toluene-d8	*74.0*		*ug/L*		*92.4*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

1 : The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC crite
- When reported, data for F4G has been processed using a silica gel cleanup.