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Phase Two
Environmental Site Assessment
Proposed Residential Development
2865 Riverside Drive
Ottawa, Ontario

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Submitted to:

St. Patrick's Home of Ottawa
2865 Riverside Drive
Ottawa, Ontario
K1V 8N5

Phase Two Environmental Site Assessment Proposed Residential Development 2865 Riverside Drive Ottawa, Ontario

September 13, 2022
Project: 100416.001

September 13, 2022 File: 100416.001

St. Patrick's Home of Ottawa
2865 Riverside Drive
Ottawa, Ontario
K1V 8N5

Attention: Ms. Janet Morris

Re: Phase Two Environmental Site Assessment
Proposed Residential Development
2865 Riverside Drive
Ottawa, ON

Enclosed is our Phase Two Environmental Site Assessment (ESA) report as per our proposal dated May 20, 2022. The Phase Two ESA was completed in general accordance with Canadian Standard Association (CSA) Standard Z769-00 (R2018), to investigate areas of potential environmental concern (APECs) identified in the 2021 Phase One ESA, and to document the interpreted environmental conditions at the property at the time the investigation was completed.

We trust this information is sufficient for your current needs. If you have any questions or require further information, please contact the undersigned.

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CS/BT/MK

Enclosures
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EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by St. Patrick's Home of Ottawa to complete a Phase Two Environmental Site Assessment (ESA) for a proposed seniors housing apartment building at 2865 Riverside Drive, in Ottawa, Ontario, K1V 8N5 (hereafter referred to as the Subject Property or Site).

Through a review of historical information pertaining to the Subject Property and adjacent properties, GEMTEC identified three areas of potential environmental concern (APECs) at the Subject Property. The APECs resulted from two on-site potential contaminating activities (PCAs) and one off-Site PCA with a potential to result in contamination to soil and/or groundwater on the Subject Property. APECs identified at the Subject Property are summarized below:

- **APEC 1**: Hospital with Hazardous Waste Generation
- **APEC 2**: Importation of Fill Material of Unknown Quality
- **APEC 3**: Rick McCloskeys Service Ltd. Auto Repair Shop at 753 Ridgewood Avenue

A total of four boreholes (BH22-01, BH22-01A, BH22-02, and BH22-03) were advanced on the Subject Property in order to collect representative soil samples. BH22-03 was advanced as a monitoring well MW22-03 in order to investigate groundwater quality at the Site. Monitoring wells were not installed at the other borehole locations as drill refusal was encountered at a shallower depth than the water table.

A total of seven soil samples, including two partial duplicates, and two groundwater samples, including a duplicate, and trip blank were submitted for analytical analyses based on the combustible headspace gas readings, visual, olfactory and tactile evidence of impacts. Samples were submitted for analysis of contaminants of potential concern associated with each APEC which included metals & inorganics (M&I), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), petroleum hydrocarbons (PHCs), and polychlorinated biphenyls (PCBs). A summary of the investigation results identified the following:

Based on the analytical results of the Phase Two ESA, GEMTEC offers the following summary:

- The overburden observed at the Site during the subsurface investigation generally consisted of a layer of fill material (silty sand and gravel) to a depth of approximately 2.74 meters below ground surface (mbgs), underlain by native deposits of brown to grey silty clay and clayey silt to a maximum borehole depth of 6.10 mbgs;
- Based on the topography and nearby surface water features, local shallow groundwater flow is anticipated to flow toward the west;
- Five of the soil samples met the Ontario Ministry of the Environment, Conservation of Parks (MECP) Table 3 residential/parkland/institutional (RPI) Site Condition Standard

(SCS) for all parameters analyzed with the exception of soil sample (BH22-1A SA2) which exceeded the MECP Table 3 SCS for vanadium and cobalt and BH22-03 SA2 which exceeded for electrical conductivity (EC);
    - Vanadium and cobalt exceeded the MECP Table 3 SCS; however, considering the geo-regional background clay concentrations for vanadium and cobalt (Sterling, et al., 2017) the sample was identified as being naturally occurring; and
    - EC exceeded the MECP Table 3 SCS at BH22-03 SA2; however, this exceedance was likely attributed to salt application and de-icing activities during winter maintenance of the parking lot and pedestrian pathways and access routes
- The groundwater sample from MW22-03 submitted for analysis met the MECP Table 3 SCS for all parameters analyzed.

Based on these results, no additional work is recommended at this time. However, if future development or construction activities are carried out at the property at a future date, additional soil quality sampling and reporting may be required to inform excess soil management planning, exportation, re-use/disposal of soils and potentially project registration, per Ontario Regulation 406/19. Similarly, additional groundwater quality sampling and reporting may be required to inform construction dewatering and discharge management options and to support an Environmental Activity Sector Registry or Permit to Take Water with the Ministry of the Environment, Conservation and Parks (MECP).

Lastly, if the monitoring well is not required for future groundwater monitoring and sampling, it is recommended to be decommissioned in accordance with O.Reg. 903, as amended.

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by St. Patrick's Home of Ottawa to complete a Phase Two Environmental Site Assessment (ESA) for a proposed seniors housing apartment building at 2865 Riverside Drive, in Ottawa, Ontario, K1V 8N5 (hereafter referred to as the Subject Property or Site).

The Phase Two ESA was completed following the recommendations provided in the GEMTEC, 2020, Phase One ESA submitted to St. Patrick's Home of Ottawa, under a separate cover. GEMTEC understands that the Phase Two ESA is being completed for environmental due diligence to support a proposed development of a seniors housing apartment building on the Subject Property. As the property use will not be changing to more sensitive land use (i.e., commercial to residential), the filing of a Record of Site Condition (RSC), as regulated by Ontario Regulation 153/04 under the Environmental Protection Act, is not required. This Phase Two ESA was conducted in general accordance with CAN/CSA-Z769-00 (R2018) and Ontario Regulation 153/04, as amended.

1.1 Site Description

The Subject Property currently consists of a five-storey long-term care home with a single-level basement. The Subject Property is located on the east side of Riverside Drive, approximately 250 metres (m) south of Brookfield Road, within the City of Ottawa, Ontario. The Subject Property boundary is shown in Figure A.1 within Appendix A.

The Subject Property is irregular in shape, with approximately 124.10 m of frontage along the east side of Riverside Drive and extending 139.7 m towards the east, with an area of approximately 2.29 hectares (5.65 acres). The southeast portion of the Subject Property is occupied by the current building. The north portion of the property is a combination of asphalt parking spaces/laneways and walkways, as well as landscaped grassed and treed areas.

1.2 Property Ownership

The Subject Property is currently owned by the Catholic Congregational Legacy Charity.

1.3 Current and Proposed Future Uses

The Subject Property has historically been and is currently developed as a long-term care home.

St. Patrick's Home of Ottawa is proposing a new residential development for the Subject Property. The proposed construction will involve the construction of a 7-storey seniors housing apartment building.

1.4 Applicable Site Condition Standards

Site Condition Standards (SCS) were selected for the Site in accordance with the requirements of Ontario Regulation 153/04, Record of Site Condition – Part XV.1 of the Environmental

Protection Act (O. Reg. 153/04, Ministry of Environment and Climate Change, October 31, 2011), as amended.

The following information was considered in selecting the SCS:

- The land use of the subject site is, and will remain residential;
- Groundwater Use: Municipal water is supplied by the City of Ottawa, with the Ottawa River serving as the source. Based on a search of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Well Records database, multiple potable water wells were located within 250 metres of the Site along Riverside Drive. However, based on further review of the individual well records available, domestic wells appear to be completed in the 1940s and 1950s time range and were constructed to draw from deep aquifers with sufficient water supply of suitable quality and quantity. More recent well records for the area are categorized as shallow small diameter non-potable monitoring wells for environmental and geotechnical field investigations. Given the Site location and proximity to multiple water treatment plants, the area was considered to be a non-potable groundwater use area;
- Available bedrock mapping and results of the boreholes advanced as part of the field program, indicate that more than 2.0 metres of overburden is present on-Site;
- The subject site subsurface was observed to be comprised of primarily fill material (silty sand and gravel) to a depth of approximately 2.74 mbgs, underlain by native deposits of brown to grey silty clay and clayey silt to a maximum borehole depth of 6.10 mbgs. Due to the large observed variation in stratigraphic units encountered during drilling– the Subject Property has been classified as a coarse-textured soil to be conservative;
- No permanent water bodies are present on the Subject Property or within 30 metres of the Subject Property (ESRI, 2011); and,
- The Site is not considered to be environmentally sensitive and the site is not within or adjacent to an area of natural or scientific interest. In addition, the Site is not considered environmentally sensitive as the pH of the soil fell between 5 and 9.

Based on the review of Site characteristics, the following SCS were considered to be applicable:

- MECP, 2011. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. Table 3: Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional (RPI) land use, and coarse-textured soils (Table 3 SCS).

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

A topographic map from the City of Ottawa's interactive mapping website (GeoOttawa) was accessed to review topographic features in the general vicinity of the Subject Property. Notable details are summarized below:

- The Subject Property is approximately 80 m above sea level (masl) and slopes down towards the northwest; and
- The Rideau River is located approximately 450 m west/northwest of the Subject Property, which flows towards the north and discharges into the Ottawa River.

Local groundwater flow is anticipated to follow regional groundwater flow and topography and trend west towards the Rideau River.

It should be noted that the inferred groundwater flow direction may be influenced by underground utilities (i.e. service trenches) and building structures.

A geotechnical investigation dated January 2009, prepared by Houle Chevrier Engineering Ltd. and entitled "*Geotechnical Investigation, Redevelopment of 2865 Riverside Drive, Ottawa, Ontario,*" was reviewed for this report. Nine boreholes were advanced during the investigation and revealed that the site stratigraphy generally consisted of topsoil overlaying grey brown silty clay followed by a deposit of glacial till and limestone bedrock.

According to "*Paleozoic Geology of Southern Ontario*" (Armstrong et al., 2007), bedrock at the Subject Property and within the study area consists of the Bobcaygeon formation from the Simcoe Group and is comprised of limestone with minor shales in the upper layer.

According to Chapman and Putnam's "*The Physiography of Southern Ontario, Third Edition*" (1984; 2007), the Subject Property and study area are located within the physiographic area known as the Ottawa Valley Clay Plains. The Ottawa Valley between Pembroke and Hawkesbury consists of clay plains combined with ridges of rock or sand. The Ottawa Valley is naturally divided into two parts, above and below Ottawa. In the upper section, there is a broad valley with rocky Laurentian uplands rising on either side. In the lower section, a gradual slope can be observed. Within the Valley, some of the uplifted blocks appear above the clay beds due to the faults in the bedrock.

2.2 Past Investigations

Three previous environmental investigations were completed for the Site/Study Area and reviewed by GEMTEC.

2.2.1.1 2865 Riverside Drive Phase I

An environmental report written by Houle Chevrier Engineering Ltd. entitled "*Phase I Environmental Site Assessment, 2865 Riverside Drive, St. Patrick's Home of Ottawa Inc., Ottawa, Ontario*" was provided for review. The report was dated January 29, 2009, and identified the main potential environmental risks for the site as being an unused above-ground storage tank (AST) and wastes being generated on and/or near the subject site. The report also recommended that a water well and septic system of unknown location be properly abandoned, if encountered.

The report summarized an interview conducted with Rick McCloskey, owner of Rick McCloskey Services Ltd. The report indicated that Phase I, II, and III Environmental Site Assessments (ESAs) had been completed at 753 Ridgewood Avenue (located approximately 80 meters south of the Subject Property). The ESAs found that the ground on the northwest corner of the building still contained some impacted material from five underground storage tanks.

The 2009 Phase I ESA report concluded that no further investigation was warranted at that time.

It is noted that during the interview completed for the present Phase One ESA investigation, Mr. Richard Valiquet indicated that he did not have any knowledge of the unused AST reportedly on-site in the past and that it had likely been removed from the site since the 2009 report. He also indicated that he did not have knowledge of the water well and septic system and that they had likely been abandoned/removed during the 2014 construction of the new building.

2.2.1.2 2887 Riverside Drive Phase One

An environmental report written by Houle Chevrier Engineering Ltd. entitled "*Phase One Environmental Site Assessment, Youth Services Bureau, 2887 Riverside Avenue, Ottawa, Ontario*" was provided for review. The report was dated March 20, 2017, and identified three areas of potential environmental concern (APECs). These included an AST, evidence of a former heating oil storage tank, and fill material of unknown origin. Based on the APECs identified in the Phase One study, a Phase Two Environmental Site Assessment was recommended to further investigate the soil and groundwater quality at the site.

2.2.1.3 2887 Riverside Drive Phase Two

An environmental report written by Houle Chevrier Engineering Ltd. entitled "*Phase Two Environmental Site Assessment, Proposed Youth Hub Development, Youth Services Bureau, 2887 Riverside Avenue, Ottawa, Ontario*" was provided for review. The report was dated May 15, 2017, and investigated the APECs identified in the Phase One report noted above.

Five boreholes and three monitoring wells were advanced to assess the soil and groundwater in the areas of the proposed construction. The investigation did not identify any petroleum-impacted soils or groundwater but did find fill material impacted with PAHs. Slight metal exceedances were identified in fill and native soil but were deemed to be naturally occurring. The report concluded

that any soils removed from the Subject Property should be disposed of at an appropriate receiving site and that no further investigation was required at the time.

3.0 SCOPE OF THE INVESTIGATION

3.1 Study Objectives and Scope of Work

The objective of the work proposed was to provide subsurface information relative to the potential environmental impacts related to the identified APECs as part of the Phase One ESA completed by GEMTEC. Environmental sampling was carried out to characterize the quality of soil and groundwater within the Subject Property APECs. Furthermore, any deviations from the proposed scope of work have been noted.

The scope of work as outlined in the GEMTEC's proposal included the following:

- Advancement of three boreholes on the Subject Property, with one completed as a groundwater monitoring well (BH22-03). All boreholes and wells (i.e., BH22-01, BH22-02, and BH22-03) were advanced as part of the environmental investigation;
- Collection and analysis of seven bulk soil samples (including duplicates) analyzed for a combination of the following contaminants of potential concern (COPCs): petroleum hydrocarbons F1 toF4 (PHC F1-F4) volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), metals and inorganics (M&I), and polychlorinated biphenyls (PCBs);
- Collection of one Toxicity Characteristic Leaching Procedure (TCLP) sample to inform landfill disposal;
- Collection of five groundwater samples (including duplicates and blanks) analyzed for the following COPCs: PHC F1-F4, VOCs, M&I, PAHs, and PCBs;
- Collection of a PHC F1/VOC Trip Blank for QA/QC;
- Assessment of soil and groundwater analytical results against applicable provincial quality SCS; and,
- Preparation of a Phase Two ESA report summarizing the purpose, methodology and results of the investigation (this report).

3.2 Media Investigated

Boreholes and monitoring wells were completed on-Site to assess soil and groundwater conditions at selected locations for the COPCs identified in the Phase I ESA Report for the Site. The sampling program included the collection of representative soil samples of both fill and native material, and one representative groundwater sample for laboratory analysis of the COPCs. One field duplicate soil sample, one groundwater duplicate sample, and one groundwater trip blank for PHCs F1/VOCs were also collected and analyzed for Quality Assurance/Quality Control (QA/QC) purposes.

3.3 Phase One Conceptual Site Model

Based on the historical review and Site reconnaissance, GEMTEC concluded that there is potential for soil and/or groundwater contamination at the Subject Property. The Phase I ESA CSM is presented under separate cover and is summarized as follows:

- The Rideau River is located approximately 450 m west/northwest of the Subject Property, which flows towards the north;
- Records indicated that 27 wells are located within the study area, which were identified as 'observation well', 'monitoring well' 'test hole', 'domestic use well' or 'commercial use well';
- Surrounding properties are a mix of residential, community, and commercial land uses;
- The Subject Property is currently developed with a five-storey building with a concrete foundation and single-level basement;
- The Subject Property is situated approximately 80 masl, and slopes down towards the northwest;
- Local groundwater is anticipated to follow regional groundwater flow and topography and trend west towards the Rideau River;
- No provincially significant wetlands were located within the Phase I study area;
- Geology mapping suggests that the Subject Property and majority of the study area consist of sandy and clay diamicton, approximately 8.53 to 29.56 m in thickness. The Subject Property and the study area are situated within the Bobcaygeon formation from the Simcoe Group of the Ordovician age, and consist of limestone with minor shales in the upper layer;
- Based on the review of records, interviews and the Site reconnaissance completed as part of the Phase I ESA, GEMTEC identified two PCAs for the Subject Property and several PCAs for the study area. Based on this, three APECS were identified for the Subject Property; and,
- Information considered for the development of this CSM was gathered from numerous sources (i.e. aerial photographs, city directories, environmental database searches, physical setting sources, an interview and a Site reconnaissance), which reduces the potential for not identifying a former property use or PCA.

3.3.1 PCAs, COPCs and APECs

The Phase One ESA (GEMTEC, 2021) identified several PCAs and APECs within the Phase One study area; defined in the Phase One as the area located within a 250 m radius of the site. A summary of PCAs, and resulting APECs as outlined in Table 2 in Schedule D of the Regulation and identified in the Phase One ESA is provided in the table below.

Summary of PCAs Identified in the Phase One ESA

PCA Type	PCA ID	Description of PCA	Location of PCA	Data Source	PCA Resulted in APEC / No APEC	COPCs
Other – Hospital with Hazardous Waste Generation	1	Listed as St. Patrick's Home of Ottawa Inc. with waste generation approval for PCBs, pathological wastes, oil skimmings and sludges, and pharmaceuticals from 2009-2020	2865 Riverside Drive	ERIS	Yes	M&I, PHC F1-F4, VOCs, PAHs, and PCBs
Other – Hospital with Hazardous Waste Generation	2	Listed as Medical Arts Dispensary of Ottawa with waste generation approval for pathological wastes, oil skimmings and sludges, and pharmaceuticals from 2009-2020	2865 Riverside Drive	ERIS	Yes	M&I, PHC F1-F4, VOCs, and PAHs

PCA Type	PCA ID	Description of PCA	Location of PCA	Data Source	PCA Resulted in APEC / No APEC	COPCs
30. Importation of Fill Material of Unknown Quality	3	Fill material of unknown quality was brought to Site during the construction of structures in 1964 and 2013	2865 Riverside Drive	Aerial Photos, Interview	Yes	M&I, PHC F1-F4, BTEX and PAHs
28. Gasoline and Associated Products Storage in Fixed Tanks	4	Listed as Rick McCloskeys Service Ltd. and having five underground storage tanks (USTs)	753 Ridgewood Avenue	ERIS, City Directories, Interviews	Yes	PHC F1-F4, VOCs and PAHs
28. Gasoline and Associated Products Storage in Fixed Tanks	5	Listed as Ed Pulley Services Ltd. and having one UST	2801 Riverside Drive	ERIS, City Directories	No	-
Other – Alkaline wastes and paint/pigment/coating residues	6	Listed as Canadian Labour Congress with waste generation approval for alkaline wastes and paint/pigment/coating residues from 2007-2008	2841 Riverside Drive	ERIS	No	-
Other – Oil Skimmings and Sludges	7	Listed as 561266 Ontario Inc. with waste approval for oil skimmings and sludges from 2016-2017	729 Ridgewood Avenue	ERIS	No	-

PCA Type	PCA ID	Description of PCA	Location of PCA	Data Source	PCA Resulted in APEC / No APEC	COPCs
Other – Oil Skimmings and Sludges	8	Listed as City of Ottawa RPAM with waste approval for oil skimmings and sludges from 2007-2020	700 Brookfield Avenue	ERIS	No	-
Other – Photoprocessing Wastes	9	Listed as Canada Post Corporation with waste approval for photo processing wastes from 1989-1997	770 Brookfield Avenue	ERIS	No	-
Other - Laboratory Chemicals and Compressed Gas Wastes	10	Listed as JDS Fitel with waste approval for inorganic and organic laboratory chemicals and compressed gas wastes from 1997-2004	770 Brookfield Avenue	ERIS	No	-
Other – Oil Skimmings and Sludges and Light Fuels	11	Listed as City of Ottawa with waste approval for oil skimmings and sludges and light fuels	2960 Riverside Drive	ERIS	No	-
31. Ink Manufacturing, Processing and Bulk Storage	12	Listed as Italian Telephone Directory and described as directory publisher	770 Ridgewood	ERIS	No	-
35. Mining, smelting and refining; ore processing; tailings storage	13	Listed as 'Thibault's Quarry' and 'O'Connor'	2960 Riverside Drive	ERIS, City Directories, Aerial photos	No	-

PCA Type	PCA ID	Description of PCA	Location of PCA	Data Source	PCA Resulted in APEC / No APEC	COPCs
40. Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	14	Listed as 'The Country Grocer Inc.' and records of pesticide presence on the property	729 Ridgewood Avenue	ERIS, City Directories	No	-
28. Gasoline and Associated Products Storage in Fixed Tanks	15	Listed as A.M.S. Service Centre	2805 Riverside Drive	Site reconnaissance, Interviews	No	-
28. Gasoline and Associated Products Storage in Fixed Tanks	16	Listed as Clean Water Works	750 Ridgewood Drive	ERIS, site reconnaissance	No	-

Notes:

- PHC F1-F4 – Petroleum Hydrocarbon Fractions F1-F4
- VOCs – Volatile Organic Compounds
- PAHs – Polycyclic Aromatic Hydrocarbons
- PCBs – Polychlorinated Biphenyls
- M&I – Metals and Inorganics

3.4 Impediments and Deviations from Sampling and Analysis Plan

The following deviations from the sampling and analysis plan were noted:

- An additional borehole was advanced (BH22-01A) approximately 10 m east of BH22-01. The additional borehole was advanced due to shallow drill refusal at BH22-01;
- Seven soil samples (some partial) were submitted for laboratory analysis to target specific COPCs at each APEC location. The 6 soil samples and duplicate adhered to the number of samples for each contaminant of concern originally proposed;
- Only one of the boreholes (BH22-03) was advanced as a monitoring well (MW22-03) due to drilling refusal above the water table; and
- Only one groundwater sample with a corresponding duplicate was collected as only one borehole was installed as a monitoring well. The duplicate sample did not include analysis of PAHs and PCBs due to low groundwater recovery.

4.0 INVESTIGATION METHODOLOGY

4.1 General

Prior to any intrusive investigation at the Site, underground public and private utility locates were completed by Utility Marx to identify the location of all underground buried utilities at the site. Utilities including telephone, gas, hydro, municipal services and private utilities were cleared through these services.

4.2 Borehole Drilling

The borehole drilling investigation was carried out on July 22, 2022. At that time a total of four boreholes (BH22-01, BH22-01A, BH22-02, and BH22-03) were advanced. BH22-03 was completed as a monitoring well (MW22-03). All boreholes were advanced on-Site to assess the soil and groundwater conditions. The boreholes were advanced by a Geoprobe 54LT track-mounted direct push drill rig owned and operated by Strata Drilling Group (Strata) operating under GEMTEC oversight. Boreholes were advanced though the overburden using a 2.13 inch Macro Core casing while advancing a 50 millimetre (mm) diameter plastic soil sample liners at 1.22 m intervals to depths ranging from the ground surface to a maximum borehole depth of 6.10 mbgs. No bedrock coring was required for the advancement of the boreholes.

4.3 Monitoring Well Installation

A monitoring well was installed in BH22-03 to determine static groundwater levels and to permit the collection of a groundwater sample for laboratory analysis. The monitoring well was installed

by Strata, who are MECP-licenced well drillers. The monitoring well was installed manually, by lowering PVC components through the surface drill casing. The well was labelled as MW22-03, following the same numbering convention as the boreholes.

Installation of the monitoring well was completed using a 31 mm diameter 1.52 m length, flush-threaded PVC screen and risers with a silica sand pack and bentonite seal. The monitoring well was finished at the surface with a flush-mount protective casing. Silica sand was placed around the screened intervals and a bentonite hole plug was used to seal the borehole to the ground surface. Monitoring well instrumentation details are included on the borehole and monitoring well logs in Appendix B.

4.4 Field Methodology

4.4.1 Soil Sampling

Soil samples were recovered at regular intervals during drilling following the *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MOE, 1996) via 50 mm diameter plastic soil sample liners. Samples were split, with a portion transferred immediately into laboratory-supplied containers and placed in a cooler. The remainder of the soils were placed in a re-sealable bag to allow for field screening. Clean nitrile gloves were worn and changed between each sample to prevent cross contamination.

Soil samples are identified as BH/MWX-Y where X indicates the year the borehole was constructed, and Y is the borehole identifier. For example, BH/MW22-03 indicates the borehole was constructed in 2022 and is identified as borehole number three.

Soil samples were inspected in the field for visual, tactile and olfactory evidence of impact, and following a period of equilibration to ambient temperature, soil sample vapours were screened using a combustible gas detector (RKI Eagle 2 combustible gas detector calibrated to hexane standards, with methane elimination enabled). The results of the soil vapour readings are provided on the Borehole and Monitoring Well Logs in Appendix B.

The soil sampling program included the submission of seven soil samples. Soil samples were selected based on soil vapour concentrations, visual, olfactory and tactile evidence of impacts, and proximity to APECs considering the pertinent COPCs. A total of seven soil samples, including two partial duplicate samples, were stored and shipped in laboratory-supplied coolers. Samples were submitted to Paracel Laboratories (Paracel), of Ottawa, Ontario, a CALA-certified analytical laboratory, under standard chain-of-custody procedures and in accordance with GEMTEC QA/QC procedures. Soil samples submitted for analyses of selected parameters are summarized in Table 4.1.

Table 4.1: Summary of Soil Analyses

Borehole	Sample	Depth Interval (mbgs)	Soil Description	Analytical Analyses
BH22-01A	SA2	1.22 – 2.13	Grey silty clay	M&I, VOCs, PHC F1-F4, PAHs
BH22-02	SA1	0.05 – 1.22	Brown silty sand with gravel	PCBs
	SA101	0.05 – 1.22	Brown silty sand with gravel	PCBs
	SA2	1.22 – 2.44	Brown silty sand with gravel	M&I, VOCs, PHC F1-F4, PAHs, PCBs
	SA102	1.22 – 2.44	Brown silty sand with gravel	M&I, VOCs, PHC F1-F4, PAHs
BH22-03	SA2	1.22-2.44	Brown silty sand with gravel	M&I, VOCs, PHC F1-F4, PAHs
	SA5	3.66 – 3.91	Brown sandy clay	VOCs, PHC F1-F4, PAHs

Notes:

- mbgs – Metres below ground surface
- PHC F1-F4 – Petroleum Hydrocarbon Fractions F1-F4
- VOCs – Volatile Organic Compounds
- PAHs – Polycyclic Aromatic Hydrocarbons
- BH22-02 SA101 is a duplicate soil sample of BH22-02 SA1
- BH22-02 SA102 is a duplicate soil sample of BH22-02 SA2

For soil samples collected for the analysis of PHC F1 and VOCs, a core of soil was placed in a pre-weighed laboratory-prepared vial containing a measured amount of methanol.

4.4.2 Field Screening Measurements

Soil samples were screened using an RKI Eagle 2, which operates as a photoionization detector (PID) and combustible gas indicator (CGI), to measure total organic vapours and combustible vapours. Results of field screening and the soil samples submitted to the laboratory for chemical analysis are included in the borehole logs (Appendix B).

The PID was equipped with a 10.6 electron-volt (eV) lamp, which was calibrated with a known concertation of isobutylene. This instrument detects VOCs that emit below an ionization potential of 10.6 eV, which includes a wide range of chemicals such as solvents and fuels. The detection limit of the instrument ranges from 0 to 15,000 ppm, and accuracy is +/- 10% for VOCs in the range of 0 and 2,000 ppm and +/- 20% of the reading above 2,000 ppm. The resolution of this instrument is 0.1 ppm for VOCs in the range of 0 and 1,000 ppm and 1 ppm for readings above 1,000 ppm. The PID provides an indication of organic contamination in soil but does not measure concentrations of individual contaminants.

The CGI detects combustible vapours such as those associated with fuels. This instrument measures a concentration of total combustible gas, calibrated to a known concentration of hexane. The instrument operates in the methane elimination mode. The detection limit of the instrument ranges from 0 to 11,000 ppm (i.e., 100 % LEL of hexane). The CGI has an accuracy of 25 ppm below 1,000 ppm and 5% of the lower explosive limit (LEL) between 1,000 ppm and

100% LEL. The PID provides an indication of contamination but not chemical specific concentrations.

There are no regulatory criteria for soil vapours; however, elevated vapour concentrations are generally indicative of the presence of volatile parameters. Concentrations vary with parameter type, concentration and age and the readings are only intended to be used as a field screening tool to provide a qualitative measure of volatile chemical concentrations within the subsurface. The readings do not provide a quantitative measure of analytical results.

The RKI Eagle 2 was obtained by GEMTEC from Maxim Environmental & Safety Inc. (Maxim) for this project. Maxim calibrates instruments on a regular basis to maintain consistent results. Site calibration of the field instrument was completed by GEMTEC field techs each day according to the manufacturer's instructions.

4.4.3 Groundwater Monitoring and Sampling

On July 29, 2022, groundwater levels were recorded in the newly installed monitoring well to determine static groundwater elevations on site. Static groundwater levels were measured relative to Top of PVC Riser (TOPVC) using an electronic water level tape (Heron Instruments water meter). The water level meter probe was decontaminated before use with soapy water (water and alconox solution) and deionised water. The static groundwater level was recorded to the nearest 0.01m. Top of PVC riser elevations were surveyed into a geodetic elevation.

The monitoring well was developed by removing three well volumes shortly after wells had been installed by the drilling contractor. Well development activities were performed using dedicated Waterra inertial hand pumps. Groundwater samples were subsequently collected, after allowing for a period of aquifer stabilization, using low-flow sampling techniques to allow for the collection of samples which were representative of formation conditions. A groundwater sample was collected from the monitoring well directly into laboratory supplied bottles using a peristaltic pump with disposable tubing. Due to the dedicated nature of all monitoring well instrumentation (Waterra inertial hand pump, ¼-inch and ¾-inch tubing) no decontamination procedures were required during groundwater sampling. All required lengths of tubing for the groundwater sampling (both ¼-inch and ¾-inch tubing) were disposed of after usage at each designated well. New tubing (both ¼-inch and ¾-inch) was used for groundwater sampling.

A total of three groundwater samples (one bulk sample, one duplicate sample, and one trip blank) were collected and stored in laboratory provided coolers with ice and/ or ice packs and shipped to the laboratory for analysis. The trip blank sample was transported to the Site during the field program and submitted with the collected groundwater samples for analysis. Samples were submitted to Paracel under standard chain-of-custody protocols and in accordance with GEMTEC QA/QC procedures. The groundwater samples submitted are summarized in Table 4.2.

Table 4.2: Summary of Groundwater Sampling Program and COPC Analyses

Monitoring Well	Sample ID	Screened Interval (mbgs)	Stratigraphic Unit	Analytical Analyses
MW22-03	MW22-03	4.42 – 5.94	Silty Sand	M&I, PHC F1-F4, VOCs, PAHs, PCBs
	MW22-103			M&I, PHC F1-F4, VOCs
Trip Blank	Trip Blank	-	-	VOCs

Notes:

- mbgs – Meters below ground surface
- PHC F1-F4 – Petroleum Hydrocarbon Fractions F1-F4
- PAHs – Polycyclic Aromatic Hydrocarbons
- M&I – Metals and Inorganics
- VOCs – Volatile Organic Compounds
- PCBs - Polychlorinated biphenyls

4.5 Laboratory Analytical Program

Soil and groundwater samples were collected directly into laboratory-supplied sampling containers. All samples were stored and shipped in coolers with ice packs. Water and soil samples were submitted to Paracel under standard chain-of-custody procedures and in accordance with GEMTEC QA/QC procedures.

Paracel is an analytical laboratory accredited by the Standards Council of Canada (SCC) in cooperation with the Canadian Association of Laboratory Accreditation (CALA) for specific environmental tests listed in the scope of accreditation. They are accredited to the ISO/IEC 17025 (2017) standard and employ in-house quality assurance and quality control programs to govern sample analysis including the analysis of method blanks, spiked blanks, and the analysis of duplicates (10%) for each sample batch.

Analytical Laboratory Certificates of Analysis are included in Appendix D.

4.6 Surveying

The ground surface elevations at the location of the boreholes (ground surface) and monitoring well (with elevations from PVC riser) were determined using a Trimble R10 global positioning system. The coordinates of the boreholes are referenced to NAD83 (CSRS) Epoch 2010, vertical network CGVD28 and are considered to be accurate within the tolerance of the instrument. The locations of the boreholes and monitoring wells advanced on-Site are shown on Figure A.1 in Appendix A.

4.7 Quality Assurance and Quality Control Measures

Quality assurance and quality control of the soil and groundwater samples was maintained by adhering to the following measures outlined below:

- The field investigation was completed under GEMTEC standard operating procedures for intrusive investigations, including soil and groundwater sampling best practices and requirements;
- Samples were assigned unique identification numbers, as they were collected, identifying the project number, date, sample location, and depth. The sample numbers were recorded in field notes for each location;
- Sample containers provided by the analytical laboratory were used and laboratory requirements for sample size, container type, preservatives and filtering were maintained;
- Non-disposable sampling equipment was cleaned using Alconox© and distilled water following each use to avoid potential cross-contamination;
- A chain-of-custody (COC) form was filled out prior to submitting the selected samples to the laboratory. The COC documented sample movement from time of field collection to receipt at the laboratory and provided a record of sample identification, requested analysis and conditions of samples upon arrival at the laboratory (e.g. temperature, container status, etc.);
- Soil samples were selected by the GEMTEC field staff for field duplicate testing. The number of duplicate samples submitted is equivalent to a minimum of 10% of the total number of samples submitted, under accepted standard industry QA/QC practices;
- A trip blank was transported to the Site during the groundwater sampling event, and was analyzed for PHCs F1/VOCs at the laboratory;
- Field monitoring equipment was calibrated according to industry requirements prior to the site visit and during implementation of the field program as required (i.e., on-site calibration); and
- Samples were randomly selected by the laboratory for Quality Assurance checks. Generally, one sample for every ten samples submitted is assessed by the laboratory internal QA/QC program. For each parameter, there is an acceptable upper and lower limit for measured concentrations.

5.0 REVIEW AND EVALUATION

5.1 Site Stratigraphy

The soil conditions identified in the boreholes advanced as part of this investigation are provided on the borehole logs in Appendix B. The borehole logs indicate the subsurface conditions encountered at the specific test locations only. Boundaries between zones on the logs are often not distinct, but rather are transitional and have been interpreted based on observations by trained GEMTEC field personnel. The precision with which subsurface conditions are indicated depends on the method of drilling, the frequency and recovery of samples, the method of sampling, and the uniformity of the subsurface conditions. Subsurface conditions at other than the test locations may vary from the conditions encountered in the boreholes. The following presents an overview of the subsurface conditions encountered in the boreholes advanced as part of this investigation.

5.1.1 Asphalt

A layer of asphalt was encountered at BH22-02 and BH22-03.

5.1.2 Topsoil

A surficial layer of topsoil was encountered at BH22-01A. The topsoil material consists of dark brown sandy silt with organic material. The topsoil has a thickness of about 150 mm.

5.1.3 Fill Material

Fill material was encountered at BH22-02 and BH22-03 below the asphalt. The fill material can be described as, brown silty sand with gravel. The fill material extends to depths ranging from about 0.05 to 2.74 mbgs

5.1.4 Silty Clay / Clayey Silt

Native deposits of brown to grey silty clay to clayey silt were encountered below the fill material at all borehole locations at depths ranging from about 0.15 to 6.10 mbgs.

5.2 Groundwater Elevations

Groundwater elevations presented below were calculated based on depth to groundwater measurements collected on July 29, 2022.

Groundwater depths were measured directly from the top of each monitoring well riser using an electronic contact water level tape. Depth measurements were converted to groundwater elevations by subtracting the measured depth from the elevation of the top of each monitoring well riser.

Table 5.1: Groundwater Levels

Monitoring Well	Groundwater Elevation (masl) July 29, 2022	Groundwater Depth (mbtoc) July 29, 2022
MW22-03	76.58	3.56

Notes:

- mbtoc – metres below top of casing
- masl – metres above sea level

Based on the topography and nearby surface water features, local shallow groundwater flow is anticipated to flow to the west of the Site.

5.3 Soil Field Screening

Soil vapours were screened within the recovered soil samples following a period of equilibration to ambient temperature using a combustible gas detector (RKI Eagle 2 combustible gas detector calibrated to hexane standards, with methane elimination enabled). Combustible headspace soil

vapour readings ranged from 0 ppm and 35 ppm at BH22-03 SA5 located between 3.66 and 3.91 mbgs.

Field screening results are provided within the borehole logs in Appendix C.

5.4 Analytical Results

5.4.1 Soil Quality

Analytical results for the soil samples submitted for analyses, and exceedances to the selected SCS, are presented in Tables C1 thoughC3, Appendix C. A summary of the soil exceedances is provided in Table 5.2. Laboratory certificates of analysis are provided in Appendix D.

Table 5.2: Summary of Soil Samples

Borehole	Sample	Depth Interval (m bgs)	Analytical Analyses	MECP Table 3 Exceedances
BH22-01A	SA2	1.22 – 2.13	M&I, VOCs, PHC F1-F4, PAHs	Cobalt, Vanadium
BH22-02	SA1	0.05 – 1.22	PCBs	None
	SA101[1]	0.05 – 1.22	PCBs	None
	SA2	1.22 – 2.44	M&I, VOCs, PHC F1-F4, PAHs, PCBs	None
	SA102[1]	1.22 – 2.44	M&I, VOCs, PHC F1-F4, PAHs	None
BH22-03	SA2	1.22-2.44	M&I, VOCs, PHC F1-F4, PAHs	Conductivity
	SA5	3.66 – 3.91	VOCs, PHC F1-F4, PAHs	None

Notes: mbgs – metres below ground surface

- MECP Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition. March 2004, amended July 1, 2011. Coarse-Textured Soils for Residential/Parkland/Institutional Property Use.
- [1] field duplicate QA/QC sample

Soil samples met the applicable MECP Table 3 SCS for all parameters analyzed, with the exception of vanadium and Cobalt at BH22-01A SA2 and conductivity at BH22-03 SA2.

In addition to the MECP Table 3 SCS, concentrations of vanadium and cobalt in native clay deposits within the project area, i.e., Champlain Sea deposits, were also compared to the 2017 document 'Elevated Background Metals Concentrations in Champlain Sea Clay – Ottawa Region' (Sterling, et al., 2017). The MECP soil values, published in the 1993 Ontario Ministry of Environment and Energy publication 'Ontario Typical Range of Chemical Parameters in Soil, Vegetation, Moss Bags and Snow' (MECP Table 1 values) were based on a statistical analysis (98th percentile) of 110 soil samples collected from various old urban and rural parks, primarily in southwestern Ontario, and are therefore not necessarily representative of natural background

concentrations of metals within the unique clay deposits of the Champlain Sea found in eastern Ontario (Sterling, et al., 2017).

Reliance on the Ottawa regional background clay concentration for vanadium and cobalt as presented in the 2017 Sterling et al., study is justified as the MECP has recommended that future updates to the Site Condition Standards (MOE, 2011) should consider using geo-regional approaches. As such, GEMTEC has consulted the above referenced document in our assessment when concentrations of naturally occurring metals were determined to exceed the generic MECP Table 3 SCS. The vanadium and cobalt concentration identified in soil sample BH22-03 SA2 is less than the proposed geo-regional background values for the Ottawa area, as such, it is GEMTECs opinion that vanadium and cobalt in native soil should not be considered an environmental concern at the Site.

5.4.2 Groundwater Quality

Analytical results for the groundwater samples submitted for analyses and the selected MECP Table 3 SCS are presented in Tables C4 throughC6, Appendix C. Laboratory Certificates of Analysis are provided in Appendix D. Groundwater samples met the applicable MECP Table 3 SCS for all parameters analyzed.

5.4.3 Quality Assurance and Quality Control Results

A QA/QC program was implemented during the investigation. The QA/QC program consisted of the use of industry standard field protocols and the collection of one blind field duplicate for both soil and groundwater. Blind duplicates are submitted for laboratory analysis to evaluate laboratory precision and the field sampling and handling procedures, in addition to sample homogeneity. The relative percent difference (RPD) is defined as the absolute value of the variation between a sample and its duplicate, when compared to the average concentration of the original and the duplicate. It is used to assess the validity of the field and laboratory analytical procedures. The RPD calculation is only applicable when concentrations in the sample and its field duplicate are greater than five times the laboratory reportable detection limit (RDL).

Two partial parent - duplicate soil sample sets was collected as part of this investigation, BH22-02 SA101 as a duplicate of BH22-01 SA1 and BH22-02 SA102 as a duplicate of BH22-02 SA2. One partial parent – duplicate groundwater set was collected, RPDs were calculated for all parameters where the original and duplicate sample concentrations exceeded five times the reportable detection limits (RDL). The RPD value ranges for parent – duplicate sets were as follows (refer to table 4.1 for what contaminants were analyzed for each parents/duplicate pair):

- BH22-02 SA1 & BH22-02 SA101: Both samples were non-detect;
    - The calculated RPDs were within the acceptable range for soils.
- BH22-02 SA2 & BH22-02 SA102: 0% to 22%

- The calculated RPDs were within the acceptable range for soils.

- MW22-03 & MW22-103: 2% to 6%
  - The calculated RPDs were within the acceptable range for groundwater.

5.4.4 Trip Blank

Trip blanks are pre-prepared samples that are transported to the Site in the same shipping containers used for the transport of the collected groundwater samples. The analysis of trip blanks is completed to determine if sample shipping or storage procedures have possibly influenced the analytical results of the VOC parameters. One trip blank was collected as part of this environmental sampling event.

The concentrations of PHC F1/VOC parameters were less than the laboratory reportable detection limits in the trip blank sample, with laboratory detection limits below the applicable standards. These results indicate that the data quality is considered reliable, with no evidence of cross-contamination during groundwater sample transport to the laboratory.

5.4.5 Analytical Laboratory QA/QC

The analytical laboratory completed all analyses in accordance with internal laboratory QA/QC which includes standardized analytical methods and procedures, in accordance with O.Reg. 153/04, as amended. GEMTECs review of Paracel's QA/QC certificates indicates that:

- Certificate of Analysis #2230573 – July 28, 2022 – Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were outside the accepted range. Batch data accepted based on other QC.

5.4.6 Analytical QA/QC Summary

The analytical laboratory completed all analyses in accordance with internal laboratory QA/QC which includes standardized analytical methods and procedures. The sample collection methods and duplicates do not suggest inconsistencies in the field collection, transport, or in the laboratory analysis methods.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analytical results of the Phase Two ESA, GEMTEC offers the following summary:

- The overburden observed at the site during the subsurface investigation generally consisted of a layer of fill material (silty sand and gravel) to a depth of approximately 2.74 mbgs, underlain by varying thicknesses native deposits of brown to grey silty clay and clayey silt to a maximum borehole depth of 6.10 mbgs;
- Based on the topography and nearby surface water features, inferred local shallow groundwater flow is anticipated to flow to the west of the Site;

- Five of the soil samples met the MECP Table 3 RPI SCS for all parameters analyzed – one of the soil samples (BH20-1A SA2) exceeded the MECP Table 3 SCS for vanadium and cobalt and BH22-03 SA2 exceeded for EC;
    - A vanadium and cobalt exceedance to MECP Table 3 SCS was identified, however considering the geo-regional background clay concentration for vanadium and cobalt (Sterling, et al., 2017) at outlined in section 5.4.1, the sample was identified as being naturally occurring; and,
    - A conductivity exceedance to MECP Table 3 SCS was identified, however this exceedance was likely attributed to salt application and de-icing activities during winter maintenance of the parking lot and pedestrian pathways and access routes.
- The groundwater sample from MW22-03 submitted for analysis met the MECP Table 3 SCS for all parameters analyzed.

Based on these results, no additional work is recommended at this time. However, if future development or construction activities are carried out at the property at a future date, additional soil quality sampling and reporting may be required to inform excess soils management planning, exportation, re-use / disposal of soils and potentially project registration, per Ontario Regulation 406/19. Similarly, additional groundwater quality sampling and reporting may be required to inform construction dewatering and discharge management options and to support an Environmental Activity Sector Registry or Permit to Take Water with the Ministry of the Environment, Conservation and Parks (MECP).

Lastly, if the monitoring well is not required for future groundwater monitoring and sampling, it is recommended to be decommissioned in accordance with O.Reg. 903, as amended.

7.0 LIMITATION OF LIABILITY

This report was prepared for and the work referred to within it has been undertaken by GEMTEC Consulting Engineers and Scientists Limited for St. Patrick's Home of Ottawa It is intended for the exclusive use of St. Patrick's Home of Ottawa This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and St. Patrick's Home of Ottawa Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared. This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, subsurface investigations at discrete locations and depths and laboratory analyses of specific chemical parameters and material during a specific time interval, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, portions of the site that were unavailable for direct

investigation, subsurface locations on the site that were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Chemical parameters other than those addressed by the investigation described in this report may exist in soil and groundwater elsewhere on the site, the chemical parameters addressed in the report may exist in soil and groundwater at other locations at the site that were not investigated, and concentrations of the chemical parameters addressed which are different than those reported may exist at other locations on the site than those from where the samples were taken.

Should new information become available during future work, including excavations, borings, or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

8.0 REFERENCES

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9.0 CLOSURE

We trust this letter is sufficient for your requirements. If you have any questions concerning this information or if we can be of further service to you on this project, please call us.

Connor Shaw, B.Eng
Environmental Scientist

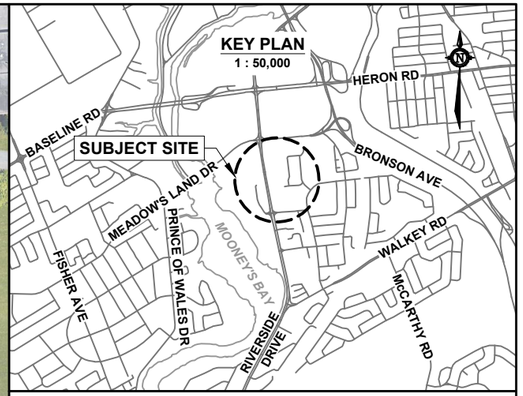
Brenda Thom, M. Sc. (Eng), P.Eng
Senior Environmental Engineer

Mike Kosiw, B. Sc, EP, $CESA_{II}$
Senior Environmental Scientist

CS/MK/BT

APPENDIX A

Figures



LEGEND

BH/MW # — BOREHOLE ID

XX.XX — GROUND SURFACE ELEVATION, IN METRES GEODETIC DATUM

BOREHOLE LOCATION
(current investigation by GEMTEC)

MONITORING WELL LOCATION
(current investigation by GEMTEC)

APPROXIMATE PROPERTY BOUNDARY

Scale
1:3000
0 100 200m

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www.gemtec.ca
ottawa@gemtec.ca

Drawing
BOREHOLE AND MONITORING WELL LOCATION PLAN

Client
ST. PATRICK'S HOME OF OTTAWA

Project
100416.001

Drwn by
S.L.

Chkd by
C.S.

PHASE II
ENVIRONMENTAL SITE ASSESSMENT
2865 RIVERSIDE DRIVE
OTTAWA, ONTARIO

Date
AUGUST, 2022

Rev.
0

FIGURE A.1

N:\PROJECTS\100400\100416.001\06_DRAFTING\1.DRAWINGS\100416.001_PHTWO-ESA_R0_2022-08.DWG

LEGEND

BH/MW # — BOREHOLE ID

XX.XX — GROUND SURFACE ELEVATION, IN METRES GEODETIC DATUM

BOREHOLE LOCATION
(current investigation by GEMTEC)

MONITORING WELL LOCATION
(current investigation by GEMTEC)

APPROXIMATE PROPERTY BOUNDARY

Parameter	MECP Table 3 RPI SCS
Metals and Inorganics	
EC (uS/cm)	700
Cobalt (µg/g)	22
Vanadium (µg/g)	86

Notes:

NA - Not Analyzed

'mbgs' - metres below ground surface

1 - MECP Table 3 SCS: Full Depth Background Site Condition Standards in a Non-Potable Ground Water Condition (MECP 2019)

* - Exceeded MECP Table 3 RPI SCS but did not exceed the proposed geo-regional background clay concentrations (Sterling, et al., 2017)

Red - Exceeds MECP Table 3 RPI SCS

Scale
1:3000
0 100 200m

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Drawing
SOIL EXCEEDANCES PLAN

Client
ST. PATRICK'S HOME OF OTTAWA

Project
100416.001

PHASE II
ENVIRONMENTAL SITE ASSESSMENT
2865 RIVERSIDE DRIVE
OTTAWA, ONTARIO

Drwn by: S.L.
Chkd by: C.S.

Date: AUGUST, 2022
Rev.: 0

FIGURE A.2

N:\PROJECTS\100400\100416.001\06_DRAFTING\1.DRAWINGS\100416.001_PHTWO-ESA_R0_2022-08-31.DWG

APPENDIX B

Borehole and Monitoring Well Logs

RECORD OF BOREHOLE 22-01A

CLIENT: St. Patrick's Home of Ottawa
PROJECT: Phase II Environmental Site Assessment
JOB#: 100416.001
LOCATION: See Figure A.1

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Jul 22 2022

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	SAMPLE DATA: TYPE	SAMPLE DATA: RECOVERY (mm)	SAMPLE DATA: BLOWS/0.3m	SAMPLE DATA: LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		78.94									
0		TOPSOIL		78.79									
		Grey CLAYEY SILT with organic material		0.15	1	CA	1056			HEX: 0 IBL: 0			Borehole backfilled with granular Benseal (bentonite)
1				77.72									
		Grey SILTY CLAY		1.22	2	CA	1056		BH22-01A SA2: PHC F1-F4, VOCs, PAHs, M&I	HEX: 0 IBL: 0			
2				76.81									
		End of Borehole (Refusal)		2.13 76.81									

GEMTEC
Consulting Engineers and Scientists

LOGGED: EW
CHECKED: SKR

ENV - BOREHOLE LOG 100416.001_GINT.GPJ GEMTEC 2018.GDT 9/13/22

RECORD OF BOREHOLE 22-02

CLIENT: St. Patrick's Home of Ottawa
PROJECT: Phase II Environmental Site Assessment
JOB#: 100416.001
LOCATION: See Figure A.1

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Jul 22 2022

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	SAMPLE DATA: TYPE	SAMPLE DATA: RECOVERY (mm)	SAMPLE DATA: BLOWS/0.3m	SAMPLE DATA: LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		83.68									
0		ASPHALT		83.63									
		Brown SILTY SAND with gravel (FILL)		0.05	1	CA	610		BH22-02 SA1: PCBs Field Duplicate BH22-02 SA101: PCBs	HEX: 0 IBL: 0			
1													
					2	CA	610		BH22-02 SA2: PHC F1-F4, VOCs, PAHs, M&I, PCBs Field Duplicate BH22-02 SA102: PHC F1-F4, VOCs, PAHs, M&I	HEX: 0 IBL: 0			
2													
				80.94									
		Brown SILTY SAND with gravel and cobbles		2.74	3	CA	405			HEX: 0 IBL: 0			
3													
				79.87									
		Grey SILTY CLAY		3.81	4	CA	616			HEX: 0 IBL: 0			
4													
				78.79									
		End of Borehole (Refusal)		4.89 78.79									
5													

Borehole backfilled with granular Benseal (bentonite). Cold Patch used to replace removed asphalt

GEMTEC
Consulting Engineers and Scientists

LOGGED: CS
CHECKED: SKR

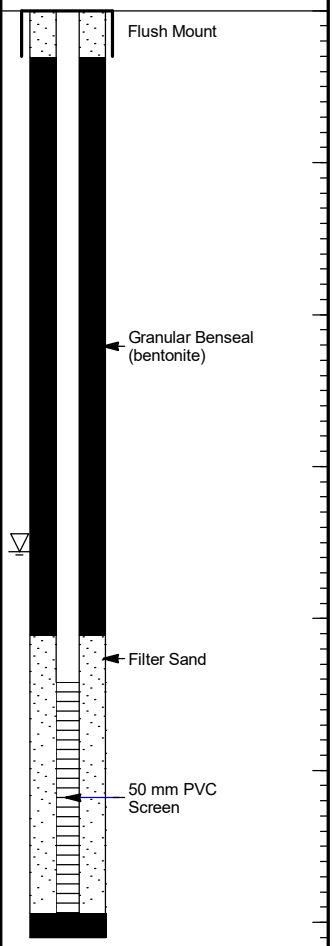
ENV - BOREHOLE LOG 100416.001_GINT.GPJ GEMTEC 2018.GDT 9/13/22

RECORD OF BOREHOLE 22-03

CLIENT: St. Patrick's Home of Ottawa
PROJECT: Phase II Environmental Site Assessment
JOB#: 100416.001
LOCATION: See Figure A.1

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Jul 22 2022

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
0		Ground Surface		80.07									
		ASPHALT		80.02									
		Brown SILTY SAND with gravel (FILL)		0.05	1	CA	457			HEX: 0 IBL: 1			
1													
					2	CA	440		BH22-03 SA2: PHC F1-F4, VOCs, PAHs, M&I	HEX: 0 IBL: 0			
2				77.57									
		Brown Silty Clay		2.50	3	CA	528			HEX: 0 IBL: 0			
3					4	CA	528			HEX: 0 IBL: 0			
				76.41									
		Brown SANDY CLAY with gravel, silt (TILL)		3.66	5	CA	528		BH22-03 SA5: PHC F1-F4, VOCs, PAHs	HEX: 35 IBL: 1			
				76.16									
4		Grey SILTY CLAY with sand		3.91	6	CA	528			HEX: 0 IBL: 1			
				75.30									
		Grey CLAYEY SILT		4.77									
5					7	CA	0			Insufficient recovery for vapour readings			
6				73.97									
		End of Borehole (No Refusal)		6.10									
				73.97									



GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEVATION (m)
Jul. 25/22	3.56 ▽	76.51

GEMTEC
Consulting Engineers and Scientists

LOGGED: CS
CHECKED: SKR

APPENDIX C

Analytical Summary Tables

Table C1
Soil Analytical Results - Metals Inorganics and Polycyclic Aromatic Hydrocarbons
Phase II Envrionmental Site Assessment
2865 Riverside Drive,
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 3 RPI SCS[1]	Sample ID: BH22-01A SA2	BH22-02 SA1	BH22-02 SA101	BH22-02 SA2	BH22-02 SA102	BH22-03 SA2	BH22-03 SA5
Laboratory Sample ID:				2230573-01	2230573-02	2230573-03	2230573-04	2230573-05	2230573-06	2230573-07
Date Sampled (dd/mm/yyyy):				22/07/2022	22/07/2022		22/07/2022		22/07/2022	22/07/2022
Sample Depth (mbgs):				1.22 - 2.13	0.05 - 0.61		1.22 - 2.44		1.22 - 2.44	3.66 - 3.91
					BH22-02 SA101 Duplicate of BH22-02 SA1		BH22-02 SA102 Duplicate of BH22-02 SA2			
General Inorganics										
SAR	N/A	0.01	5	0.35	N/A	N/A	2.51	2.78	1.04	N/A
Conductivity	uS/cm	5	700	151	N/A	N/A	629	566	*2550*	N/A
Cyanide, free	ug/g dry	0.03	0.051	ND (0.03)	N/A	N/A	ND (0.03)	ND (0.03)	ND (0.03)	N/A
pH	pH Units	0.05	NS	7.08	N/A	N/A	7.26	7.21	7.32	N/A
Metals										
Antimony	ug/g dry	1.0	7.5	ND (1.0)	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Arsenic	ug/g dry	1.0	18	4.6	N/A	N/A	5.8	5.8	9.3	N/A
Barium	ug/g dry	1.0	390	343	N/A	N/A	59.0	50.5	24.6	N/A
Beryllium	ug/g dry	0.5	4	1.0	N/A	N/A	0.5	0.6	ND (0.5)	N/A
Boron, available	ug/g dry	0.5	1.5	ND (0.5)	N/A	N/A	ND (0.5)	ND (0.5)	ND (0.5)	N/A
Boron (Hot Water Soluble)	ug/g dry	5.0	120	ND (5.0)	N/A	N/A	9.3	9.5	7.6	N/A
Cadmium	ug/g dry	0.5	1.2	ND (0.5)	N/A	N/A	ND (0.5)	ND (0.5)	ND (0.5)	N/A
Chromium (VI)	ug/g dry	0.2	8	0.7	N/A	N/A	ND (0.2)	ND (0.2)	0.3	N/A
Chromium	ug/g dry	5.0	160	103	N/A	N/A	19.6	20.1	14.2	N/A
Cobalt	ug/g dry	1.0	22	*25.1*	N/A	N/A	7.6	7.3	9.5	N/A
Copper	ug/g dry	5.0	140	55.9	N/A	N/A	22.9	22.7	8.7	N/A
Lead	ug/g dry	1.0	120	6.0	N/A	N/A	20.0	16.0	19.3	N/A
Mercury	ug/g dry	0.1	0.27	ND (0.1)	N/A	N/A	ND (0.1)	ND (0.1)	ND (0.1)	N/A
Molybdenum	ug/g dry	1.0	6.9	ND (1.0)	N/A	N/A	1.7	1.7	6.9	N/A
Nickel	ug/g dry	5.0	100	57.5	N/A	N/A	16.5	16.7	18.4	N/A
Selenium	ug/g dry	1.0	2.4	ND (1.0)	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Silver	ug/g dry	0.3	20	ND (0.3)	N/A	N/A	ND (0.3)	ND (0.3)	ND (0.3)	N/A
Thallium	ug/g dry	1.0	1	ND (1.0)	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Uranium	ug/g dry	1.0	23	ND (1.0)	N/A	N/A	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Vanadium	ug/g dry	10.0	86	*121*	N/A	N/A	30.2	30.6	15.2	N/A
Zinc	ug/g dry	20.0	340	136	N/A	N/A	41.9	47.7	ND (20.0)	N/A
Polycyclic Aromatic Hydrocarbons	ug/g dry									
Acenaphthene	ug/g dry	0.02	7.9	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Acenaphthylene	ug/g dry	0.02	0.15	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Anthracene	ug/g dry	0.02	0.67	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Benzo[a]anthracene	ug/g dry	0.02	0.5	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Benzo[a]pyrene	ug/g dry	0.02	0.3	ND (0.02)	N/A	N/A	ND (0.02)	0.02	ND (0.02)	ND (0.02)
Benzo[b]fluoranthene	ug/g dry	0.02	0.78	ND (0.02)	N/A	N/A	0.02	0.02	ND (0.02)	ND (0.02)
Benzo[g,h,i]perylene	ug/g dry	0.02	6.6	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Benzo[k]fluoranthene	ug/g dry	0.02	0.78	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Chrysene	ug/g dry	0.02	7	ND (0.02)	N/A	N/A	0.02	0.02	ND (0.02)	ND (0.02)
Dibenzo[a,h]anthracene	ug/g dry	0.02	0.1	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Fluoranthene	ug/g dry	0.02	0.69	ND (0.02)	N/A	N/A	0.03	0.03	ND (0.02)	ND (0.02)
Fluorene	ug/g dry	0.02	62	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Indeno [1,2,3-cd] pyrene	ug/g dry	0.02	0.38	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
1-Methylnaphthalene	ug/g dry	0.02	0.99	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
2-Methylnaphthalene	ug/g dry	0.02	0.99	ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Methylnaphthalene (1&2)	ug/g dry	0.04	0.99	ND (0.04)	N/A	N/A	ND (0.04)	ND (0.04)	ND (0.04)	ND (0.04)
Naphthalene	ug/g dry	0.01	0.6	ND (0.01)	N/A	N/A	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Phenanthrene	ug/g dry	0.02	6.2	ND (0.02)	N/A	N/A	0.02	ND (0.02)	ND (0.02)	ND (0.02)
Pyrene	ug/g dry	0.02	78	ND (0.02)	N/A	N/A	0.03	0.02	ND (0.02)	ND (0.02)

Notes:
MDL - Method Detection Limit
'mbgs' - Metres Below Ground Surface
NA - Not Analyzed
'ND' - Non-Detect Sample
1 - MECP Table 3 ESQS: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional coarse grained land use (MECP 2011)
Italics - Exceeds MECP Table 3 RPI SCS

Table C2
Soil Analytical Results - Volatile Organic Compounds, Petroleum Hydrocarbons, and Polychlorinated Biphenyls
Phase II Envrionmental Site Assessment
2865 Riverside Drive,
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 3 RPI SCS[1]	Sample ID:	BH22-01A SA2	BH22-02 SA1	BH22-02 SA101	BH22-02 SA2	BH22-02 SA102	BH22-03 SA2	BH22-03 SA5
				Laboratory Sample ID:	2230573-01	2230573-02	2230573-03	2230573-04	2230573-05	2230573-06	2230573-07
				Date Sampled (dd/mm/yyyy):	22/07/2022	22/07/2022		22/07/2022		22/07/2022	22/07/2022
				Sample Depth (mbgs):	1.22 - 2.13	0.05 - 0.61		1.22 - 2.44		1.22 - 2.44	3.66 - 3.91
						BH22-02 SA101 Duplicate of BH22-02 SA1		BH22-02 SA102 Duplicate of BH22-02 SA2			
Volatiles											
Acetone	ug/g dry	0.50	16		ND (0.50)	N/A	N/A	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Benzene	ug/g dry	0.02	0.21		ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Bromodichloromethane	ug/g dry	0.05	13		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Bromoform	ug/g dry	0.05	0.27		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Bromomethane	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Carbon Tetrachloride	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Chlorobenzene	ug/g dry	0.05	2.4		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Chloroform	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Dibromochloromethane	ug/g dry	0.05	9.4		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Dichlorodifluoromethane	ug/g dry	0.05	16		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,2-Dichlorobenzene	ug/g dry	0.05	3.4		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,3-Dichlorobenzene	ug/g dry	0.05	4.8		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,4-Dichlorobenzene	ug/g dry	0.05	0.083		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,1-Dichloroethane	ug/g dry	0.05	3.5		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,2-Dichloroethane	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,1-Dichloroethylene	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
cis-1,2-Dichloroethylene	ug/g dry	0.05	3.4		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
trans-1,2-Dichloroethylene	ug/g dry	0.05	0.084		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,2-Dichloropropane	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
cis-1,3-Dichloropropylene	ug/g dry	0.05	NS		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
trans-1,3-Dichloropropylene	ug/g dry	0.05	NS		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,3-Dichloropropene, total	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Ethylbenzene	ug/g dry	0.05	2		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Ethylene dibromide (dibromoethane, 1,2-)	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Hexane	ug/g dry	0.05	2.8		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Methyl Ethyl Ketone (2-Butanone)	ug/g dry	0.50	16		ND (0.50)	N/A	N/A	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methyl Isobutyl Ketone	ug/g dry	0.50	1.7		ND (0.50)	N/A	N/A	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Methyl tert-butyl ether	ug/g dry	0.05	0.75		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Methylene Chloride	ug/g dry	0.05	0.1		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Styrene	ug/g dry	0.05	0.7		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,1,1,2-Tetrachloroethane	ug/g dry	0.05	0.058		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,1,2,2-Tetrachloroethane	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Tetrachloroethylene	ug/g dry	0.05	0.28		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Toluene	ug/g dry	0.05	2.3		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,1,1-Trichloroethane	ug/g dry	0.05	0.38		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
1,1,2-Trichloroethane	ug/g dry	0.05	0.05		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Trichloroethylene	ug/g dry	0.05	0.061		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Trichlorofluoromethane	ug/g dry	0.05	4		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Vinyl Chloride	ug/g dry	0.02	0.02		ND (0.02)	N/A	N/A	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
m/p-Xylene	ug/g dry	0.05	NS		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
o-Xylene	ug/g dry	0.05	NS		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Xylenes, total	ug/g dry	0.05	3.1		ND (0.05)	N/A	N/A	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Petroleum Hydrocarbons											
F1 PHCs (C6-C10)	ug/g dry	7	55		ND (7)	N/A	N/A	ND (7)	ND (7)	ND (7)	ND (7)
F2 PHCs (C10-C16)	ug/g dry	4	98		ND (4)	N/A	N/A	ND (4)	ND (4)	ND (4)	ND (4)
F3 PHCs (C16-C34)	ug/g dry	8	300		ND (8)	N/A	N/A	ND (8)	9	25	237
F4 PHCs (C34-C50)	ug/g dry	6	2800		ND (6)	N/A	N/A	ND (6)	15	30	296
F4G PHCs (gravimetric)	ug/g dry	50	2800		N/A	N/A	N/A	N/A	N/A	N/A	394
Polychlorintaed Biphenyls											
PCBs, total	ug/g dry	0.05	0.35		N/A	ND (0.05)	ND (0.05)	ND (0.05)	N/A	N/A	N/A

Notes:
MDL - Method Detection Limit
'mbgs' - Metres Below Ground Surface
'NS' - No Standard/ Guideline
NA - Not Analyzed
'ND' - Non-Detect Sample
1 - MECP Table 3 SCS: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional coarse grained land use (MECP 2011)
Italics - Exceeds MECP Table 3 RPI SCS

TABLE C3
TCLP Analytical Results
Phase II Envrionmental Site Assessment
2865 Riverside Drive,
Ottawa, Ontario

Parameter	Units	MDL	MECP O.Reg. 558/347 Schedule 4[1]	Sample ID: Date Sampled (dd/mm/yyyy): TCLP 22/07/2022
Physical Characteristics				
Flashpoint	°C	-	NS	>70
EPA 1311 - TCLP Leachate Metals				
Arsenic	mg/L	0.05	2.5	ND (0.05)
Barium	mg/L	0.05	100	0.28
Boron	mg/L	0.05	500	ND (0.05)
Cadmium	mg/L	0.01	0.5	ND (0.01)
Chromium	mg/L	0.05	5	ND (0.05)
Lead	mg/L	0.05	5	ND (0.05)
Mercury	mg/L	0.005	0.1	ND (0.005)
Selenium	mg/L	0.05	1	ND (0.05)
Silver	mg/L	0.05	5	ND (0.05)
Uranium	mg/L	0.05	10	ND (0.05)
EPA 1311 - TCLP Leachate Volatiles				
Benzene	mg/L	0.005	0.5	ND (0.005)
Carbon Tetrachloride	mg/L	0.005	0.5	ND (0.005)
Chlorobenzene	mg/L	0.004	8	ND (0.004)
Chloroform	mg/L	0.006	10	ND (0.006)
1,2-Dichlorobenzene	mg/L	0.004	20	ND (0.004)
1,4-Dichlorobenzene	mg/L	0.004	0.5	ND (0.004)
1,2-Dichloroethane	mg/L	0.005	0.5	ND (0.005)
1,1-Dichloroethylene	mg/L	0.006	1.4	ND (0.006)
Methyl Ethyl Ketone (2-Butanone)	mg/L	0.30	200	ND (0.30)
Methylene Chloride	mg/L	0.04	5	ND (0.04)
Tetrachloroethylene	mg/L	0.005	3	ND (0.005)
Trichloroethylene	mg/L	0.004	5	ND (0.004)
Vinyl Chloride	mg/L	0.005	0.2	ND (0.005)
EPA 1311 - TCLP Leachate Organics				
Benzo[a]pyrene	mg/L	0.0001	0.001	ND (0.0001)

Notes:
MDL - Method Detection Limit
'mbgs' - Metres Below Ground Surface
'NS' - No Standard/ Guideline
NA - Not Analyzed
'ND' - Non-Detect Sample
1 - MECP O.Reg. 558/347 Schedule 4: Leachate Quality Criteria, to evaluate waste classification (hazardous or non-hazardous waste) for on-site soils (MECP, 2000).
Italics - Exceeds MECP O.Reg. 558/347 Schedule 4

Table C4
Groundwater Analytical Results - Metals and Inorganics
Phase II Environmental Site Assessment
2865 Riverside Drive,
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 3 RPI SCS[1]	Sample ID: MW22-03	Sample ID: MW22-103
Laboratory Sample ID:				2231574-01	2231574-02
Date Sampled (dd/mm/yyyy):				29/07/2022	
Screen Interval (mbgs):				4.42 - 5.94	
				MW22-103 Duplicate of MW22-03	
General Inorganics					
Cyanide, free	ug/L	0.01		ND (2)	ND (2)
Metals					
Mercury	ug/L	0.1	0.29	ND (0.1)	ND (0.1)
Antimony	ug/L	0.5	20000	ND (0.5)	ND (0.5)
Arsenic	ug/L	1	1900	ND (1)	ND (1)
Barium	ug/L	1	29000	85	80
Beryllium	ug/L	0.5	67	ND (0.5)	ND (0.5)
Boron	ug/L	10	45000	139	143
Cadmium	ug/L	0.1	2.7	0.4	0.5
Chromium	ug/L	1	810	ND (1)	ND (1)
Chromium (VI)	ug/L	10	140	ND (10)	ND (10)
Cobalt	ug/L	0.5	66	4.5	4.4
Copper	ug/L	0.5	87	2.7	2.7
Lead	ug/L	0.1	25	ND (0.1)	ND (0.1)
Molybdenum	ug/L	0.5	9200	4.4	4.1
Nickel	ug/L	1	490	9	9
Selenium	ug/L	1	63	ND (1)	ND (1)
Silver	ug/L	0.1	1.5	ND (0.1)	ND (0.1)
Sodium	ug/L	200	2300000	1460000	1430000
Thallium	ug/L	0.1	510	ND (0.1)	ND (0.1)
Uranium	ug/L	0.1	420	10.9	10.4
Vanadium	ug/L	0.5	250	2.2	2.3
Zinc	ug/L	5	1100	ND (5)	ND (5)

Notes:
MDL - Method Detection Limit
'mbgs' - Metres Below Ground Surface
'NS' - No Standard/ Guideline
NA - Not Analyzed
'ND' - Non-Detect Sample
1 - MECP Table 3 ESQS: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for All Types of Property Use, Coarse Grained Soil (MECP 2011)
Italics - Exceeds MECP Table 3 RPI SCS

Table C5
Groundwater Analytical Results - Volatile Organic Compounds and Petroleum Hydrocarbons
Phase II Environmental Site Assessment
2865 Riverside Drive,
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 3 RPI SCS[1]	Sample ID: MW22-03 / Laboratory Sample ID: 2231574-01 / Date Sampled (dd/mm/yyyy): 29/07/2022 / Screen Interval (mbgs): 4.42 - 5.94	MW22-103 / 2231574-02 / MW22-103 Duplicate of MW22-03	Trip Blank / 2231574-03 / 28/07/2022
Volatiles						
Acetone	ug/L	5.0	130000	ND (5.0)	ND (5.0)	ND (5.0)
Benzene	ug/L	0.5	44	ND (0.5)	ND (0.5)	ND (0.5)
Bromodichloromethane	ug/L	0.5	85000	ND (0.5)	ND (0.5)	ND (0.5)
Bromoform	ug/L	0.5	380	ND (0.5)	ND (0.5)	ND (0.5)
Bromomethane	ug/L	0.5	5.6	ND (0.5)	ND (0.5)	ND (0.5)
Carbon Tetrachloride	ug/L	0.2	0.79	ND (0.2)	ND (0.2)	ND (0.2)
Chlorobenzene	ug/L	0.5	630	ND (0.5)	ND (0.5)	ND (0.5)
Chloroform	ug/L	0.5	2.4	ND (0.5)	ND (0.5)	ND (0.5)
Dibromochloromethane	ug/L	0.5	82000	ND (0.5)	ND (0.5)	ND (0.5)
Dichlorodifluoromethane	ug/L	1.0	4400	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichlorobenzene	ug/L	0.5	4600	ND (0.5)	ND (0.5)	ND (0.5)
1,3-Dichlorobenzene	ug/L	0.5	9600	ND (0.5)	ND (0.5)	ND (0.5)
1,4-Dichlorobenzene	ug/L	0.5	8	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethane	ug/L	0.5	320	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloroethane	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,2-Dichloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)
trans-1,2-Dichloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)
1,2-Dichloropropane	ug/L	0.5	16	ND (0.5)	ND (0.5)	ND (0.5)
cis-1,3-Dichloropropylene	ug/L	0.5		ND (0.5)	ND (0.5)	ND (0.5)
trans-1,3-Dichloropropylene	ug/L	0.5		ND (0.5)	ND (0.5)	ND (0.5)
1,3-Dichloropropene, total	ug/L	0.5	5.2	ND (0.5)	ND (0.5)	ND (0.5)
Ethylbenzene	ug/L	0.5	2300	ND (0.5)	ND (0.5)	ND (0.5)
Ethylene dibromide (dibrom	ug/L	0.2	0.25	ND (0.2)	ND (0.2)	ND (0.2)
Hexane	ug/L	1.0	51	ND (1.0)	ND (1.0)	ND (1.0)
Methyl Ethyl Ketone (2-Buta	ug/L	5.0	470000	ND (5.0)	ND (5.0)	ND (5.0)
Methyl Isobutyl Ketone	ug/L	5.0	140000	ND (5.0)	ND (5.0)	ND (5.0)
Methyl tert-butyl ether	ug/L	2.0	190	ND (2.0)	ND (2.0)	ND (2.0)
Methylene Chloride	ug/L	5.0	610	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	ug/L	0.5	1300	ND (0.5)	ND (0.5)	ND (0.5)
1,1,1,2-Tetrachloroethane	ug/L	0.5	3.3	ND (0.5)	ND (0.5)	ND (0.5)
1,1,2,2-Tetrachloroethane	ug/L	0.5	3.2	ND (0.5)	ND (0.5)	ND (0.5)
Tetrachloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)
Toluene	ug/L	0.5	18000	ND (0.5)	ND (0.5)	ND (0.5)
1,1,1-Trichloroethane	ug/L	0.5	640	ND (0.5)	ND (0.5)	ND (0.5)
1,1,2-Trichloroethane	ug/L	0.5	4.7	ND (0.5)	ND (0.5)	ND (0.5)
Trichloroethylene	ug/L	0.5	1.6	ND (0.5)	ND (0.5)	ND (0.5)
Trichlorofluoromethane	ug/L	1.0	2500	ND (1.0)	ND (1.0)	ND (1.0)
Vinyl Chloride	ug/L	0.5	0.5	ND (0.5)	ND (0.5)	ND (0.5)
m/p-Xylene	ug/L	0.5		ND (0.5)	ND (0.5)	ND (0.5)
o-Xylene	ug/L	0.5		ND (0.5)	ND (0.5)	ND (0.5)
Xylenes, total	ug/L	0.5	4200	ND (0.5)	ND (0.5)	ND (0.5)
Petroleum Hydrocarbons						
F1 PHCs (C6-C10)	ug/L	25	750	ND (25)	ND (25)	ND (25)
F2 PHCs (C10-C16)	ug/L	100	150	ND (100)	ND (100)	N/A
F3 PHCs (C16-C34)	ug/L	100	500	ND (100)	ND (100)	N/A
F4 PHCs (C34-C50)	ug/L	100	500	ND (100)	ND (100)	N/A

Notes:
MDL - Method Detection Limit
'mbgs' - Metres Below Ground Surface
'NS' - No Standard/ Guideline
NA - Not Analyzed
'ND' - Non-Detect Sample
1 - MECP Table 3 ESQS: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for All Types of Property Use, Coarse Grained Soil (MECP 2011)
Italics - Exceeds MECP Table 3 RPI SCS

Table C6
Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons and Polychlorinated Biphenyls
Phase II Environmental Site Assessment
2865 Riverside Drive,
Ottawa, Ontario

Parameter	Units	MDL	MECP Table 3 RPI SCS[1]	Sample ID: MW22-03 Laboratory Sample ID: 2231182-01 Date Sampled (dd/mm/yyyy): 26/07/2022 Screen Interval (mbgs): 4.42 - 5.94
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	ug/L	0.05	600	ND (0.05)
Acenaphthylene	ug/L	0.05	1.8	ND (0.05)
Anthracene	ug/L	0.01	2.4	ND (0.01)
Benzo[a]anthracene	ug/L	0.01	4.7	ND (0.01)
Benzo[a]pyrene	ug/L	0.01	0.81	ND (0.01)
Benzo[b]fluoranthene	ug/L	0.05	0.75	ND (0.05)
Benzo[g,h,i]perylene	ug/L	0.05	0.2	ND (0.05)
Benzo[k]fluoranthene	ug/L	0.05	0.4	ND (0.05)
Chrysene	ug/L	0.05	1	ND (0.05)
Dibenzo[a,h]anthracene	ug/L	0.05	0.52	ND (0.05)
Fluoranthene	ug/L	0.01	130	ND (0.01)
Fluorene	ug/L	0.05	400	ND (0.05)
Indeno [1,2,3-cd] pyrene	ug/L	0.05	0.2	ND (0.05)
1-Methylnaphthalene	ug/L	0.05	1800	ND (0.05)
2-Methylnaphthalene	ug/L	0.05	1800	ND (0.05)
Methylnaphthalene (1&2)	ug/L	0.10	1800	ND (0.10)
Naphthalene	ug/L	0.05	1400	ND (0.05)
Phenanthrene	ug/L	0.05	580	ND (0.05)
Pyrene	ug/L	0.01	68	ND (0.01)
Polychlorinated Biphenyls				
PCBs, total	ug/L	0.05	7.8	ND (0.05)

Notes:
MDL - Method Detection Limit
'mbgs' - Metres Below Ground Surface
'NS' - No Standard/ Guideline
NA - Not Analyzed
'ND' - Non-Detect Sample

1 - MECP Table 3 ESQS: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for All Types of Property Use, Coarse Grained Soil (MECP 2011)
Italics - Exceeds MECP Table 3 RPI SCS

APPENDIX D

Laboratory Analytical Reports

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Certificate of Analysis

GEMTEC Consulting Engineers and Scientists Limited

32 Steacie Drive
Kanata, ON K2K 2A9
Attn: Connor Shaw

Client PO: 100416.001
Project: 100416.001
Custody: 138016

Report Date: 28-Jul-2022
Order Date: 22-Jul-2022

Order #: 2230573

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

Paracel ID	Client ID
2230573-01	BH22-01A SA2
2230573-02	BH22-02 SA1
2230573-03	BH22-02 SA101
2230573-04	BH22-02 SA2
2230573-05	BH22-02 SA102
2230573-06	BH22-03 SA2
2230573-07	BH22-03 SA5

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 28-Jul-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 22-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	27-Jul-22	27-Jul-22
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	25-Jul-22	26-Jul-22
Conductivity	MOE E3138 - probe @25 °C, water ext	27-Jul-22	27-Jul-22
Cyanide, free	MOE E3015 - Auto Colour, water extraction	26-Jul-22	26-Jul-22
Mercury by CVAA	EPA 7471B - CVAA, digestion	27-Jul-22	28-Jul-22
PCBs, total	SW846 8082A - GC-ECD	22-Jul-22	28-Jul-22
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	25-Jul-22	25-Jul-22
PHC F1	CWS Tier 1 - P&T GC-FID	25-Jul-22	26-Jul-22
PHC F4G (gravimetric)	CWS Tier 1 - Extraction Gravimetric	28-Jul-22	28-Jul-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	25-Jul-22	28-Jul-22
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	27-Jul-22	27-Jul-22
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	25-Jul-22	28-Jul-22
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	25-Jul-22	26-Jul-22
SAR	Calculated	27-Jul-22	27-Jul-22
Solids, %	Gravimetric, calculation	26-Jul-22	26-Jul-22

Certificate of Analysis

Report Date: 28-Jul-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 22-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	BH22-01A SA2	BH22-02 SA1	BH22-02 SA101	BH22-02 SA2
	Sample Date:	22-Jul-22 12:00	22-Jul-22 09:00	22-Jul-22 09:00	22-Jul-22 09:00
	Sample ID:	2230573-01	2230573-02	2230573-03	2230573-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	69.9	95.7	95.5	95.1
General Inorganics					
SAR	0.01 N/A	0.35	-	-	2.51
Conductivity	5 uS/cm	151	-	-	629
Cyanide, free	0.03 ug/g dry	<0.03	-	-	<0.03
pH	0.05 pH Units	7.08	-	-	7.26
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	<1.0
Arsenic	1.0 ug/g dry	4.6	-	-	5.8
Barium	1.0 ug/g dry	343	-	-	59.0
Beryllium	0.5 ug/g dry	1.0	-	-	0.5
Boron	5.0 ug/g dry	<5.0	-	-	9.3
Boron, available	0.5 ug/g dry	<0.5	-	-	<0.5
Cadmium	0.5 ug/g dry	<0.5	-	-	<0.5
Chromium	5.0 ug/g dry	103	-	-	19.6
Chromium (VI)	0.2 ug/g dry	0.7	-	-	<0.2
Cobalt	1.0 ug/g dry	25.1	-	-	7.6
Copper	5.0 ug/g dry	55.9	-	-	22.9
Lead	1.0 ug/g dry	6.0	-	-	20.0
Mercury	0.1 ug/g dry	<0.1	-	-	<0.1
Molybdenum	1.0 ug/g dry	<1.0	-	-	1.7
Nickel	5.0 ug/g dry	57.5	-	-	16.5
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	121	-	-	30.2
Zinc	20.0 ug/g dry	136	-	-	41.9
Volatiles					
Acetone	0.50 ug/g dry	<0.50	-	-	<0.50
Benzene	0.02 ug/g dry	<0.02	-	-	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Bromoform	0.05 ug/g dry	<0.05	-	-	<0.05
Bromomethane	0.05 ug/g dry	<0.05	-	-	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	-	-	<0.05

Certificate of Analysis

Report Date: 28-Jul-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 22-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	BH22-01A SA2	BH22-02 SA1	BH22-02 SA101	BH22-02 SA2
	Sample Date:	22-Jul-22 12:00	22-Jul-22 09:00	22-Jul-22 09:00	22-Jul-22 09:00
	Sample ID:	2230573-01	2230573-02	2230573-03	2230573-04
	MDL/Units	Soil	Soil	Soil	Soil
Chlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
Chloroform	0.05 ug/g dry	<0.05	-	-	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	-	-	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	-	-	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	<0.05
Ethylene dibromide (dibromoethane, 1,2-)	0.05 ug/g dry	<0.05	-	-	<0.05
Hexane	0.05 ug/g dry	<0.05	-	-	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	-	-	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	-	-	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	-	-	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	-	-	<0.05
Styrene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
Toluene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	-	-	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	<0.05
o-Xylene	0.05 ug/g dry	<0.05	-	-	<0.05

Certificate of Analysis

Report Date: 28-Jul-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 22-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	BH22-01A SA2	BH22-02 SA1	BH22-02 SA101	BH22-02 SA2
	Sample Date:	22-Jul-22 12:00	22-Jul-22 09:00	22-Jul-22 09:00	22-Jul-22 09:00
	Sample ID:	2230573-01	2230573-02	2230573-03	2230573-04
	MDL/Units	Soil	Soil	Soil	Soil
Xylenes, total	0.05 ug/g dry	<0.05	-	-	<0.05
4-Bromofluorobenzene	Surrogate	116%	-	-	95.3%
Dibromofluoromethane	Surrogate	100%	-	-	88.1%
Toluene-d8	Surrogate	75.0%	-	-	64.6%
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
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	<0.02	-	-	0.03
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	-	-	0.03
2-Fluorobiphenyl	Surrogate	82.6%	-	-	85.6%
Terphenyl-d14	Surrogate	88.1%	-	-	83.5%
PCBs					
PCBs, total	0.05 ug/g dry	-	<0.05	<0.05	<0.05
Decachlorobiphenyl	Surrogate	-	97.1%	97.8%	102%

Certificate of Analysis

Report Date: 28-Jul-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 22-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	BH22-02 SA102	BH22-03 SA2	BH22-03 SA5	-
	Sample Date:	22-Jul-22 09:00	22-Jul-22 09:00	22-Jul-22 09:00	-
	Sample ID:	2230573-05	2230573-06	2230573-07	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	95.2	89.9	78.7	-
General Inorganics					
SAR	0.01 N/A	2.78	1.04	-	-
Conductivity	5 uS/cm	566	2550	-	-
Cyanide, free	0.03 ug/g dry	<0.03	<0.03	-	-
pH	0.05 pH Units	7.21	7.32	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	-	-
Arsenic	1.0 ug/g dry	5.8	9.3	-	-
Barium	1.0 ug/g dry	50.5	24.6	-	-
Beryllium	0.5 ug/g dry	0.6	<0.5	-	-
Boron	5.0 ug/g dry	9.5	7.6	-	-
Boron, available	0.5 ug/g dry	<0.5	<0.5	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	5.0 ug/g dry	20.1	14.2	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	0.3	-	-
Cobalt	1.0 ug/g dry	7.3	9.5	-	-
Copper	5.0 ug/g dry	22.7	8.7	-	-
Lead	1.0 ug/g dry	16.0	19.3	-	-
Mercury	0.1 ug/g dry	<0.1	<0.1	-	-
Molybdenum	1.0 ug/g dry	1.7	6.9	-	-
Nickel	5.0 ug/g dry	16.7	18.4	-	-
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	30.6	15.2	-	-
Zinc	20.0 ug/g dry	47.7	<20.0	-	-
Volatiles					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	-
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	-

	Client ID:	BH22-02 SA102	BH22-03 SA2	BH22-03 SA5	-
	Sample Date:	22-Jul-22 09:00	22-Jul-22 09:00	22-Jul-22 09:00	-
	Sample ID:	2230573-05	2230573-06	2230573-07	-
	MDL/Units	Soil	Soil	Soil	-
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Ethylene dibromide (dibromoethane, 1	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-

Certificate of Analysis

Report Date: 28-Jul-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 22-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	BH22-02 SA102	BH22-03 SA2	BH22-03 SA5	-
	Sample Date:	22-Jul-22 09:00	22-Jul-22 09:00	22-Jul-22 09:00	-
	Sample ID:	2230573-05	2230573-06	2230573-07	-
	MDL/Units	Soil	Soil	Soil	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
4-Bromofluorobenzene	Surrogate	89.5%	97.1%	104%	-
Dibromofluoromethane	Surrogate	90.2%	92.0%	102%	-
Toluene-d8	Surrogate	62.8%	62.8%	67.8%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	9	25	237	-
F4 PHCs (C34-C50)	6 ug/g dry	15	30	296 [1]	-
F4G PHCs (gravimetric)	50 ug/g dry	-	-	394	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Benzo [a] pyrene	0.02 ug/g dry	0.02	<0.02	<0.02	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.02	<0.02	<0.02	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Chrysene	0.02 ug/g dry	0.02	<0.02	<0.02	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Fluoranthene	0.02 ug/g dry	0.03	<0.02	<0.02	-
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	-
Naphthalene	0.01 ug/g dry	<0.01	<0.01	<0.01	-
Phenanthrene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Pyrene	0.02 ug/g dry	0.02	<0.02	<0.02	-
2-Fluorobiphenyl	Surrogate	99.5%	104%	90.2%	-
Terphenyl-d14	Surrogate	105%	106%	89.1%	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Conductivity	ND	5	uS/cm						
Cyanide, free	ND	0.03	ug/g						
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						
F4G PHCs (gravimetric)	ND	50	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, available	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	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						
Mercury	ND	0.1	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						
PCBs									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	*0.109*		*ug/g*		*109*	*60-140*			
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	*1.14*		*ug/g*		*85.7*	*50-140*			
Surrogate: Terphenyl-d14	*1.24*		*ug/g*		*93.2*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	*3.11*		*ug/g*		*97.3*	*50-140*			
Surrogate: Dibromofluoromethane	*2.93*		*ug/g*		*91.6*	*50-140*			
Surrogate: Toluene-d8	*2.08*		*ug/g*		*64.9*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	0.09	0.01	N/A	0.08			11.8	30	
Conductivity	122	5	uS/cm	124			1.7	5	
Cyanide, free	ND	0.03	ug/g	ND			NC	35	
pH	7.15	0.05	pH Units	7.09			0.8	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)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g	1.0			NC	30	
Arsenic	7.8	1.0	ug/g	8.4			7.3	30	
Barium	118	1.0	ug/g	135			12.9	30	
Beryllium	1.1	0.5	ug/g	1.2			12.0	30	
Boron, available	0.72	0.5	ug/g	0.73			1.1	35	
Boron	12.2	5.0	ug/g	12.2			0.2	30	
Cadmium	0.5	0.5	ug/g	0.6			16.7	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	30.7	5.0	ug/g	33.7			9.1	30	
Cobalt	9.8	1.0	ug/g	10.6			7.7	30	
Copper	31.0	5.0	ug/g	33.8			8.6	30	
Lead	26.1	1.0	ug/g	30.5			15.6	30	
Mercury	0.116	0.1	ug/g	0.118			1.3	30	
Molybdenum	1.9	1.0	ug/g	2.1			9.8	30	
Nickel	26.1	5.0	ug/g	28.9			10.3	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	1.8	1.0	ug/g	2.0			15.0	30	
Vanadium	44.7	10.0	ug/g	48.3			7.9	30	
Zinc	86.5	20.0	ug/g	93.4			7.8	30	
PCBs									
PCBs, total	ND	0.05	ug/g	ND			NC	40	
Surrogate: Decachlorobiphenyl	*0.132*		*ug/g*		*111*	*60-140*			
Physical Characteristics									
% Solids	90.6	0.1	% by Wt.	90.3			0.3	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: 2-Fluorobiphenyl	*1.29*		*ug/g*		*89.8*	*50-140*			
Surrogate: Terphenyl-d14	*1.48*		*ug/g*		*104*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	*3.04*		*ug/g*		*79.1*	*50-140*			
Surrogate: Dibromofluoromethane	*3.53*		*ug/g*		*91.7*	*50-140*			
Surrogate: Toluene-d8	*2.62*		*ug/g*		*68.0*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Cyanide, free	0.248	0.03	ug/g	ND	69.5	50-150			
Hydrocarbons									
F1 PHCs (C6-C10)	173	7	ug/g	ND	86.3	80-120			
F2 PHCs (C10-C16)	125	4	ug/g	ND	109	60-140			
F3 PHCs (C16-C34)	295	8	ug/g	ND	105	60-140			
F4 PHCs (C34-C50)	187	6	ug/g	ND	105	60-140			
F4G PHCs (gravimetric)	920	50	ug/g	ND	92.0	80-120			
Metals									
Arsenic	63.7	1.0	ug/g	3.4	121	70-130			
Barium	104	1.0	ug/g	53.8	100	70-130			
Beryllium	61.3	0.5	ug/g	0.5	122	70-130			
Boron, available	3.28	0.5	ug/g	0.73	51.1	70-122			QM-06
Boron	65.7	5.0	ug/g	ND	122	70-130			
Cadmium	52.0	0.5	ug/g	ND	104	70-130			
Chromium (VI)	4.5	0.2	ug/g	ND	89.5	70-130			
Chromium	75.3	5.0	ug/g	13.5	124	70-130			
Cobalt	63.9	1.0	ug/g	4.2	119	70-130			
Copper	70.1	5.0	ug/g	13.5	113	70-130			
Lead	62.4	1.0	ug/g	12.2	100	70-130			
Mercury	1.55	0.1	ug/g	0.118	95.3	70-130			
Molybdenum	58.1	1.0	ug/g	ND	115	70-130			
Nickel	68.0	5.0	ug/g	11.6	113	70-130			
Selenium	53.4	1.0	ug/g	ND	106	70-130			
Silver	46.3	0.3	ug/g	ND	92.5	70-130			
Thallium	50.1	1.0	ug/g	ND	100	70-130			
Uranium	53.1	1.0	ug/g	ND	105	70-130			
Vanadium	81.9	10.0	ug/g	19.3	125	70-130			
Zinc	89.5	20.0	ug/g	37.4	104	70-130			
PCBs									
PCBs, total	0.470	0.05	ug/g	ND	98.9	60-140			
Surrogate: Decachlorobiphenyl	*0.128*		*ug/g*		*108*	*60-140*			
Semi-Volatiles									
Acenaphthene	0.186	0.02	ug/g	ND	104	50-140			
Acenaphthylene	0.168	0.02	ug/g	ND	94.1	50-140			
Anthracene	0.177	0.02	ug/g	ND	99.0	50-140			
Benzo [a] anthracene	0.163	0.02	ug/g	ND	91.2	50-140			
Benzo [a] pyrene	0.197	0.02	ug/g	ND	110	50-140			
Benzo [b] fluoranthene	0.207	0.02	ug/g	ND	116	50-140			
Benzo [g,h,i] perylene	0.192	0.02	ug/g	ND	107	50-140			
Benzo [k] fluoranthene	0.176	0.02	ug/g	ND	98.2	50-140			
Chrysene	0.179	0.02	ug/g	ND	100	50-140			
Dibenzo [a,h] anthracene	0.197	0.02	ug/g	ND	110	50-140			
Fluoranthene	0.155	0.02	ug/g	ND	86.6	50-140			
Fluorene	0.174	0.02	ug/g	ND	97.4	50-140			
Indeno [1,2,3-cd] pyrene	0.210	0.02	ug/g	ND	117	50-140			
1-Methylnaphthalene	0.184	0.02	ug/g	ND	103	50-140			
2-Methylnaphthalene	0.200	0.02	ug/g	ND	112	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Naphthalene	0.195	0.01	ug/g	ND	109	50-140			
Phenanthrene	0.157	0.02	ug/g	ND	87.6	50-140			
Pyrene	0.179	0.02	ug/g	ND	100	50-140			
Surrogate: 2-Fluorobiphenyl	*1.37*		*ug/g*		*95.9*	*50-140*			
Surrogate: Terphenyl-d14	*1.48*		*ug/g*		*103*	*50-140*			
Volatiles									
Acetone	6.88	0.50	ug/g	ND	68.8	50-140			
Benzene	2.65	0.02	ug/g	ND	66.2	60-130			
Bromodichloromethane	2.59	0.05	ug/g	ND	64.9	60-130			
Bromoform	4.66	0.05	ug/g	ND	117	60-130			
Bromomethane	2.99	0.05	ug/g	ND	74.7	50-140			
Carbon Tetrachloride	2.68	0.05	ug/g	ND	67.0	60-130			
Chlorobenzene	3.97	0.05	ug/g	ND	99.3	60-130			
Chloroform	2.47	0.05	ug/g	ND	61.9	60-130			
Dibromochloromethane	4.21	0.05	ug/g	ND	105	60-130			
Dichlorodifluoromethane	2.82	0.05	ug/g	ND	70.5	50-140			
1,2-Dichlorobenzene	4.10	0.05	ug/g	ND	102	60-130			
1,3-Dichlorobenzene	3.92	0.05	ug/g	ND	98.1	60-130			
1,4-Dichlorobenzene	3.98	0.05	ug/g	ND	99.4	60-130			
1,1-Dichloroethane	3.06	0.05	ug/g	ND	76.4	60-130			
1,2-Dichloroethane	2.83	0.05	ug/g	ND	70.8	60-130			
1,1-Dichloroethylene	2.52	0.05	ug/g	ND	63.1	60-130			
cis-1,2-Dichloroethylene	4.38	0.05	ug/g	ND	110	60-130			
trans-1,2-Dichloroethylene	4.44	0.05	ug/g	ND	111	60-130			
1,2-Dichloropropane	4.34	0.05	ug/g	ND	108	60-130			
cis-1,3-Dichloropropylene	2.67	0.05	ug/g	ND	66.7	60-130			
trans-1,3-Dichloropropylene	3.70	0.05	ug/g	ND	92.4	60-130			
Ethylbenzene	3.59	0.05	ug/g	ND	89.8	60-130			
Ethylene dibromide (dibromoethane, 1,2	3.93	0.05	ug/g	ND	98.2	60-130			
Hexane	2.78	0.05	ug/g	ND	69.5	60-130			
Methyl Ethyl Ketone (2-Butanone)	6.87	0.50	ug/g	ND	68.7	50-140			
Methyl Isobutyl Ketone	7.67	0.50	ug/g	ND	76.7	50-140			
Methyl tert-butyl ether	6.40	0.05	ug/g	ND	64.0	50-140			
Methylene Chloride	2.54	0.05	ug/g	ND	63.5	60-130			
Styrene	3.57	0.05	ug/g	ND	89.2	60-130			
1,1,1,2-Tetrachloroethane	4.16	0.05	ug/g	ND	104	60-130			
1,1,2,2-Tetrachloroethane	3.50	0.05	ug/g	ND	87.6	60-130			
Tetrachloroethylene	3.81	0.05	ug/g	ND	95.2	60-130			
Toluene	3.76	0.05	ug/g	ND	94.1	60-130			
1,1,1-Trichloroethane	2.66	0.05	ug/g	ND	66.4	60-130			
1,1,2-Trichloroethane	2.68	0.05	ug/g	ND	66.9	60-130			
Trichloroethylene	3.48	0.05	ug/g	ND	87.0	60-130			
Trichlorofluoromethane	2.70	0.05	ug/g	ND	67.4	50-140			
Vinyl chloride	2.49	0.02	ug/g	ND	62.2	50-140			
m,p-Xylenes	7.70	0.05	ug/g	ND	96.2	60-130			
o-Xylene	4.01	0.05	ug/g	ND	100	60-130			
Surrogate: 4-Bromofluorobenzene	*1.80*		*ug/g*		*56.4*	*50-140*			
Surrogate: Dibromofluoromethane	*2.92*		*ug/g*		*91.2*	*50-140*			
Surrogate: Toluene-d8	*2.68*		*ug/g*		*83.8*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

1 : GC-FID signal did not return to baseline by C50

QC Qualifiers :

QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.

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 criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

PARACEL LABORATORIES LTD.

Paracel ID: 2230573

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2230573 - BULK 2230574 - TCLP	№ 138016

Client Name: GEMTEC	Project Ref: 100416.001	Page 1 of 1
Contact Name: Connor Shaw	Quote #:	Turnaround Time
Address: 32 Steacie Dr. Kanata, ON	PO #: 100416.001	☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Telephone: (613)595-3626	E-mail: Connor.Shaw / ester.wilson / Brenda.thom @gemtec.ca	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: PHCs F1-F4+BTEX	VOCs	PAHs	Metals & Inorganics	Hg PCBs	CrVI	B(HWS) TCLP
1	BH22-01A SA2	S	-	2	July 22/2022	PM	X	X	X	X			
2	BH22-02 SA1	S	-	1		AM					X		
3	BH22-02 SA101	S	-	1		AM					X		
4	BH22-02 SA2	S	-	3		AM	X	X	X	X	X		
5	BH22-02 SA102	S	-	2		AM	X	X	X	X			
6	BH22-03 SA2	S	-	2		AM	X	X	X	X			
7	BH22-03 SA5	S	-	2		AM	X	X	X				
8													
9	TCLP	S	-	2									X
10													

Comments: Metals by ICP-MS, CrVI, Hg, HWS B, EC, SAR, cyanide (free), pH
TCLP for VOCs, metals, b(a)p, and Flashpoint

Method of Delivery: walk-in

Relinquished By (Sign): Ester Wilson	Received By Driver/Depot:	Received at Lab: BS	Verified By: BS
Relinquished By (Print): Ester Wilson	Date/Time:	Date/Time: July 22,22 17:00	Date/Time: July 23,22 11:55
Date/Time: July 22,2022 @ 4:45 PM	Temperature: °C	Temperature: 23.5 °C	pH Verified: ☐ By:

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Certificate of Analysis

GEMTEC Consulting Engineers and Scientists Limited

32 Steacie Drive
Kanata, ON K2K 2A9
Attn: Connor Shaw

Client PO: 100416.001
Project: 100416.001
Custody: 138016

Report Date: 28-Jul-2022
Order Date: 22-Jul-2022

Order #: 2230574

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

Paracel ID	Client ID
2230574-01	TCLP

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 28-Jul-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 22-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Flashpoint	ASTM D93 - Pensky-Martens Closed Cup	27-Jul-22	27-Jul-22
Metals, ICP-MS	TCLP EPA 6020 - Digestion - ICP-MS	26-Jul-22	26-Jul-22
REG 558 - Mercury by CVAA	TCLP EPA 7470A, CVAA	26-Jul-22	26-Jul-22
REG 558 - PAHs	TCLP EPA 625 - GC-MS	26-Jul-22	27-Jul-22
REG 558 - VOCs	TCLP ZHE EPA 624 - P&T GC-MS	26-Jul-22	26-Jul-22
Solids, %	Gravimetric, calculation	26-Jul-22	26-Jul-22

Certificate of Analysis

Report Date: 28-Jul-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 22-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	TCLP	-	-	-
	Sample Date:	22-Jul-22 09:00	-	-	-
	Sample ID:	2230574-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
Flashpoint	°C	>70	-	-	-
% Solids	0.1 % by Wt.	76.0	-	-	-
EPA 1311 - TCLP Leachate Metals					
Arsenic	0.05 mg/L	<0.05	-	-	-
Barium	0.05 mg/L	0.28	-	-	-
Boron	0.05 mg/L	<0.05	-	-	-
Cadmium	0.01 mg/L	<0.01	-	-	-
Chromium	0.05 mg/L	<0.05	-	-	-
Lead	0.05 mg/L	<0.05	-	-	-
Mercury	0.005 mg/L	<0.005	-	-	-
Selenium	0.05 mg/L	<0.05	-	-	-
Silver	0.05 mg/L	<0.05	-	-	-
Uranium	0.05 mg/L	<0.05	-	-	-
EPA 1311 - TCLP Leachate Volatiles					
Benzene	0.005 mg/L	<0.005	-	-	-
Carbon Tetrachloride	0.005 mg/L	<0.005	-	-	-
Chlorobenzene	0.004 mg/L	<0.004	-	-	-
Chloroform	0.006 mg/L	<0.006	-	-	-
1,2-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-
1,4-Dichlorobenzene	0.004 mg/L	<0.004	-	-	-
1,2-Dichloroethane	0.005 mg/L	<0.005	-	-	-
1,1-Dichloroethylene	0.006 mg/L	<0.006	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.30 mg/L	<0.30	-	-	-
Methylene Chloride	0.04 mg/L	<0.04	-	-	-
Tetrachloroethylene	0.005 mg/L	<0.005	-	-	-
Trichloroethylene	0.004 mg/L	<0.004	-	-	-
Vinyl chloride	0.005 mg/L	<0.005	-	-	-
4-Bromofluorobenzene	Surrogate	99.3%	-	-	-
Dibromofluoromethane	Surrogate	85.4%	-	-	-
Toluene-d8	Surrogate	102%	-	-	-
EPA 1311 - TCLP Leachate Organics					
Benzo [a] pyrene	0.0001 mg/L	<0.0001	-	-	-
Terphenyl-d14	Surrogate	89.8%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Metals									
Arsenic	ND	0.05	mg/L						
Barium	ND	0.05	mg/L						
Boron	ND	0.05	mg/L						
Cadmium	ND	0.01	mg/L						
Chromium	ND	0.05	mg/L						
Lead	ND	0.05	mg/L						
Mercury	ND	0.005	mg/L						
Selenium	ND	0.05	mg/L						
Silver	ND	0.05	mg/L						
Uranium	ND	0.05	mg/L						
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	ND	0.0001	mg/L						
Surrogate: Terphenyl-d14	*0.22*		*mg/L*		*112*	*37-156*			
EPA 1311 - TCLP Leachate Volatiles									
Benzene	ND	0.005	mg/L						
Carbon Tetrachloride	ND	0.005	mg/L						
Chlorobenzene	ND	0.004	mg/L						
Chloroform	ND	0.006	mg/L						
1,2-Dichlorobenzene	ND	0.004	mg/L						
1,4-Dichlorobenzene	ND	0.004	mg/L						
1,2-Dichloroethane	ND	0.005	mg/L						
1,1-Dichloroethylene	ND	0.006	mg/L						
Methyl Ethyl Ketone (2-Butanone)	ND	0.30	mg/L						
Methylene Chloride	ND	0.04	mg/L						
Tetrachloroethylene	ND	0.005	mg/L						
Trichloroethylene	ND	0.004	mg/L						
Vinyl chloride	ND	0.005	mg/L						
Surrogate: 4-Bromofluorobenzene	*0.0762*		*mg/L*		*95.2*	*83-134*			
Surrogate: Dibromofluoromethane	*0.0844*		*mg/L*		*105*	*78-124*			
Surrogate: Toluene-d8	*0.0864*		*mg/L*		*108*	*76-118*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Metals									
Arsenic	ND	0.05	mg/L	ND			NC	29	
Barium	0.128	0.05	mg/L	0.127			1.0	34	
Boron	0.263	0.05	mg/L	0.252			4.1	33	
Cadmium	ND	0.01	mg/L	ND			NC	33	
Chromium	ND	0.05	mg/L	ND			NC	32	
Lead	ND	0.05	mg/L	ND			NC	32	
Mercury	ND	0.005	mg/L	ND			NC	30	
Selenium	ND	0.05	mg/L	ND			NC	28	
Silver	ND	0.05	mg/L	ND			NC	28	
Uranium	ND	0.05	mg/L	ND			NC	27	
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	ND	0.0001	mg/L	ND			NC	50	
Surrogate: Terphenyl-d14	*0.21*		*mg/L*		*103*	*37-156*			
EPA 1311 - TCLP Leachate Volatiles									
Benzene	ND	0.005	mg/L	ND			NC	25	
Carbon Tetrachloride	ND	0.005	mg/L	ND			NC	25	
Chlorobenzene	ND	0.004	mg/L	ND			NC	25	
Chloroform	ND	0.006	mg/L	ND			NC	25	
1,2-Dichlorobenzene	ND	0.004	mg/L	ND			NC	25	
1,4-Dichlorobenzene	ND	0.004	mg/L	ND			NC	25	
1,2-Dichloroethane	ND	0.005	mg/L	ND			NC	25	
1,1-Dichloroethylene	ND	0.006	mg/L	ND			NC	25	
Methyl Ethyl Ketone (2-Butanone)	ND	0.30	mg/L	ND			NC	25	
Methylene Chloride	ND	0.04	mg/L	ND			NC	25	
Tetrachloroethylene	ND	0.005	mg/L	ND			NC	25	
Trichloroethylene	ND	0.004	mg/L	ND			NC	25	
Vinyl chloride	ND	0.005	mg/L	ND			NC	25	
Surrogate: 4-Bromofluorobenzene	*0.0751*		*mg/L*		*93.9*	*83-134*			
Surrogate: Dibromofluoromethane	*0.0852*		*mg/L*		*107*	*78-124*			
Surrogate: Toluene-d8	*0.0854*		*mg/L*		*107*	*76-118*			
Physical Characteristics									
% Solids	90.6	0.1	% by Wt.	90.3			0.3	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Metals									
Arsenic	57.3	0.05	mg/L	0.302	114	83-119			
Barium	68.8	0.05	mg/L	12.7	112	80-120			
Boron	72.6	0.05	mg/L	25.2	94.7	71-128			
Cadmium	49.3	0.01	mg/L	0.027	98.5	78-119			
Chromium	57.2	0.05	mg/L	0.386	114	80-124			
Lead	50.4	0.05	mg/L	0.259	100	77-126			
Mercury	0.0331	0.005	mg/L	ND	110	70-130			
Selenium	46.3	0.05	mg/L	0.237	92.2	75-125			
Silver	52.1	0.05	mg/L	ND	104	70-128			
Uranium	56.7	0.05	mg/L	ND	113	70-131			
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	0.0468	0.0001	mg/L	ND	93.6	39-123			
Surrogate: Terphenyl-d14	*0.19*		*mg/L*		*96.5*	*37-156*			
EPA 1311 - TCLP Leachate Volatiles									
Benzene	0.015	0.005	mg/L	ND	76.4	55-141			
Carbon Tetrachloride	0.015	0.005	mg/L	ND	75.8	49-149			
Chlorobenzene	0.014	0.004	mg/L	ND	71.0	64-137			
Chloroform	0.015	0.006	mg/L	ND	72.6	58-138			
1,2-Dichlorobenzene	0.022	0.004	mg/L	ND	109	60-150			
1,4-Dichlorobenzene	0.013	0.004	mg/L	ND	65.6	63-132			
1,2-Dichloroethane	0.014	0.005	mg/L	ND	67.8	50-140			
1,1-Dichloroethylene	0.014	0.006	mg/L	ND	67.8	43-153			
Methyl Ethyl Ketone (2-Butanone)	0.039	0.30	mg/L	ND	78.6	26-153			
Methylene Chloride	0.017	0.04	mg/L	ND	85.4	58-149			
Tetrachloroethylene	0.015	0.005	mg/L	ND	73.3	51-145			
Trichloroethylene	0.014	0.004	mg/L	ND	72.2	52-135			
Vinyl chloride	0.015	0.005	mg/L	ND	76.6	31-159			
Surrogate: 4-Bromofluorobenzene	*0.0743*		*mg/L*		*92.9*	*83-134*			
Surrogate: Dibromofluoromethane	*0.0872*		*mg/L*		*109*	*78-124*			
Surrogate: Toluene-d8	*0.0801*		*mg/L*		*100*	*76-118*			

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

PARACEL LABORATORIES LTD.

Paracel ID: 2230574

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2230573 - BULK 2230574 - TCLP	№ 138016

Client Name: GEMTEC	Project Ref: 100416.001	Page 1 of 1
Contact Name: Connor Shaw	Quote #:	Turnaround Time
Address: 32 Steacie Dr. Kanata, ON	PO #: 100416.001	☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Telephone: (613)585-3626	E-mail: Connor.Shaw / ester.wilson / Brenda.thom @gemtec.ca	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: PHCs F1-F4+~~BTEX~~	VOCs	PAHs	Metals & Inorganics ~~by ICP~~	Hg	CrVI	~~B(HWS)~~ TCLP
1	BH22-01A SA2	S	-	2	July 22/2022	PM	X	X	X	X			
2	BH22-02 SA1	S	-	1		AM					X		
3	BH22-02 SA101	S	-	1		AM					X		
4	BH22-02 SA2	S	-	3		AM	X	X	X	X	X		
5	BH22-02 SA102	S	-	2		AM	X	X	X	X			
6	BH22-03 SA2	S	-	2		AM	X	X	X	X			
7	BH22-03 SA5	S	-	2		AM	X	X	X				
8													
9	TCLP	S	-	2									X
10													

Comments: Metals by ICP-MS, CrVI, Hg, HWS B, EC, SAR, cyanide (free), pH
TCLP for VOCs, metals, b(a)p, and Flashpoint

Method of Delivery: walk-in

Relinquished By (Sign): Ester Wilson	Received By Driver/Depot:	Received at Lab: BS	Verified By: BS
Relinquished By (Print): Ester Wilson	Date/Time:	Date/Time: JUL 22,22 17:00	Date/Time: JULY 23,22 11:55
Date/Time: July 22,2022 @ 4:45 PM	Temperature: °C	Temperature: 23.5 °C	pH Verified: ☐ By:

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Certificate of Analysis

GEMTEC Consulting Engineers and Scientists Limited

32 Steacie Drive
Kanata, ON K2K 2A9
Attn: Ester Wilson

Client PO: 100416.001
Project: 100416.001
Custody: 136799

Report Date: 3-Aug-2022
Order Date: 26-Jul-2022

Order #: 2231182

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

Paracel ID	Client ID
2231182-01	MW22-03

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 03-Aug-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 26-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PCBs, total	EPA 608 - GC-ECD	28-Jul-22	28-Jul-22
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	28-Jul-22	30-Jul-22

Certificate of Analysis

Report Date: 03-Aug-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 26-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	MW22-03	-	-	-
	Sample Date:	26-Jul-22 07:00	-	-	-
	Sample ID:	2231182-01	-	-	-
	MDL/Units	Water	-	-	-
Semi-Volatiles					
Acenaphthene	0.05 ug/L	<0.05	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	-	-	-
Anthracene	0.01 ug/L	<0.01	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	-	-	-
Chrysene	0.05 ug/L	<0.05	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-
Fluoranthene	0.01 ug/L	<0.01	-	-	-
Fluorene	0.05 ug/L	<0.05	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	-	-	-
Naphthalene	0.05 ug/L	<0.05	-	-	-
Phenanthrene	0.05 ug/L	<0.05	-	-	-
Pyrene	0.01 ug/L	<0.01	-	-	-
2-Fluorobiphenyl	Surrogate	109%	-	-	-
Terphenyl-d14	Surrogate	108%	-	-	-
PCBs					
PCBs, total	0.05 ug/L	<0.05	-	-	-
Decachlorobiphenyl	Surrogate	95.0%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
PCBs									
PCBs, total	ND	0.05	ug/L						
Surrogate: Decachlorobiphenyl	*0.377*		*ug/L*		*75.4*	*60-140*			
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	*16.9*		*ug/L*		*84.6*	*50-140*			
Surrogate: Terphenyl-d14	*23.4*		*ug/L*		*117*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
PCBs									
PCBs, total	0.710	0.05	ug/L	ND	71.0	65-135			
Surrogate: Decachlorobiphenyl	*0.359*		*ug/L*		*71.8*	*60-140*			
Semi-Volatiles									
Acenaphthene	3.99	0.05	ug/L	ND	79.7	50-140			
Acenaphthylene	3.52	0.05	ug/L	ND	70.3	50-140			
Anthracene	3.97	0.01	ug/L	ND	79.5	50-140			
Benzo [a] anthracene	3.59	0.01	ug/L	ND	71.9	50-140			
Benzo [a] pyrene	4.33	0.01	ug/L	ND	86.6	50-140			
Benzo [b] fluoranthene	5.30	0.05	ug/L	ND	106	50-140			
Benzo [g,h,i] perylene	3.60	0.05	ug/L	ND	71.9	50-140			
Benzo [k] fluoranthene	5.34	0.05	ug/L	ND	107	50-140			
Chrysene	3.21	0.05	ug/L	ND	64.1	50-140			
Dibenzo [a,h] anthracene	4.14	0.05	ug/L	ND	82.8	50-140			
Fluoranthene	4.54	0.01	ug/L	ND	90.8	50-140			
Fluorene	3.38	0.05	ug/L	ND	67.6	50-140			
Indeno [1,2,3-cd] pyrene	4.18	0.05	ug/L	ND	83.6	50-140			
1-Methylnaphthalene	3.53	0.05	ug/L	ND	70.6	50-140			
2-Methylnaphthalene	3.79	0.05	ug/L	ND	75.7	50-140			
Naphthalene	3.87	0.05	ug/L	ND	77.5	50-140			
Phenanthrene	3.51	0.05	ug/L	ND	70.3	50-140			
Pyrene	5.00	0.01	ug/L	ND	100	50-140			
Surrogate: 2-Fluorobiphenyl	*31.1*		*ug/L*		*77.6*	*50-140*			
Surrogate: Terphenyl-d14	*34.8*		*ug/L*		*87.0*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Container(s) - Labeled improperly/insufficient information - Chain of custody sample date reads July 26, 2022, and sample collection date on the PCB bottle and VOC vials is July 25, 2022.

Applies to samples: MW22-03

Container and COC sample IDs don't match - Chain of custody reads as MW22-03. Hexavalent chromium vial has no sample ID.

Applies to samples: MW22-03

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

PARACEL LABORATORIES LTD.

Paracel ID: 2231182

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2231182	№ 136799

Client Name: GEMTEC	Project Ref: 100416.001		Page 1 of 1
Contact Name: Ester Wilson	Quote #:		Turnaround Time
Address: 32 Steacie Dr. Kanata, ON	PO #: 100416.001		☐ 1 day ☐ 3 day
	E-mail: ester.wilson, connor.shaw, brenda.thom @gemtec.ca		☐ 2 day ☒ Regular
Telephone: (613) 585-2041			Date Required:

☒ REG 153/04 ☐ REG 406/19 — Other Regulation

☒ Table 1 ☐ Res/Park ☐ Med/Fine ☐ REG 558 ☐ PWQO

☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ CCME ☐ MISA

☐ Table 3 ☐ Agri/Other ☐ SU - Sani ☐ SU - Storm

☐ Table ___ Mun: ___

For RSC: ☐ Yes ☒ No ☐ Other:

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

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+~~BTEX~~	VOCs	PAHs	Metals by ICP	~~Hg BTEX~~ PCBs	~~CrVI~~	~~B (HWS)~~						
1	MW22-03	GW	/	10	July 26, 2022	7AM	X	X	X	X	X								
2	Trip Blank	/	/	1	June 13, 2022	N/A	X	X											
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments: Metals to include CrVI, Hg, (which were field filtered)

Method of Delivery: Drop Box

Relinquished By (Sign): Ester Wilson	Received By Driver/Depot: [signature] 8:30 AM	Received at Lab: [signature]	Verified By: [signature]
Relinquished By (Print): Ester Wilson	Date/Time: July 26/22	Date/Time: JUL 26, 2022 01.10	Date/Time: July 26, 2022 [illegible]
Date/Time: July 26, 2022 at 8 AM	Temperature: 13.3 °C	Temperature: 19.7 °C	pH Verified: ☐ By:

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Certificate of Analysis

GEMTEC Consulting Engineers and Scientists Limited

32 Steacie Drive
Kanata, ON K2K 2A9
Attn: Ester Wilson

Client PO: 100416.001
Project: 100416.001
Custody: 66686

Report Date: 4-Aug-2022
Order Date: 29-Jul-2022

Order #: 2231574

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

Paracel ID	Client ID
2231574-01	MW22-03
2231574-02	MW22-103
2231574-03	Trip Blank

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 04-Aug-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 29-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent - water	MOE E3056 - colourimetric	2-Aug-22	2-Aug-22
Cyanide, free	MOE E3015 - Auto Colour	2-Aug-22	2-Aug-22
Mercury by CVAA	EPA 245.2 - Cold Vapour AA	3-Aug-22	3-Aug-22
Metals, ICP-MS	EPA 200.8 - ICP-MS	3-Aug-22	3-Aug-22
PHC F1	CWS Tier 1 - P&T GC-FID	2-Aug-22	2-Aug-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	2-Aug-22	3-Aug-22
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	2-Aug-22	2-Aug-22

Certificate of Analysis

Report Date: 04-Aug-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 29-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	MW22-03	MW22-103	Trip Blank	-
	Sample Date:	29-Jul-22 07:00	29-Jul-22 07:00	28-Jul-22 00:00	-
	Sample ID:	2231574-01	2231574-02	2231574-03	-
	MDL/Units	Water	Water	Water	-
General Inorganics					
Cyanide, free	2 ug/L	<2	<2	-	-
Metals					
Mercury	0.1 ug/L	<0.1	<0.1	-	-
Antimony	0.5 ug/L	<0.5	<0.5	-	-
Arsenic	1 ug/L	<1	<1	-	-
Barium	1 ug/L	85	80	-	-
Beryllium	0.5 ug/L	<0.5	<0.5	-	-
Boron	10 ug/L	139	143	-	-
Cadmium	0.1 ug/L	0.4	0.5	-	-
Chromium	1 ug/L	<1	<1	-	-
Chromium (VI)	10 ug/L	<10	<10	-	-
Cobalt	0.5 ug/L	4.5	4.4	-	-
Copper	0.5 ug/L	2.7	2.7	-	-
Lead	0.1 ug/L	<0.1	<0.1	-	-
Molybdenum	0.5 ug/L	4.4	4.1	-	-
Nickel	1 ug/L	9	9	-	-
Selenium	1 ug/L	<1	<1	-	-
Silver	0.1 ug/L	<0.1	<0.1	-	-
Sodium	200 ug/L	1460000	1430000	-	-
Thallium	0.1 ug/L	<0.1	<0.1	-	-
Uranium	0.1 ug/L	10.9	10.4	-	-
Vanadium	0.5 ug/L	2.2	2.3	-	-
Zinc	5 ug/L	<5	<5	-	-
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-

Certificate of Analysis

Report Date: 04-Aug-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 29-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	MW22-03	MW22-103	Trip Blank	-
	Sample Date:	29-Jul-22 07:00	29-Jul-22 07:00	28-Jul-22 00:00	-
	Sample ID:	2231574-01	2231574-02	2231574-03	-
	MDL/Units	Water	Water	Water	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylene dibromide (dibromoethane, 1,2-)	0.2 ug/L	<0.2	<0.2	<0.2	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
4-Bromofluorobenzene	Surrogate	105%	103%	104%	-
Dibromofluoromethane	Surrogate	132%	94.1%	117%	-
Toluene-d8	Surrogate	102%	101%	102%	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	-

Certificate of Analysis

Report Date: 04-Aug-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 29-Jul-2022

Client PO: 100416.001

Project Description: 100416.001

	Client ID:	MW22-03	MW22-103	Trip Blank	-
	Sample Date:	29-Jul-22 07:00	29-Jul-22 07:00	28-Jul-22 00:00	-
	Sample ID:	2231574-01	2231574-02	2231574-03	-
	MDL/Units	Water	Water	Water	-
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	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Cyanide, free	ND	2	ug/L						
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						
Metals									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane, 1,2	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	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: 4-Bromofluorobenzene	*83.4*		*ug/L*		*104*	*50-140*			
Surrogate: Dibromofluoromethane	*75.4*		*ug/L*		*94.2*	*50-140*			
Surrogate: Toluene-d8	*82.0*		*ug/L*		*102*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Cyanide, free	ND	2	ug/L	ND			NC	20	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Mercury	ND	0.1	ug/L	ND			NC	20	
Antimony	ND	0.5	ug/L	ND			NC	20	
Arsenic	ND	1	ug/L	ND			NC	20	
Barium	23.9	1	ug/L	24.6			2.9	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	20	10	ug/L	20			1.8	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium (VI)	ND	10	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	ND			NC	20	
Cobalt	ND	0.5	ug/L	ND			NC	20	
Copper	1.30	0.5	ug/L	1.23			5.6	20	
Lead	0.13	0.1	ug/L	0.14			6.5	20	
Molybdenum	1.08	0.5	ug/L	1.24			13.4	20	
Nickel	ND	1	ug/L	ND			NC	20	
Selenium	ND	1	ug/L	ND			NC	20	
Silver	ND	0.1	ug/L	ND			NC	20	
Sodium	15000	200	ug/L	14700			2.4	20	
Thallium	ND	0.1	ug/L	ND			NC	20	
Uranium	ND	0.1	ug/L	ND			NC	20	
Vanadium	ND	0.5	ug/L	ND			NC	20	
Zinc	10	5	ug/L	10			3.4	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	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: 4-Bromofluorobenzene	*81.4*		*ug/L*		*102*	*50-140*			
Surrogate: Dibromofluoromethane	*94.0*		*ug/L*		*118*	*50-140*			
Surrogate: Toluene-d8	*80.9*		*ug/L*		*101*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Cyanide, free	43.5	2	ug/L	ND	87.1	61-139			
Hydrocarbons									
F1 PHCs (C6-C10)	2050	25	ug/L	ND	102	68-117			
F2 PHCs (C10-C16)	2000	100	ug/L	ND	125	60-140			
F3 PHCs (C16-C34)	4130	100	ug/L	ND	105	60-140			
F4 PHCs (C34-C50)	2750	100	ug/L	ND	111	60-140			
Metals									
Mercury	2.97	0.1	ug/L	ND	98.9	70-130			
Arsenic	54.5	1	ug/L	ND	108	80-120			
Barium	75.0	1	ug/L	24.6	101	80-120			
Beryllium	50.2	0.5	ug/L	ND	100	80-120			
Boron	68	10	ug/L	20	94.8	80-120			
Cadmium	52.4	0.1	ug/L	ND	105	80-120			
Chromium (VI)	204	10	ug/L	ND	102	70-130			
Chromium	52.4	1	ug/L	ND	104	80-120			
Cobalt	50.3	0.5	ug/L	ND	101	80-120			
Copper	50.0	0.5	ug/L	1.23	97.5	80-120			
Lead	46.7	0.1	ug/L	0.14	93.1	80-120			
Molybdenum	49.6	0.5	ug/L	1.24	96.8	80-120			
Nickel	49.5	1	ug/L	ND	97.7	80-120			
Selenium	47.0	1	ug/L	ND	93.7	80-120			
Silver	50.6	0.1	ug/L	ND	101	80-120			
Sodium	23200	200	ug/L	14700	85.2	80-120			
Thallium	49.3	0.1	ug/L	ND	98.6	80-120			
Uranium	48.5	0.1	ug/L	ND	97.0	80-120			
Vanadium	53.3	0.5	ug/L	ND	106	80-120			
Zinc	57	5	ug/L	10	94.9	80-120			
Volatiles									
Acetone	91.0	5.0	ug/L	ND	91.0	50-140			
Benzene	38.9	0.5	ug/L	ND	97.2	60-130			
Bromodichloromethane	43.3	0.5	ug/L	ND	108	60-130			
Bromoform	40.4	0.5	ug/L	ND	101	60-130			
Bromomethane	37.9	0.5	ug/L	ND	94.6	50-140			
Carbon Tetrachloride	43.6	0.2	ug/L	ND	109	60-130			
Chlorobenzene	38.1	0.5	ug/L	ND	95.4	60-130			
Chloroform	38.9	0.5	ug/L	ND	97.2	60-130			
Dibromochloromethane	40.3	0.5	ug/L	ND	101	60-130			
Dichlorodifluoromethane	44.8	1.0	ug/L	ND	112	50-140			
1,2-Dichlorobenzene	36.6	0.5	ug/L	ND	91.5	60-130			
1,3-Dichlorobenzene	36.0	0.5	ug/L	ND	90.0	60-130			
1,4-Dichlorobenzene	36.2	0.5	ug/L	ND	90.5	60-130			
1,1-Dichloroethane	38.5	0.5	ug/L	ND	96.2	60-130			
1,2-Dichloroethane	38.9	0.5	ug/L	ND	97.2	60-130			
1,1-Dichloroethylene	41.6	0.5	ug/L	ND	104	60-130			
cis-1,2-Dichloroethylene	38.7	0.5	ug/L	ND	96.8	60-130			
trans-1,2-Dichloroethylene	42.5	0.5	ug/L	ND	106	60-130			
1,2-Dichloropropane	39.8	0.5	ug/L	ND	99.6	60-130			
cis-1,3-Dichloropropylene	44.0	0.5	ug/L	ND	110	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
trans-1,3-Dichloropropylene	44.4	0.5	ug/L	ND	111	60-130			
Ethylbenzene	38.3	0.5	ug/L	ND	95.8	60-130			
Ethylene dibromide (dibromoethane, 1,2-	45.5	0.2	ug/L	ND	114	60-130			
Hexane	40.7	1.0	ug/L	ND	102	60-130			
Methyl Ethyl Ketone (2-Butanone)	94.2	5.0	ug/L	ND	94.2	50-140			
Methyl Isobutyl Ketone	107	5.0	ug/L	ND	107	50-140			
Methyl tert-butyl ether	117	2.0	ug/L	ND	117	50-140			
Methylene Chloride	35.9	5.0	ug/L	ND	89.7	60-130			
Styrene	34.8	0.5	ug/L	ND	87.0	60-130			
1,1,1,2-Tetrachloroethane	43.1	0.5	ug/L	ND	108	60-130			
1,1,2,2-Tetrachloroethane	40.6	0.5	ug/L	ND	101	60-130			
Tetrachloroethylene	36.9	0.5	ug/L	ND	92.3	60-130			
Toluene	37.7	0.5	ug/L	ND	94.4	60-130			
1,1,1-Trichloroethane	38.7	0.5	ug/L	ND	96.7	60-130			
1,1,2-Trichloroethane	41.4	0.5	ug/L	ND	103	60-130			
Trichloroethylene	38.8	0.5	ug/L	ND	96.9	60-130			
Trichlorofluoromethane	38.1	1.0	ug/L	ND	95.2	60-130			
Vinyl chloride	38.5	0.5	ug/L	ND	96.2	50-140			
m,p-Xylenes	74.1	0.5	ug/L	ND	92.6	60-130			
o-Xylene	37.9	0.5	ug/L	ND	94.7	60-130			
Surrogate: 4-Bromofluorobenzene	*82.3*		*ug/L*		*103*	*50-140*			
Surrogate: Dibromofluoromethane	*76.7*		*ug/L*		*95.9*	*50-140*			
Surrogate: Toluene-d8	*79.0*		*ug/L*		*98.8*	*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

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: 2231574

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2231574	№ 66686

Client Name: GEMTEC	Project Ref: 100416.001	Page 1 of 1
Contact Name: Ester Wilson	Quote #:	Turnaround Time
Address: 32 Steacie Dr. Kanata, ON	PO #: 100416.001	☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Telephone: (613) 585-6036	E-mail: ester.wilson, connor.shaw}@gemtec.ca	Date Required:

☒ REG 153/04 ☐ REG 406/19

Other Regulation

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

☐ 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)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4	VOCs	Metals by ICP
1	MW22-03	GW	-	7	July 29/22	7 AM	X	X	X
2	MW22-103	GW	-	7	July 29/22	7 AM	X	X	X
3	Trip Blank	-	-	1	July 29/22	-	X	X	
4									
5									
6									
7									
8									
9									
10									

Comments: metals including CrVI, Hg, Cyanide. Trip Blank only VOCs and PHC F1.

Method of Delivery: Drop Box

Relinquished By (Sign): Ester Wilson	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Ester Wilson	Date/Time: July 29/22 8:30	Date/Time: July 29, 22 16:15	Date/Time: July 29, 22 17:31
Date/Time: July 29, 8:30 AM	Temperature: 16.4 °C	Temperature: 15.5 °C	pH Verified: ☑ By: RS

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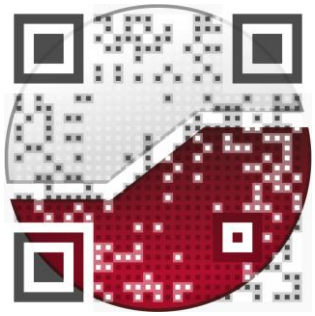

civil	civil
geotechnical	géotechnique
environmental	environnementale
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

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