**Ottawa-Carleton District School Board**

# Phase Two Environmental Site Assessment
# 700 Spring Valley Drive
# Ottawa, Ontario

**ER1087**

**November 25, 2024**

**CM3 Environmental Inc.**
*5710 Akins Road Ottawa, Ontario K2S 1B8*

## 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 700 Spring Valley Drive in Ottawa, Ontario ("site" or "subject property"). The purpose of the Phase Two ESA was to identify contaminants of concern, if present, in soil in the areas of potential environmental concern (APECs). The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application with the City of Ottawa. The Phase Two ESA was not completed in support of a record of site condition.

CM3 completed a Phase One ESA in November 2024 that identified one area of potential environmental concern (APEC) on-site related to the importation of fill materials of unknown quality. The contaminants of concern (COCs) were identified as petroleum hydrocarbons in the F1 to F4 fractions (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), and metals. CM3 added sodium adsorption ration (SAR), electrical conductivity (EC), pH, and leachate analysis to the analytical suite for future excess soil management purposes. Potentially contaminated media included soil. If soil within the APEC was found to have elevated concentrations of COCs, an assessment of the on-site groundwater would be completed.

The investigation included the advancement of eight test pits to assess the soil conditions on-site. The overburden soil encountered at the site generally consisted of sand and organic soil (topsoil) overlying clay to a maximum observed depth of 1.52 meters below ground (m bg). Construction debris such as landscape fabric and concrete were observed during the test pit excavations. Bedrock and groundwater were not observed during the investigation. Based on the regional topography and the local presence of wetlands and waterbodies, the inferred regional groundwater flow direction was south.

The Phase Two ESA identified minor and localized exceedances of cobalt and vanadium in soil at the subject property. CM3 does not anticipate that there will be negative environmental impacts caused by these exceedances due to factors outlined in the conceptual site model (i.e. elevated background metals concentrations in the area).

During the construction phase of this project, these impacts should be managed by a Qualified Person ($QP_{ESA}$) under the MECP.

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## 2.0 INTRODUCTION

CM3 was retained by the OCDSB to complete a Phase Two ESA for the property located at 700 Spring Valley Drive in Ottawa, Ontario. The purpose of the Phase Two ESA was to assess the soil quality within the APEC identified in CM3's November 2024 Phase One ESA report for the site. The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application with the City of Ottawa.

### 2.1 Site Description

The subject property is located on the east side of Spring Valley Drive in Ottawa, Ontario. The legal description is Block 131, Plan 4M1465; City of Ottawa, and the property identification number is 04352-2047 (LT). The site location is provided as **Figure 1**.

The subject property is roughly rectangular in shape, apart from the north section which follows the curvature of Spring Valley Drive. The site is bound by open space to the north, Goldfinch Park to the east, Joshua Street to the south, and Spring Valley Drive to the west. The subject property is located in a primarily residential area and is approximately 2.83 hectares with no buildings or structures on-site. The property is grass covered with trees positioned sporadically throughout the site. Site features are shown on **Figure 2**.

### 2.2 Property Ownership

The owner of the subject property as of November 1, 2024, was the Ottawa-Carleton District School Board. CM3's main point of contact for the property owner was:

Barry Boyd
Project Officer, Architectural & Engineering
Design & Construction Services, Facilities Department
Ottawa-Carleton District School Board
(613)-596-8746
barry.boyd@ocdsb.ca

### 2.3 Current and Proposed Future Uses

The property is currently undeveloped. The development of a public school is proposed for the site.

### 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. The following site conditions were used in the selection of the appropriate site condition standards (SCS):

- 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.

# 3.0 BACKGROUND INFORMATION

## 3.1 Physical Setting

The site elevation is approximately 76.56 meters above sea level (m asl) and the site slopes downward to the south-south-west. The surrounding area slopes downward from north to south from 87 m asl to 69 m asl and downward from east to west from 86 m asl to 73 m asl.

Surface drainage at the site is expected to be primarily by infiltration. Small depressions were identified at the south, south-east, and south areas of the site. Stormwater that does not infiltrate likely flows overland to these depressions or to municipal catch basins located on Joshua Street, south of the site.

Soils at the site were described as offshore marine deposits of clay and silt with low permeability. Bedrock at the site was described as shale, limestone, dolostone, and siltstone, of the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, the Collingwood Member, and the Eastview Member.

Small depressions were identified at the south, south-east, and east sections of the site. The depressions were surrounded by tall grasses. Wetlands were not identified on-site in the Ministry of Natural Resources and Forestry (MNRF) Natural Heritage maps or on the ERIS PSR wetland map (**Appendix H**). Based on aerial photographs, it is presumed that the depressions formed naturally on-site within the last decade.

The Mer Bleue Bog (the bog) is located approximately 300 m south of the subject property and is an evaluated provincially significant wetland. The bog is an Area of Natural and Scientific Interest (ANSI). A watercourse is shown on the Ontario Base Map leading from the neighbouring property to the east (Goldfinch Park) to the bog (south).

Based on the regional topography and the local presence of wetlands and waterbodies, the inferred regional groundwater flow direction was south.

## 3.2 Past Investigations

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

Two previous environmental reports were available for review and are summarized below:

1. CM3 Environmental. *Phase I Environmental Site Assessment, Spring Valley Drive at Joshua Street, Ottawa, Ontario*. Dated February 20, 2019.

CM3 was retained by the OCDSB to carry out a due diligence Phase I ESA at the subject property. At the time of the assessment, the site did not have a civic address and was owned by Claridge Homes. The Phase I ESA was performed in accordance with CSA standard Z768-01 and in general accordance with O. Reg. 153/04. The findings of the Phase I ESA did not identify any

PCAs on-site or within the Phase I study area. No APECs were identified on-site. CM3 did not recommend a Phase II ESA.

2. CM3 Environmental Inc. "*Phase One Environmental Site Assessment, 3853 Cambrian Road, Ottawa, Ontario". November 25, 2024.*

CM3 was retained by the OCDSB to carry out a Phase One ESA at the subject property in support of a Site Plan Control application. The Phase I ESA was performed in accordance with CSA standard Z768-01 and in general accordance with O. Reg. 153/04. One on-site PCA related to the importation of fill materials of unknown quality was identified. CM3 identified one APEC on the subject property related to the on-site PCA (imported fill).

# 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 the APEC, identified in the Phase One ESA, and to assess the general soil quality on-site for excess soil management. The site investigation was completed in general accordance with O. Reg. 153/04 and the Canadian Standards Association (CSA) Standard Z769-00 (R2008). The scope of work for the investigation included:

- The determination of the locations of all underground utilities by a third-party utility locator;
- The excavation of eight test pits;
- The continuous collection of soil samples during the test pit excavations 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, BTEX, metals, pH, SAR, EC, and leachate testing;
- The evaluation of the analytical results with respect to applicable site condition standards (SCS).

## 4.2 Media Investigated

The Phase Two ESA investigation included the sampling and analysis of soil in the APEC.

## 4.3 Phase One Conceptual Site Model

A Phase One conceptual site model (CSM) was developed based on the information collected as part of this investigation.

The subject property has remained undeveloped since its use for agriculture prior to 2007. Small depressions were identified at the south, south-east, and east sections of the site. The depressions were surrounded by tall grasses. Wetlands were not identified on-site in the Ministry of Natural Resources and Forestry (MNRF) Natural Heritage maps or on the ERIS PSR wetland map. Based on aerial photographs, it is presumed that the depressions formed naturally on-site within the last decade. A watercourse is shown on the Ontario Base Map leading from the neighbouring property to the east (Goldfinch Park) to the Mer Bleue Bog (to the south). Wetlands and ANSI were not identified within the Phase One study area. The site features are provided on **Figure 2**.

One PCA was identified on-site related to the potential use of the site for vehicle, equipment, and/or soils storage during the development of surrounding areas. Based on the evaluation of the PCA, one APEC was identified on-site related to the importation of fill materials of unknown quality. The APEC is provided on **Figure 3**.

Underground utilities were not identified at the site. Drainage at the subject property is likely by infiltration and by overland flow to depressions on-site and stormwater catch basins to the south on Joshua Street.

Soils at the site were described as offshore marine deposits of clay and silt with low permeability (Champlain Sea Deposits). Bedrock at the site was described as shale, limestone, dolostone, and siltstone, of the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, the Collingwood Member, and the Eastview Member.

### 4.4 Deviations From Sampling and Analysis Plan

The analysis of pH, SAR, EC, and synthetic precipitation leaching procedure for metals (mSPLP) were added to the sampling and analysis plan for future excess soil management purposes.

### 4.5 Impediments

Impediments were not encountered during the Phase Two site investigation.

# 5.0 INVESTIGATION METHOD

## 5.1 General

CM3 was on-site with Hodges Home Excavating (Hodges) of Kemptville, Ontario on September 4, 2024, to excavate test pits. CM3 collected soil samples during the test pit excavations for soil logging, field screening, and potential submission to the laboratory for the analysis of COCs.

## 5.2 Drilling and Excavating

A total of eight test pits (TP1 through TP9) were excavated on September 4, 2024. The excavations were completed by Hodges using a Yanmar ViO80 excavator. All test pits were excavated within APEC 1. The test pit locations are provided on **Figure 3**.

## 5.3 Soil Sampling

Soil samples were collected from 0.0 m bg to a maximum of 1.52 m bg. Samples were collected by hand from the excavator bucket using new nitrile gloves in between samples. Soil samples were logged for grain size, colour, moisture content, and visual or olfactory evidence of impacts.

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 Analytical Testing

Soil 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.

## 5.6 Residue Management Procedures

Excavated soil was immediately used to backfill the test pit following the collecting of soil samples. The soil was placed and compacted in lifts to avoid extra soil being left on the ground surface.

## 5.7 Elevation Surveying

An elevation survey was not completed as part of this assessment. General topographic trends and the coordinates of the test pit excavations were noted.

## 5.8 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 Two 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;
- 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 test pit excavations and soil logging. Surface materials included topsoil with grass, typically underlain by clay, observed to a maximum depth of 1.52 m bg. Bedrock was not encountered during the investigation. The site stratigraphy is provided on the test pit logs, **Appendix A**.

## 6.2 Groundwater: Elevations and Flow Direction

Groundwater flow direction could not be determined based on the information collected as part of this assessment. The regional groundwater flow direction was inferred to be south toward the Mer Bleue bog.

## 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 fine grained soils. The soils were considered coarse grained for the comparison to the MECP SCS. The stratigraphy observed at the site is provided on the test pit logs, **Appendix A**.

## 6.5 Soil: Field Screening

A total of 16 soil samples were collected from test pits for field screening and combustible vapour analysis. The samples showed combustible vapour concentrations ranging from 0 ppm (not detected) to 120 ppm. The soil combustible vapour concentrations are included on the test pit logs, **Appendix A**.

## 6.6 Phase Two Soil Quality

A total of eight soil samples were analyzed for one or more COCs. The soil sample analytical results are summarized in **Table 1**. The test pit locations and soil quality are provided on **Figure 3**. The soil sample laboratory reports are provided in **Appendix B**.

*APEC 1 – Entire Site*

Test pit TP1 through TP8 were advanced in APEC 1 to cover the entire site. Soil samples TP1 S2, TP2 S1, TP3 S2, TP4 S1, TP5 S2, TP6 S1, TP7 S2, TP8 S1 were analyzed for PHCs, BTEX, metals, SAR, EC, pH. TP2 S1, TP4 S1, and TP8 S1 were analyzed for mSPLP.

Sample TP1 S2 exceeded the MECP Table 3 SCS for cobalt and vanadium. All other samples analyzed met the MECP SCS for COCs.

### 6.7 Ground Water Quality

Based on the soil analytical results, groundwater at the site is not expected to be impacted.

### 6.8 Quality Assurance and Quality Control Results

Field duplicates were not collected during the Phase Two ESA. 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 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 analyses are provided in the laboratory reports, **Appendix B**.

### 6.9 Phase Two Conceptual Site Model

One PCA was identified on-site related to the importation of fill materials of unknown quality. The on-site PCA resulted in an APEC that encompassed the subject property. The APEC is shown on **Figure 2**.

The site has remained undeveloped. No underground utility services were identified on-site.

The overburden soil encountered at the site consisted of sand and organic soil (topsoil) overlying clay to a maximum observed depth of 1.52 m bg. Construction debris (e.g., landscape fabric and concrete) were observed during the test pit excavation TP1. Bedrock and groundwater were not observed during the investigation.

Surface drainage at the site is expected to be primarily by infiltration. Small depressions were identified at the south, south-east, and south areas of the site. Stormwater that does not infiltrate likely flows overland to these depressions or to municipal catch basins located on Joshua Street, south of the site.

Section 35 of O. Reg. 153/04, non-potable SCS, are applicable to the subject property based on the following:

- The subject property is not in a designated wellhead protection area.

Section 41 of O. Reg. 153/04, environmentally sensitive areas SCS 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. 153/04, shallow soil property or water body SCS, are not applicable to the subject property based on the following:

- Bedrock at the subject property is greater than 2.0 m bg,
- The subject property is not within 30 m of a water body.

The development of a public school is proposed for the site and includes sports fields and parking lots. The development plans have not reached final approval.

The Phase Two ESA identified the following contaminants with concentrations that exceeded the applicable SCS in soil:

**TP1 – Central west section of the site. 23.7 µg/g cobalt vs 22 µg/g cobalt (SCS) and 107 µg/g vanadium vs 86 µg/g vanadium (SCS).**

The reason for the slightly elevated concentrations may be explained in multiple reports/studies including “Background Metals in Champlain Sea Sediments: Updates from 2019 Drilling and Sampling Program Eastern Ontario – Ottawa Region” prepared by Geofirma Engineering for the City of Ottawa. Please refer to Section 9 - References.

The reports indicate that concentrations of cobalt, barium, chromium, and vanadium are greater in the former Champlain Sea Basin in eastern Ontario than other parts of Ontario. The subject property is within the Champlain Sea Basin. Based on the above, the elevated concentrations of cobalt and vanadium identified in the soil sample “TP1 S2” may be naturally occurring and not from an anthropogenic source. The report suggests updated (region specific) background values for cobalt and vanadium of 28 µg/g and 122 µg/g, respectively. The elevated concentrations identified on-site are below the updated background concentrations suggested in the report.

Additionally, the elevated concentrations of cobalt and vanadium appear to be localized and marginally exceed the applicable SCS at this site. Based on the above, CM3 does not anticipate that there will be negative environmental impacts caused by these exceedances.

With respect to groundwater, the above report states “The relative absence of metal exceedances in groundwater samples compared to the soil chemistry results suggests that the elevated metals concentrations that are observed in the fine-grained Champlain Sea sediments generally remain immobile and do not desorb readily into the groundwater”. As such it is unlikely that groundwater impacts are present.

## 7.0 CONCLUSIONS

CM3 Environmental Inc. was retained by the OCDSB to complete a Phase Two ESA for the property located at 700 Spring Valley Drive in Ottawa, Ontario. The purpose of the Phase Two ESA was to assess concentrations of contaminants of concern in soil, if present. The Phase Two ESA was undertaken for due diligence purposes in support of a Site Plan Control application with the City of Ottawa. The Phase Two ESA was not completed in support of a record of site condition.

The investigation included the advancement of eight test pits to assess soil conditions at the site. The results of the Phase Two ESA investigation are summarized as follows:

### Site Characterization

- The overburden soil generally consisted of sand and organic soil (topsoil) overlying clay to a maximum observed depth of 1.52 m bg.
- Bedrock and groundwater were not encountered during the investigation.
- On-site groundwater flow direction could not be determined based on the information gathered in this assessment. The inferred regional groundwater flow direction was south toward the Mer Bleue Bog.

### Soil Quality

- Eight soil samples (TP1 S2, TP2 S1, TP3 S2, TP4 S1, TP5 S2, TP6 S1, TP7 S2, TP8 S1) were collected from APEC 1 and analyzed for COCs.
- Sample “TP1 S2” slightly **exceeded** the SCS for cobalt and vanadium. All other soil samples analyzed met the SCS for COCs.
- Based on evidence of elevated Background Metals in Champlain Sea Sediments (refer to the Conceptual Site Model and References), it is CM3’s opinion that the general soil quality at the site is adequate for the proposed land use.

### Groundwater Quality

- Based on factors explained in the conceptual site model, specifically, documented evidence in Champlain Sea Sediments of: “*The relative absence of metal exceedances in groundwater samples compared to the soil chemistry results suggests that the elevated metals concentrations that are observed in the fine-grained Champlain Sea sediments generally remain immobile and do not desorb readily into the groundwater*”, CM3 does not expect groundwater at the site to be impacted by COCs.

The Phase Two ESA identified minor and localized exceedances of cobalt and vanadium in soil at the subject property. CM3 does not anticipate that there will be negative environmental impacts caused by these exceedances due to factors outlined in the conceptual site model (i.e. elevated background metals concentrations).

During the construction phase of this project, these impacts should be managed by a Qualified Person ($QP_{ESA}$) under the MECP.

## 7.1 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.**

Ethan Risk, B.Eng., EIT
Project Manager

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

## 8.0 LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by CM3 Environmental Inc. for the **Ottawa-Carleton District School Board**. It is intended for the sole and exclusive use of the **Ottawa-Carleton District School Board**, 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 **Ottawa-Carleton District School Board** based on this report is the sole responsibility of such other person. CM3 Environmental Inc. and the **Ottawa-Carleton District School Board** 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.

Other than by the **Ottawa-Carleton District School Board**, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of CM3 Environmental Inc. Nothing in this report is intended to constitute or provide a legal opinion.

## 9.0 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.

City of Ottawa Online Mapping Tool. Available online at: https://maps.ottawa.ca/geoottawa/

Ontario Ministry of Natural Resources and Forestry Natural Heritage Interactive Mapping Tool. Available online at: https://www.lioapplications.lrc.gov.on.ca/Natural_Heritage/index.html?viewer=Natural_Heritage.Natural_Heritage&locale=en-CA

Rational for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario. Standards Development Branch, Ontario Ministry of the Environment. April 2011.

Sterling and Raven (Geofirma), Brent Loney and Asia Reid (Dillon), Brad Carew (City of Ottawa) Elevated Background Metals Concentrations in Champlain Sea Clay - Ottawa Region 2017

Geofirma Engineering Ltd. and Dillon Consulting Ltd. (2018). Elevated Background Concentrations in Fine-Grained Champlain Sea Deposits, Eastern Ontario – Ottawa Regions. Prepared for: City of Ottawa, Infrastructure Policy Unit.

Morgan, C. (2023a). (rep.). (S. Sterling, Ed.) Geofirma Background Metals in Champlain Sea Sediments: Updates from 2019 Drilling and Sampling Program Eastern Ontario – Ottawa Region (pp. 1–115). Ottawa, ON: Geofirma Engineering.

# FIGURES

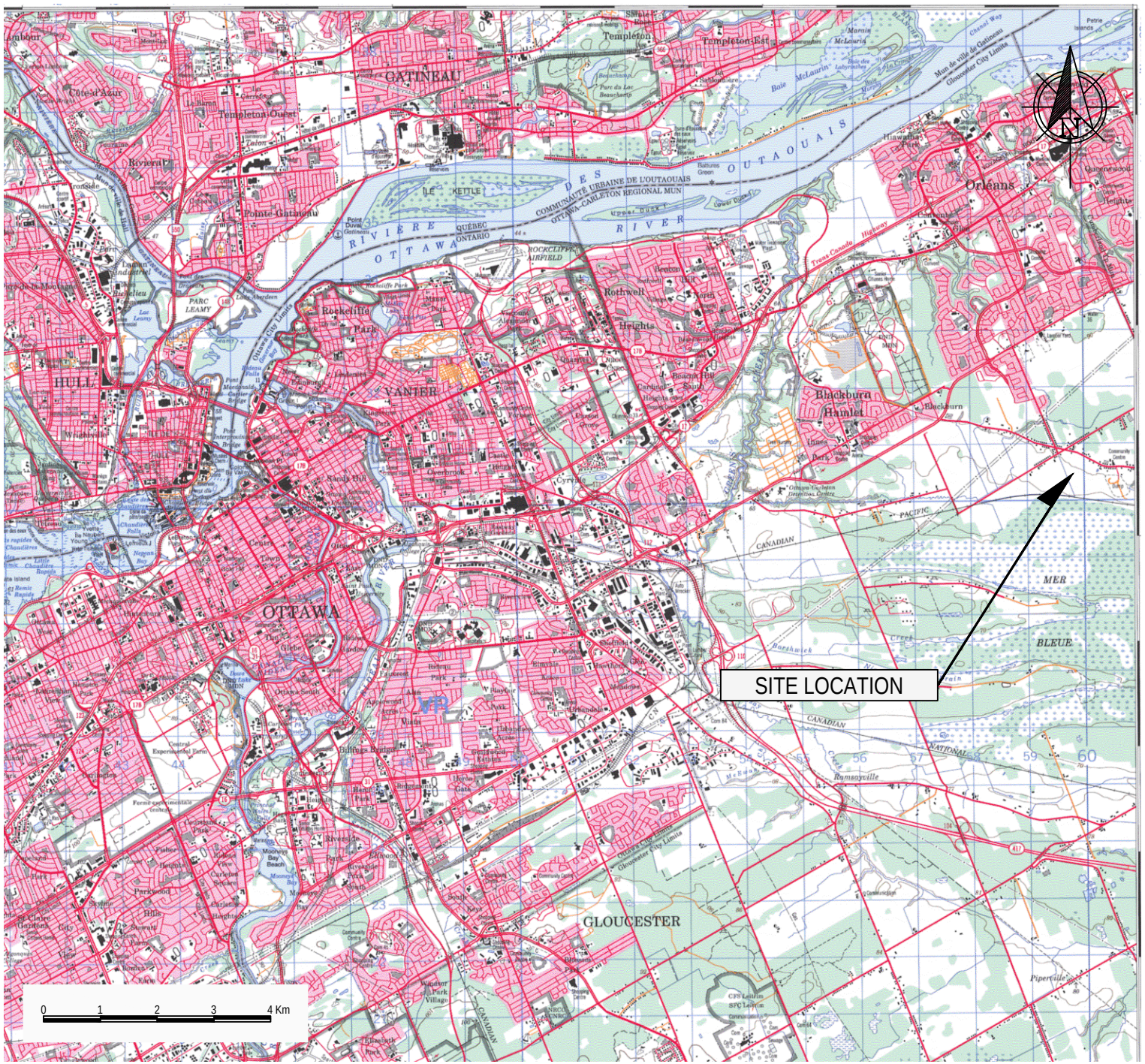
**Phase Two Environmental Site Assessment**

**700 Spring Valley Drive**

**Ottawa, Ontario**

**Ottawa-Carleton District School Board**

**ER1087**




cm3 environmental

5710 AKINS ROAD, OTTAWA, ON
K2S 1B8

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
700 SPRING VALLEY DRIVE,
OTTAWA, ONTARIO

SITE LOCATION

| | |
|---|---|
| Project: ER1087 | Drawn By: KS |
| Date: NOV 2024 | Reviewed By: ER |
| Scale: AS SHOWN | Figure: 1 |




**LEGEND**

PHASE I SITE

**APEC:**

APEC 1 -IMPORTATION OF FILL MATERIALS OF UNKNOWN QUALITY (ENTIRE SITE)

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

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
700 SPRING VALLEY DRIVE,
OTTAWA, ONTARIO

AREA OF POTENTIAL
ENVIRONMENTAL CONCERN

Scale 1:1000

0 10 20 30 40 m

(Approx. When plotted 11x17)

OTTAWA-CARLETON
DISTRICT SCHOOL BOARD

| Project: | Drawn By: |
|---|---|
| ER1087 | KS |
| Date: | Reviewed By: |
| NOV 2024 | ER |
| Scale: | Figure: |
| 1:1000 | 4 |




**LEGEND**

- PHASE I SITE
- TEST PIT

SOIL SAMPLES ANALYSED:

- CONTAMINANTS OF CONCERN NOT DETECTED
- CONTAMINANTS OF CONCERN < MECP TABLE 3 SCS
- CONTAMINANTS OF CONCERN > MECP TABLE 3 SCS

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

PHASE TWO
ENVIRONMENTAL SITE ASSESSMENT
700 SPRING VALLEY DRIVE,
OTTAWA, ONTARIO

SOIL QUALITY

Scale 1:1000

0 10 20 30 40 m

(Approx. When plotted 11x17)

OTTAWA-CARLETON DISTRICT SCHOOL BOARD

| | |
|---|---|
| Project: ER1087 | Drawn By: KS |
| Date: NOV 2024 | Reviewed By: ER |
| Scale: 1:1000 | Figure: 3 |

# TABLES

**Phase Two Environmental Site Assessment**

**700 Spring Valley Drive**

**Ottawa, Ontario**

**Ottawa-Carleton District School Board**

**ER1087**

**TABLE 1: Summary of Soil Analytical Results**
**Phase Two Environmental SIte Assessment**
**700 Spring Valley Drive, Ottawa, ON**
**ER1087**

| Parameter / Sample ID > | MDL | MECP Table 3 SCS | TP1-S2 | TP2-S1 | TP3-S2 | TP4-S1 | TP5-S2 | TP6-S1 | TP7-S2 | TP8-S1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Depth (m bg) > | | | 0.61 - 1.22 | 0 - 0.61 | 0.61 - 1.22 | 0 - 0.61 | 0.61 - 1.22 | 0 - 0.61 | 0.61 - 1.22 | 0 - 0.61 |
| HSVL (ppm) > | | | 120 | 25 | 50 | 30 | 0 | 0 | 0 | 0 |
| Sample Date > | | | 04-Sep-24 | 04-Sep-24 | 04-Sep-24 | 04-Sep-24 | 04-Sep-24 | 04-Sep-24 | 04-Sep-24 | 04-Sep-24 |
| ***General Inorganics*** | | | | | | | | | | |
| SAR | 0.01 | 5 | 0.96 | 0.29 | 0.28 | 0.13 | 1.35 | 1.31 | 1.44 | 0.37 |
| Conductivity (uS/cm) | 5 | 700 | 173 | 149 | 95 | 141 | 191 | 292 | 317 | 178 |
| pH | 0.05 | 5 to 9 | 6.8 | 6.72 | 6.75 | 6.81 | 6.76 | 6.79 | 6.87 | 6.97 |
| ***Metals*** | | | | | | | | | | |
| Antimony | 1 | 7.5 | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) |
| Arsenic | 1 | 18 | 3.7 | 2.6 | 2.3 | 2.6 | 2.8 | 3.6 | 2.9 | 1.8 |
| Barium | 1 | 390 | 321 | 125 | 174 | 84.6 | 196 | 141 | 123 | 49.2 |
| Beryllium | 0.5 | 4 | 0.8 | 0.5 | 0.6 | ND (0.5) | 0.6 | 0.7 | 0.5 | ND (0.5) |
| Boron | 5 | 120 | 9.5 | 5.5 | 5.5 | ND (5.0) | 5.4 | 10.2 | 5.6 | ND (5.0) |
| Cadmium | 0.5 | 1.2 | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) |
| Chromium | 5 | 160 | 114 | 59 | 75.4 | 44.4 | 83.1 | 68 | 61.2 | 25.8 |
| Cobalt | 1 | 22 | ***23.7*** | 11.6 | 14 | 8.9 | 17.2 | 14.1 | 11.8 | 5.4 |
| Copper | 5 | 140 | 46 | 20.9 | 17.2 | 16.6 | 23.1 | 29.5 | 22.5 | 10.3 |
| Lead | 1 | 120 | 8 | 7 | 9.2 | 6.4 | 7.8 | 7.7 | 6.8 | 3.3 |
| Molybdenum | 1 | 6.9 | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) |
| Nickel | 5 | 100 | 61.7 | 31 | 33.8 | 23.5 | 39.8 | 42.1 | 32.2 | 13.6 |
| Selenium | 1 | 2.4 | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) |
| Silver | 0.3 | 20 | ND (0.3) | ND (0.3) | ND (0.3) | ND (0.3) | ND (0.3) | ND (0.3) | ND (0.3) | ND (0.3) |
| Thallium | 1 | 1 | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) | ND (1.0) |
| Uranium | 1 | 23 | ND (1.0) | ND (1.0) | 1.5 | ND (1.0) | 1.2 | 1.1 | ND (1.0) | ND (1.0) |
| Vanadium | 10 | 86 | ***107*** | 50.3 | 62.7 | 40.2 | 75.6 | 53.5 | 52 | 24.4 |
| Zinc | 20 | 340 | 126 | 61.9 | 89.3 | 46.2 | 87.1 | 70.4 | 62.4 | 27.1 |
| ***Volatiles*** | | | | | | | | | | |
| Benzene | 0.02 | 0.21 | ND (0.02) | ND (0.02) | ND (0.02) | ND (0.02) | ND (0.02) | ND (0.02) | ND (0.02) | ND (0.02) |
| Ethylbenzene | 0.05 | 2 | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) |
| Toluene | 0.05 | 2.3 | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) |
| m/p-Xylene | 0.05 | NV | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) |
| o-Xylene | 0.05 | NV | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) |
| Xylenes, total | 0.05 | 3.1 | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) |
| **Hydrocarbons** | | | | | | | | | | |
| F1 PHCs (C6-C10) | 7 | 55 | ND (7) | ND (7) | ND (7) | ND (7) | ND (7) | ND (7) | ND (7) | ND (7) |
| F2 PHCs (C10-C16) | 4 | 98 | ND (4) | ND (4) | ND (4) | ND (4) | ND (4) | ND (4) | ND (4) | ND (4) |
| F3 PHCs (C16-C34) | 8 | 300 | ND (8) | ND (8) | ND (8) | ND (8) | ND (8) | ND (8) | ND (8) | ND (8) |
| F4 PHCs (C34-C50) | 6 | 2800 | ND (6) | ND (6) | ND (6) | ND (6) | ND (6) | ND (6) | ND (6) | ND (6) |

**Notes**:
mg/kg - all concentrations provided in parts per million (milligrams per kilogram) apart from general inorganics
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, coarse 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

# TESTPIT LOGS

**Phase Two Environmental Site Assessment**

**700 Spring Valley Drive**

**Ottawa, Ontario**

**Ottawa-Carleton District School Board**

**ER1087**

# TESTPIT LOG

CLIENT: **Ottawa-Carleton District School Board**

PROJECT: **700 Spring Valley Drive, Ottawa, ON**

CM³ JOB NO: ER1076

TESTPIT NO: TP1

SURFACE ELEVATION:

| DEPTH (m) | SAMPLE TYPE | SAMPLE ID | SPT COUNT | SOIL TYPE | SOIL DESCRIPTION | FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000 | TESTPIT COMPLETION | WATER LEVEL | WELL COMPLETION NOTES | DEPTH (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **SAND AND ORGANIC SOIL**<br>loose, brown, dry | | | | | |
| | | | | | **CLAY**<br>soft, grey, dry, landscape fabric debris around 0.91 m bg. | | | | | |
| | | TP1 S1 | | | | 60 | | | | |
| | | TP1 S2 | | | | 120 | | | | |
| 1 | | | | | | | | | | 1.0 |
| | | | | | End of testpit at 1.22 m | | | | | |

DRILLING METHOD: Yanmar ViO 80

DRILL DATE: 2024 September 4 LOGGED BY: ER

Notes: ■ GRAB SAMPLE

# TESTPIT LOG

CLIENT: **Ottawa-Carleton District School Board**

PROJECT: **700 Spring Valley Drive, Ottawa, ON**

CM³ JOB NO: ER1076

TESTPIT NO: TP2

SURFACE ELEVATION:

| DEPTH (m) | SAMPLE TYPE | SAMPLE ID | SPT COUNT | SOIL TYPE | SOIL DESCRIPTION | FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 – 10 – 100 | TESTPIT COMPLETION | WATER LEVEL | WELL COMPLETION NOTES | DEPTH (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **SAND AND ORGANIC SOIL**<br>loose, brown, dry | | | | | |
| | | | | | **CLAY**<br>soft, grey, dry | | | | | |
| | | TP2 S1 | | | | 25 | | | | |
| | | TP2 S2 | | | | 0 | | | | |
| 1 | | | | | | | | | | 1.0 |
| | | | | | End of testpit at 1.22 m | | | | | |

DRILLING METHOD: Yanmar ViO 80

DRILL DATE: 2024 September 4 LOGGED BY: ER

Notes: ■ GRAB SAMPLE

# TESTPIT LOG

CLIENT: **Ottawa-Carleton District School Board**

PROJECT: **700 Spring Valley Drive, Ottawa, ON**

CM³ JOB NO: ER1076

TESTPIT NO: TP3

SURFACE ELEVATION:

| DEPTH (m) | SAMPLE TYPE | SAMPLE ID | SPT COUNT | SOIL TYPE | SOIL DESCRIPTION | FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 – 10 – 100 | TESTPIT COMPLETION | WATER LEVEL | WELL COMPLETION NOTES | DEPTH (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | TP3 S1 | | | **SAND AND ORGANIC SOIL**<br>piled topsoil, loose, dry, brown | 45 | | | | |
| | | TP3 S2 | | | **SAND AND SILT**<br>loose, dry, brown | 50 | | | | |
| 1 | | | | | | | | | | 1.0 |
| | | | | | End of testpit at 1.22 m | | | | | |

DRILLING METHOD: Yanmar ViO 80

DRILL DATE: 2024 September 4 LOGGED BY: ER

Notes: ■ GRAB SAMPLE

# TESTPIT LOG

CLIENT: Ottawa-Carleton District School Board

PROJECT: 700 Spring Valley Drive, Ottawa, ON

CM³ JOB NO: ER1076

TESTPIT NO: TP4

SURFACE ELEVATION:

| DEPTH (m) | SAMPLE TYPE | SAMPLE ID | SPT COUNT | SOIL TYPE | SOIL DESCRIPTION | FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 – 10 – 100 | TESTPIT COMPLETION | WATER LEVEL | WELL COMPLETION NOTES | DEPTH (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | TP4 S1 | | | **SAND AND ORGANIC SOIL**<br>loose, dry, brown | 30 | | | | |
| | | TP4 S2 | | | | 5 | | | | |
| 1 | | | | | | | | | | 1.0 |
| | | | | | End of testpit at 1.22 m | | | | | |

DRILLING METHOD: Yanmar ViO 80

Notes: ■ GRAB SAMPLE

DRILL DATE: 2024 September 4 LOGGED BY: ER

cm3 environmental

CM³ JOB NO: ER1076

CLIENT: **Ottawa-Carleton District School Board**

PROJECT: **700 Spring Valley Drive, Ottawa, ON**

# TESTPIT LOG

TESTPIT NO: TP5

SURFACE ELEVATION:

| DEPTH (m) | SAMPLE TYPE | SAMPLE ID | SPT COUNT | SOIL TYPE | SOIL DESCRIPTION | FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 | TESTPIT COMPLETION | WATER LEVEL | WELL COMPLETION NOTES | DEPTH (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **SAND AND ORGANIC SOIL**<br>loose, dry, brown | | | | | |
| | | TP5 S1 | | | | 0 | | | | |
| | | TP5 S2 | | | | 0 | | | | |
| 1 | | | | | | | | | | 1.0 |
| | | | | | End of testpit at 1.22 m | | | | | |

DRILLING METHOD: Yanmar ViO 80

DRILL DATE: 2024 September 4 LOGGED BY: ER

Notes: ■ GRAB SAMPLE

# TESTPIT LOG

CLIENT: **Ottawa-Carleton District School Board**

PROJECT: **700 Spring Valley Drive, Ottawa, ON**

CM³ JOB NO: ER1076

TESTPIT NO: TP6

SURFACE ELEVATION:

| DEPTH (m) | SAMPLE TYPE | SAMPLE ID | SPT COUNT | SOIL TYPE | SOIL DESCRIPTION | FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 – 10 – 100 | TESTPIT COMPLETION | WATER LEVEL | WELL COMPLETION NOTES | DEPTH (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **SAND AND ORGANIC SOIL**<br>some clay, loose, dry, grey/brown | | | | | |
| | | | | | **CLAY**<br>soft, dry, grey | | | | | |
| | | TP6 S1 | | | | 0 | | | | |
| | | TP6 S2 | | | | 0 | | | | |
| 1 | | | | | | | | | | 1.0 |
| | | | | | End of testpit at 1.22 m | | | | | |

DRILLING METHOD: Yanmar ViO 80

DRILL DATE: 2024 September 4 LOGGED BY: ER

Notes: ■ GRAB SAMPLE

# TESTPIT LOG

CLIENT: **Ottawa-Carleton District School Board**

PROJECT: **700 Spring Valley Drive, Ottawa, ON**

CM³ JOB NO: ER1076

TESTPIT NO: TP7

SURFACE ELEVATION:

| DEPTH (m) | SAMPLE TYPE | SAMPLE ID | SPT COUNT | SOIL TYPE | SOIL DESCRIPTION | FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 – 10 – 100 | TESTPIT COMPLETION | WATER LEVEL | WELL COMPLETION NOTES | DEPTH (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **SAND**<br>some clay, loose, moist, grey | | | | | |
| | | TP7 S1 | | | | 0 | | | | |
| | | TP7 S2 | | | | 0 | | | | |
| 1 | | | | | | | | | | 1.0 |
| | | | | | End of testpit at 1.22 m | | | | | |

DRILLING METHOD: Yanmar ViO 80

Notes: ■ GRAB SAMPLE

DRILL DATE: 2024 September 4 LOGGED BY: ER

# TESTPIT LOG

CLIENT: **Ottawa-Carleton District School Board**

PROJECT: **700 Spring Valley Drive, Ottawa, ON**

CM³ JOB NO: ER1076

TESTPIT NO: TP8

SURFACE ELEVATION:

| DEPTH (m) | SAMPLE TYPE | SAMPLE ID | SPT COUNT | SOIL TYPE | SOIL DESCRIPTION | FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 | TESTPIT COMPLETION | WATER LEVEL | WELL COMPLETION NOTES | DEPTH (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | TP8 S1 | | | **SAND**<br>some organic soil, loose, dry, brown | 0 | | | | |
| 1 | | TP8 S2 | | | **SAND**<br>loose, dry, grey | 0 | | | | 1.0 |
| | | | | | End of testpit at 1.52 m | | | | | |

DRILLING METHOD: Yanmar ViO 80

Notes: ■ GRAB SAMPLE

DRILL DATE: 2024 September 4 LOGGED BY: ER

# APPENDIX B

# LABORATORY CERTIFICATES OF ANALYSIS

**Phase Two Environmental Site Assessment**

**700 Spring Valley Drive**

**Ottawa, Ontario**

**Ottawa-Carleton District School Board**

**ER1087**

PARACEL LABORATORIES LTD.
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# Certificate of Analysis

**CM3 Environmental Inc.**
5710 Akins Road
Ottawa, ON K2S 1B8
Attn: Ethan Risk

Client PO: 700 Spring Valley Drive
Project: ER1087
Custody: 73630

Report Date: 11-Sep-2024
Order Date: 4-Sep-2024

**Order #: 2436274**

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

| Paracel ID | Client ID |
|---|---|
| 2436274-01 | TP1 S2 |
| 2436274-02 | TP2 S1 |
| 2436274-03 | TP3 S2 |
| 2436274-04 | TP4 S1 |
| 2436274-05 | TP5 S2 |
| 2436274-06 | TP6 S1 |
| 2436274-07 | TP7 S2 |
| 2436274-08 | TP8 S1 |

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

## Analysis Summary Table

| Analysis | Method Reference/Description | Extraction Date | Analysis Date |
|---|---|---|---|
| BTEX by P&T GC-MS | EPA 8260 - P&T GC-MS | 6-Sep-24 | 6-Sep-24 |
| Conductivity | MOE E3138 - probe @25 °C, water ext | 9-Sep-24 | 10-Sep-24 |
| pH, soil | EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext. | 6-Sep-24 | 6-Sep-24 |
| PHC F1 | CWS Tier 1 - P&T GC-FID | 6-Sep-24 | 6-Sep-24 |
| PHCs F2 to F4 | CWS Tier 1 - GC-FID, extraction | 6-Sep-24 | 6-Sep-24 |
| REG 153: Metals by ICP/MS, soil | EPA 6020 - Digestion - ICP-MS | 9-Sep-24 | 9-Sep-24 |
| REG 406: Metals, leachate | mSPLP EPA 6020 - Digestion - ICP-MS | 9-Sep-24 | 9-Sep-24 |
| SAR | Calculated | 9-Sep-24 | 10-Sep-24 |
| Solids, % | CWS Tier 1 - Gravimetric | 6-Sep-24 | 9-Sep-24 |

Certificate of Analysis

Report Date: 11-Sep-2024

**Client:** **CM3 Environmental Inc.**

Order Date: 4-Sep-2024

**Client PO:** **700 Spring Valley Drive**

**Project Description: ER1087**

| | Client ID: | TP1 S2 | TP2 S1 | TP3 S2 | TP4 S1 | - | - |
|---|---|---|---|---|---|---|---|
| | Sample Date: | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | | |
| | Sample ID: | 2436274-01 | 2436274-02 | 2436274-03 | 2436274-04 | | |
| | Matrix: | Soil | Soil | Soil | Soil | | |
| | MDL/Units | | | | | | |
| **Physical Characteristics** | | | | | | | |
| % Solids | 0.1 % by Wt. | 74.0 | 81.4 | 76.0 | 85.0 | - | - |
| **mSPLP Leachate Metals** | | | | | | | |
| Antimony | 0.5 ug/L | - | <0.5 | - | <0.5 | - | - |
| Arsenic | 1.0 ug/L | - | 3.3 | - | <1.0 | - | - |
| Barium | 1.0 ug/L | - | 212 | - | 50.8 | - | - |
| Beryllium | 0.5 ug/L | - | <0.5 | - | <0.5 | - | - |
| Boron | 10.0 ug/L | - | 26.0 | - | 36.4 | - | - |
| Cadmium | 0.2 ug/L | - | <0.2 | - | <0.2 | - | - |
| Chromium | 1.0 ug/L | - | 27.6 | - | 9.1 | - | - |
| Cobalt | 0.5 ug/L | - | 7.7 | - | 1.7 | - | - |
| Copper | 0.5 ug/L | - | 28.1 | - | 7.1 | - | - |
| Lead | 0.2 ug/L | - | 8.1 | - | 1.6 | - | - |
| Molybdenum | 0.5 ug/L | - | <0.5 | - | <0.5 | - | - |
| Nickel | 1.0 ug/L | - | 20.1 | - | 6.1 | - | - |
| Selenium | 1.0 ug/L | - | <1.0 | - | <1.0 | - | - |
| Silver | 0.2 ug/L | - | <0.2 | - | <0.2 | - | - |
| Thallium | 0.5 ug/L | - | <0.5 | - | <0.5 | - | - |
| Uranium | 0.2 ug/L | - | 0.8 | - | 0.4 | - | - |
| Vanadium | 0.5 ug/L | - | 30.0 | - | 8.6 | - | - |
| Zinc | 5.0 ug/L | - | 47.3 | - | 13.0 | - | - |
| **General Inorganics** | | | | | | | |
| SAR | 0.01 N/A | 0.96 | 0.29 | 0.28 | 0.13 | - | - |
| Conductivity | 5 uS/cm | 173 | 149 | 95 | 141 | - | - |
| pH | 0.05 pH Units | 6.80 | 6.72 | 6.75 | 6.81 | - | - |
| **Metals** | | | | | | | |

PARACEL LABORATORIES LTD.

**Order #: 2436274**

Certificate of Analysis

Report Date: 11-Sep-2024

**Client:** **CM3 Environmental Inc.**

Order Date: 4-Sep-2024

**Client PO:** **700 Spring Valley Drive**

**Project Description: ER1087**

| | Client ID: | TP1 S2 | TP2 S1 | TP3 S2 | TP4 S1 | - | - |
|---|---|---|---|---|---|---|---|
| | Sample Date: | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | | |
| | Sample ID: | 2436274-01 | 2436274-02 | 2436274-03 | 2436274-04 | | |
| | Matrix: | Soil | Soil | Soil | Soil | | |
| | MDL/Units | | | | | | |
| **Metals** | | | | | | | |
| Antimony | 1.0 ug/g | <1.0 | <1.0 | <1.0 | <1.0 | - | - |
| Arsenic | 1.0 ug/g | 3.7 | 2.6 | 2.3 | 2.6 | - | - |
| Barium | 1.0 ug/g | 321 | 125 | 174 | 84.6 | - | - |
| Beryllium | 0.5 ug/g | 0.8 | 0.5 | 0.6 | <0.5 | - | - |
| Boron | 5.0 ug/g | 9.5 | 5.5 | 5.5 | <5.0 | - | - |
| Cadmium | 0.5 ug/g | <0.5 | <0.5 | <0.5 | <0.5 | - | - |
| Chromium | 5.0 ug/g | 114 | 59.0 | 75.4 | 44.4 | - | - |
| Cobalt | 1.0 ug/g | 23.7 | 11.6 | 14.0 | 8.9 | - | - |
| Copper | 5.0 ug/g | 46.0 | 20.9 | 17.2 | 16.6 | - | - |
| Lead | 1.0 ug/g | 8.0 | 7.0 | 9.2 | 6.4 | - | - |
| Molybdenum | 1.0 ug/g | <1.0 | <1.0 | <1.0 | <1.0 | - | - |
| Nickel | 5.0 ug/g | 61.7 | 31.0 | 33.8 | 23.5 | - | - |
| Selenium | 1.0 ug/g | <1.0 | <1.0 | <1.0 | <1.0 | - | - |
| Silver | 0.3 ug/g | <0.3 | <0.3 | <0.3 | <0.3 | - | - |
| Thallium | 1.0 ug/g | <1.0 | <1.0 | <1.0 | <1.0 | - | - |
| Uranium | 1.0 ug/g | <1.0 | <1.0 | 1.5 | <1.0 | - | - |
| Vanadium | 10.0 ug/g | 107 | 50.3 | 62.7 | 40.2 | - | - |
| Zinc | 20.0 ug/g | 126 | 61.9 | 89.3 | 46.2 | - | - |
| **Volatiles** | | | | | | | |
| Benzene | 0.02 ug/g | <0.02 | <0.02 | <0.02 | <0.02 | - | - |
| Ethylbenzene | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |
| Toluene | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |
| m,p-Xylenes | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |
| o-Xylene | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |
| Xylenes, total | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |

Certificate of Analysis

Report Date: 11-Sep-2024

**Client:** **CM3 Environmental Inc.**

Order Date: 4-Sep-2024

**Client PO:** **700 Spring Valley Drive**

**Project Description: ER1087**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Client ID:** | TP1 S2 | TP2 S1 | TP3 S2 | TP4 S1 | - | - |
| | **Sample Date:** | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | | |
| | **Sample ID:** | 2436274-01 | 2436274-02 | 2436274-03 | 2436274-04 | | |
| | **Matrix:** | Soil | Soil | Soil | Soil | | |
| | **MDL/Units** | | | | | | |
| **Volatiles** | | | | | | | |
| Toluene-d8 | Surrogate | 116% | 120% | 120% | 117% | - | - |
| **Hydrocarbons** | | | | | | | |
| F1 PHCs (C6-C10) | 7 ug/g | <7 | <7 | <7 | <7 | - | - |
| F2 PHCs (C10-C16) | 4 ug/g | <4 | <4 | <4 | <4 | - | - |
| F3 PHCs (C16-C34) | 8 ug/g | <8 | <8 | <8 | <8 | - | - |
| F4 PHCs (C34-C50) | 6 ug/g | <6 | <6 | <6 | <6 | - | - |

Certificate of Analysis

Report Date: 11-Sep-2024

**Client:** **CM3 Environmental Inc.**

Order Date: 4-Sep-2024

**Client PO:** **700 Spring Valley Drive**

**Project Description: ER1087**

| | Client ID: | TP5 S2 | TP6 S1 | TP7 S2 | TP8 S1 | - | - |
|---|---|---|---|---|---|---|---|
| | Sample Date: | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | | |
| | Sample ID: | 2436274-05 | 2436274-06 | 2436274-07 | 2436274-08 | | |
| | Matrix: | Soil | Soil | Soil | Soil | | |
| | MDL/Units | | | | | | |
| **Physical Characteristics** | | | | | | | |
| % Solids | 0.1 % by Wt. | 75.5 | 79.0 | 80.1 | 85.1 | - | - |
| **mSPLP Leachate Metals** | | | | | | | |
| Antimony | 0.5 ug/L | - | - | - | <0.5 | - | - |
| Arsenic | 1.0 ug/L | - | - | - | 1.1 | - | - |
| Barium | 1.0 ug/L | - | - | - | 45.5 | - | - |
| Beryllium | 0.5 ug/L | - | - | - | <0.5 | - | - |
| Boron | 10.0 ug/L | - | - | - | 39.9 | - | - |
| Cadmium | 0.2 ug/L | - | - | - | <0.2 | - | - |
| Chromium | 1.0 ug/L | - | - | - | 9.2 | - | - |
| Cobalt | 0.5 ug/L | - | - | - | 2.0 | - | - |
| Copper | 0.5 ug/L | - | - | - | 10.0 | - | - |
| Lead | 0.2 ug/L | - | - | - | 2.1 | - | - |
| Molybdenum | 0.5 ug/L | - | - | - | <0.5 | - | - |
| Nickel | 1.0 ug/L | - | - | - | 6.7 | - | - |
| Selenium | 1.0 ug/L | - | - | - | <1.0 | - | - |
| Silver | 0.2 ug/L | - | - | - | <0.2 | - | - |
| Thallium | 0.5 ug/L | - | - | - | <0.5 | - | - |
| Uranium | 0.2 ug/L | - | - | - | 0.4 | - | - |
| Vanadium | 0.5 ug/L | - | - | - | 9.5 | - | - |
| Zinc | 5.0 ug/L | - | - | - | 14.9 | - | - |
| **General Inorganics** | | | | | | | |
| SAR | 0.01 N/A | 1.35 | 1.31 | 1.44 | 0.37 | - | - |
| Conductivity | 5 uS/cm | 191 | 292 | 317 | 178 | - | - |
| pH | 0.05 pH Units | 6.76 | 6.79 | 6.87 | 6.97 | - | - |
| **Metals** | | | | | | | |

| | Client ID: | TP5 S2 | TP6 S1 | TP7 S2 | TP8 S1 | - | - |
|---|---|---|---|---|---|---|---|
| | Sample Date: | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | | |
| | Sample ID: | 2436274-05 | 2436274-06 | 2436274-07 | 2436274-08 | | |
| | Matrix: | Soil | Soil | Soil | Soil | | |
| | MDL/Units | | | | | | |
| **Metals** | | | | | | | |
| Antimony | 1.0 ug/g | <1.0 | <1.0 | <1.0 | <1.0 | - | - |
| Arsenic | 1.0 ug/g | 2.8 | 3.6 | 2.9 | 1.8 | - | - |
| Barium | 1.0 ug/g | 196 | 141 | 123 | 49.2 | - | - |
| Beryllium | 0.5 ug/g | 0.6 | 0.7 | 0.5 | <0.5 | - | - |
| Boron | 5.0 ug/g | 5.4 | 10.2 | 5.6 | <5.0 | - | - |
| Cadmium | 0.5 ug/g | <0.5 | <0.5 | <0.5 | <0.5 | - | - |
| Chromium | 5.0 ug/g | 83.1 | 68.0 | 61.2 | 25.8 | - | - |
| Cobalt | 1.0 ug/g | 17.2 | 14.1 | 11.8 | 5.4 | - | - |
| Copper | 5.0 ug/g | 23.1 | 29.5 | 22.5 | 10.3 | - | - |
| Lead | 1.0 ug/g | 7.8 | 7.7 | 6.8 | 3.3 | - | - |
| Molybdenum | 1.0 ug/g | <1.0 | <1.0 | <1.0 | <1.0 | - | - |
| Nickel | 5.0 ug/g | 39.8 | 42.1 | 32.2 | 13.6 | - | - |
| Selenium | 1.0 ug/g | <1.0 | <1.0 | <1.0 | <1.0 | - | - |
| Silver | 0.3 ug/g | <0.3 | <0.3 | <0.3 | <0.3 | - | - |
| Thallium | 1.0 ug/g | <1.0 | <1.0 | <1.0 | <1.0 | - | - |
| Uranium | 1.0 ug/g | 1.2 | 1.1 | <1.0 | <1.0 | - | - |
| Vanadium | 10.0 ug/g | 75.6 | 53.5 | 52.0 | 24.4 | - | - |
| Zinc | 20.0 ug/g | 87.1 | 70.4 | 62.4 | 27.1 | - | - |
| **Volatiles** | | | | | | | |
| Benzene | 0.02 ug/g | <0.02 | <0.02 | <0.02 | <0.02 | - | - |
| Ethylbenzene | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |
| Toluene | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |
| m,p-Xylenes | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |
| o-Xylene | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |
| Xylenes, total | 0.05 ug/g | <0.05 | <0.05 | <0.05 | <0.05 | - | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Client ID:** | TP5 S2 | TP6 S1 | TP7 S2 | TP8 S1 | - | - |
| | **Sample Date:** | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | 04-Sep-24 09:00 | | |
| | **Sample ID:** | 2436274-05 | 2436274-06 | 2436274-07 | 2436274-08 | | |
| | **Matrix:** | Soil | Soil | Soil | Soil | | |
| | **MDL/Units** | | | | | | |
| **Volatiles** | | | | | | | |
| Toluene-d8 | Surrogate | 122% | 122% | 119% | 118% | - | - |
| **Hydrocarbons** | | | | | | | |
| F1 PHCs (C6-C10) | 7 ug/g | <7 | <7 | <7 | <7 | - | - |
| F2 PHCs (C10-C16) | 4 ug/g | <4 | <4 | <4 | <4 | - | - |
| F3 PHCs (C16-C34) | 8 ug/g | <8 | <8 | <8 | <8 | - | - |
| F4 PHCs (C34-C50) | 6 ug/g | <6 | <6 | <6 | <6 | - | - |

## Method Quality Control: Blank

| Analyte | Result | Reporting Limit | Units | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|
| **General Inorganics** | | | | | | | | |
| Conductivity | ND | 5 | uS/cm | | | | | |
| **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 | | | | | |
| **mSPLP Leachate Metals** | | | | | | | | |
| Antimony | ND | 0.5 | ug/L | | | | | |
| Arsenic | ND | 1.0 | ug/L | | | | | |
| Barium | ND | 1.0 | ug/L | | | | | |
| Beryllium | ND | 0.5 | ug/L | | | | | |
| Boron | ND | 10.0 | ug/L | | | | | |
| Cadmium | ND | 0.2 | ug/L | | | | | |

## Method Quality Control: Blank

| Analyte | Result | Reporting Limit | Units | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|
| Chromium | ND | 1.0 | ug/L | | | | | |
| Cobalt | ND | 0.5 | ug/L | | | | | |
| Copper | ND | 0.5 | ug/L | | | | | |
| Lead | ND | 0.2 | ug/L | | | | | |
| Molybdenum | ND | 0.5 | ug/L | | | | | |
| Nickel | ND | 1.0 | ug/L | | | | | |
| Selenium | ND | 1.0 | ug/L | | | | | |
| Silver | ND | 0.2 | ug/L | | | | | |
| Thallium | ND | 0.5 | ug/L | | | | | |
| Uranium | ND | 0.2 | ug/L | | | | | |
| Vanadium | ND | 0.5 | ug/L | | | | | |
| Zinc | ND | 5.0 | ug/L | | | | | |
| **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* | *8.51* | | *%* | *106* | *50-140* | | | |

## Method Quality Control: Duplicate

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **General Inorganics** | | | | | | | | | |
| SAR | 0.95 | 0.01 | N/A | 0.96 | | | 0.8 | 30 | |
| Conductivity | 248 | 5 | uS/cm | 255 | | | 2.7 | 5 | |
| pH | 6.78 | 0.05 | pH Units | 6.80 | | | 0.3 | 2.3 | |
| **Hydrocarbons** | | | | | | | | | |
| F1 PHCs (C6-C10) | 50 | 7 | ug/g | 42 | | | 16.1 | 40 | |
| F2 PHCs (C10-C16) | ND | 4 | ug/g | ND | | | NC | 30 | |
| F3 PHCs (C16-C34) | ND | 8 | ug/g | ND | | | NC | 30 | |
| F4 PHCs (C34-C50) | ND | 6 | ug/g | ND | | | NC | 30 | |
| **Metals** | | | | | | | | | |
| Antimony | 2.2 | 1.0 | ug/g | 2.4 | | | 6.3 | 30 | |
| Arsenic | 13.0 | 1.0 | ug/g | 13.4 | | | 2.8 | 30 | |
| Barium | 109 | 1.0 | ug/g | 114 | | | 4.0 | 30 | |
| Beryllium | 0.6 | 0.5 | ug/g | 0.6 | | | 7.1 | 30 | |
| Boron | 7.6 | 5.0 | ug/g | 8.0 | | | 5.4 | 30 | |
| Cadmium | 0.6 | 0.5 | ug/g | 0.7 | | | 10.6 | 30 | |
| Chromium | 23.9 | 5.0 | ug/g | 24.0 | | | 0.5 | 30 | |
| Cobalt | 5.8 | 1.0 | ug/g | 5.8 | | | 0.3 | 30 | |
| Copper | 28.0 | 5.0 | ug/g | 28.0 | | | 0.1 | 30 | |
| Lead | 179 | 1.0 | ug/g | 214 | | | 17.8 | 30 | |
| Molybdenum | 1.6 | 1.0 | ug/g | 1.6 | | | 3.3 | 30 | |
| Nickel | 16.2 | 5.0 | ug/g | 15.8 | | | 2.1 | 30 | |
| Selenium | ND | 1.0 | ug/g | 1.1 | | | 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 | 38.2 | 10.0 | ug/g | 37.8 | | | 1.1 | 30 | |
| Zinc | 185 | 20.0 | ug/g | 186 | | | 0.6 | 30 | |
| **mSPLP Leachate Metals** | | | | | | | | | |
| Antimony | ND | 0.5 | ug/L | ND | | | NC | 50 | |
| Arsenic | 3.40 | 1.0 | ug/L | 3.31 | | | 2.6 | 50 | |

## Method Quality Control: Duplicate

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Barium | 209 | 3.4 | ug/L | 212 | | | 1.1 | 50 | |
| Beryllium | ND | 0.5 | ug/L | ND | | | NC | 50 | |
| Boron | 26.6 | 10.0 | ug/L | 26.0 | | | 2.1 | 50 | |
| Cadmium | ND | 0.2 | ug/L | ND | | | NC | 50 | |
| Chromium | 28.0 | 1.0 | ug/L | 27.6 | | | 1.3 | 50 | |
| Cobalt | 7.54 | 0.5 | ug/L | 7.74 | | | 2.6 | 50 | |
| Copper | 26.5 | 0.5 | ug/L | 28.1 | | | 5.5 | 50 | |
| Lead | 7.98 | 0.2 | ug/L | 8.09 | | | 1.4 | 50 | |
| Molybdenum | ND | 0.5 | ug/L | ND | | | NC | 50 | |
| Nickel | 19.2 | 1.0 | ug/L | 20.1 | | | 4.6 | 50 | |
| Selenium | ND | 1.0 | ug/L | ND | | | NC | 50 | |
| Silver | ND | 0.2 | ug/L | ND | | | NC | 50 | |
| Thallium | ND | 0.5 | ug/L | ND | | | NC | 50 | |
| Uranium | 0.77 | 0.2 | ug/L | 0.82 | | | 6.0 | 50 | |
| Vanadium | 30.1 | 0.5 | ug/L | 30.0 | | | 0.3 | 50 | |
| Zinc | 48.0 | 5.0 | ug/L | 47.3 | | | 1.4 | 50 | |
| **Physical Characteristics** | | | | | | | | | |
| % Solids | 74.0 | 0.1 | % by Wt. | 76.2 | | | 2.9 | 25 | |
| **Volatiles** | | | | | | | | | |
| Benzene | ND | 0.02 | ug/g | ND | | | NC | 50 | |
| Ethylbenzene | 0.209 | 0.05 | ug/g | 0.220 | | | 5.2 | 50 | |
| Toluene | ND | 0.05 | ug/g | ND | | | NC | 50 | |
| m,p-Xylenes | 1.00 | 0.05 | ug/g | 1.06 | | | 5.5 | 50 | |
| o-Xylene | 0.158 | 0.05 | ug/g | 0.161 | | | 1.4 | 50 | |
| *Surrogate: Toluene-d8* | *4.39* | | *%* | | *105* | *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) | 195 | 7 | ug/g | ND | 113 | 85-115 | | | |
| F2 PHCs (C10-C16) | 115 | 4 | ug/g | ND | 106 | 60-140 | | | |
| F3 PHCs (C16-C34) | 246 | 8 | ug/g | ND | 92.8 | 60-140 | | | |
| F4 PHCs (C34-C50) | 180 | 6 | ug/g | ND | 108 | 60-140 | | | |
| **Metals** | | | | | | | | | |
| Arsenic | 57.2 | 1.0 | ug/g | 5.4 | 104 | 70-130 | | | |
| Barium | 96.9 | 1.0 | ug/g | 45.5 | 103 | 70-130 | | | |
| Beryllium | 53.9 | 0.5 | ug/g | ND | 107 | 70-130 | | | |
| Boron | 53.3 | 5.0 | ug/g | ND | 100 | 70-130 | | | |
| Cadmium | 47.6 | 0.5 | ug/g | ND | 94.7 | 70-130 | | | |
| Chromium | 62.8 | 5.0 | ug/g | 9.6 | 106 | 70-130 | | | |
| Cobalt | 54.0 | 1.0 | ug/g | 2.3 | 103 | 70-130 | | | |
| Copper | 59.5 | 5.0 | ug/g | 11.2 | 96.6 | 70-130 | | | |
| Lead | 121 | 1.0 | ug/g | 85.4 | 71.0 | 70-130 | | | |
| Molybdenum | 53.0 | 1.0 | ug/g | ND | 105 | 70-130 | | | |
| Nickel | 56.7 | 5.0 | ug/g | 6.3 | 101 | 70-130 | | | |
| Selenium | 50.5 | 1.0 | ug/g | ND | 100 | 70-130 | | | |
| Silver | 41.8 | 0.3 | ug/g | ND | 83.3 | 70-130 | | | |
| Thallium | 46.9 | 1.0 | ug/g | ND | 93.6 | 70-130 | | | |
| Uranium | 51.1 | 1.0 | ug/g | ND | 102 | 70-130 | | | |
| Vanadium | 67.2 | 10.0 | ug/g | 15.1 | 104 | 70-130 | | | |
| Zinc | 120 | 20.0 | ug/g | 74.5 | 91.6 | 70-130 | | | |
| **mSPLP Leachate Metals** | | | | | | | | | |
| Antimony | 36.9 | 0.5 | ug/L | ND | 73.0 | 60-130 | | | |
| Arsenic | 50.8 | 1.0 | ug/L | 3.31 | 95.1 | 70-130 | | | |
| Barium | 257 | 1.0 | ug/L | 212 | 91.2 | 70-130 | | | |
| Beryllium | 47.7 | 0.5 | ug/L | ND | 94.5 | 70-130 | | | |
| Boron | 68.0 | 10.0 | ug/L | 26.0 | 84.1 | 70-130 | | | |
| Cadmium | 47.6 | 0.2 | ug/L | ND | 95.0 | 70-130 | | | |
| Chromium | 76.3 | 1.0 | ug/L | 27.6 | 97.3 | 70-130 | | | |

## Method Quality Control: Spike

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Cobalt | 53.2 | 0.5 | ug/L | 7.74 | 91.0 | 70-130 | | | |
| Copper | 67.2 | 0.5 | ug/L | 28.1 | 78.2 | 70-130 | | | |
| Lead | 52.5 | 0.2 | ug/L | 8.09 | 88.8 | 70-130 | | | |
| Molybdenum | 47.7 | 0.5 | ug/L | ND | 95.0 | 70-130 | | | |
| Nickel | 62.4 | 1.0 | ug/L | 20.1 | 84.5 | 70-130 | | | |
| Selenium | 49.2 | 1.0 | ug/L | ND | 97.7 | 70-130 | | | |
| Silver | 44.0 | 0.2 | ug/L | ND | 88.0 | 70-130 | | | |
| Thallium | 43.8 | 0.5 | ug/L | ND | 87.6 | 70-130 | | | |
| Uranium | 51.9 | 0.2 | ug/L | 0.82 | 102 | 70-130 | | | |
| Vanadium | 81.3 | 0.5 | ug/L | 30.0 | 103 | 70-130 | | | |
| Zinc | 91.8 | 5.0 | ug/L | 47.3 | 88.9 | 70-130 | | | |
| **Volatiles** | | | | | | | | | |
| Benzene | 3.61 | 0.02 | ug/g | ND | 90.2 | 60-130 | | | |
| Ethylbenzene | 3.73 | 0.05 | ug/g | ND | 93.1 | 60-130 | | | |
| Toluene | 3.91 | 0.05 | ug/g | ND | 97.7 | 60-130 | | | |
| m,p-Xylenes | 7.52 | 0.05 | ug/g | ND | 93.9 | 60-130 | | | |
| o-Xylene | 3.61 | 0.05 | ug/g | ND | 90.3 | 60-130 | | | |
| *Surrogate: Toluene-d8* | *8.50* | | *%* | | *106* | *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 unlesss otherwise noted.

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.

PARACEL LABORATORIES LTD.

**Paracel ID: 2436274**

| Paracel Order Number (Lab Use Only) | Chain Of Custody (Lab Use Only) |
|---|---|
| 2436274 | № 73630 |

| | | |
|---|---|---|
| Client Name: CM3 Environmental | Project Ref: 700 Spring Valley Drive | Page 1 of 1 |
| Contact Name: Ethan Risk | Quote #: OCDSB | Turnaround Time |
| Address: 5710 Akins Road, Ottawa | PO #: ER1087 | ☐ 1 day ☐ 3 day |
| | E-mail: ethan@cm3environmental.com | ☐ 2 day ☒ Regular |
| Telephone: 613-304-5410 | | Date Required: |

☒ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☐ Yes ☐ No

**Other Regulation**: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm ☐ Mun: ___ ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

| | Sample ID/Location Name | Matrix | Air Volume | # of Containers | Sample Taken: Date | Sample Taken: Time | Required Analysis: PHC F1-F4 | BTEX | Metals ICP | SAR | EC | pH | MSLP Metals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TP1 S2 | S | Ø | 2 | 24/09/04 | AM | X | X | X | X | X | X | |
| 2 | TP2 S1 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | X |
| 3 | TP3 S2 | | | | | | | | | | | | |
| 4 | TP4 S1 | | | | | | | | | | | | X |
| 5 | TP5 S2 | | | | | | | | | | | | |
| 6 | TP6 S1 | | | | | | | | | | | | |
| 7 | TP7 S2 | | | | | | | | | | | | |
| 8 | TP8 S1 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | X |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |

Comments:

Method of Delivery: Walkin

| | | | |
|---|---|---|---|
| Relinquished By (Sign): | Received at Depot: | Received at Lab: JM SS | Verified By: SO |
| Relinquished By (Print): Ethan Risk | Date/Time: Sept/24 4:38 | Date/Time: 05-Sep-24 14:12 | Date/Time: Sept 5, 2024 2:53p |
| Date/Time: 24/09/04 2:50 PM | Temperature: 21.5 °C | Temperature: 8.6 °C | pH Verified: ☐ By: |