Phase II Environmental Site Assessment

2095 Dilworth Road
Kars, Ontario

Prepared for:
Dilworth Development Inc.
92 Bentley Avenue
Ottawa, Ontario K2E 6T9

April 2021

DST File No.: 02101208.000

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EXECUTIVE SUMMARY

DST, a Division of Englobe (DST) was retained by Dilworth Development Inc. (herein referred to as the "Client") to conduct a Phase II Environmental Site Assessment (ESA) for the property parcel located at 2095 Dilworth Road (also referred to as 2097, and 2099 Dilworth Road) in Kars, Ontario (herein referred to as the "Site"). Refer to Figures 1 and 4 in Appendix A for Site Location Map and Borehole Location Plan, respectively.

The objective of a Phase II ESA was to conduct an intrusive investigation with sample collection and analyses to confirm the presence or absence of potential contaminants of concern in soils and groundwater, based on Areas of Potential Environmental Concern (APECs) identified within the following report:

- Phase One Environmental Site Assessment, 2095 Dilworth Road, Kars, Ontario, April 2021, DST, a Division of Englobe, DST File No. 02101208.000 (DST, April 2021).

The APECs identified by the Phase One ESA were as follows:

APEC	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Contaminants of Potential Environmental Concern	Media Potentially Impacted
APEC 1 Fill material of unknown quality likely present on Site	Developed portion of the property	PCA Item #30 – Importation of Fill Material of Unknown Quality	- Metals - Polycyclic aromatic hydrocarbons (PAHs)	Soil
APEC 2 Existing commercial garage	Within the area of the on-Site garage	PCA Item #52 - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	- Petroleum hydrocarbons (PHCs F1-F4) - Volatile organic compounds (VOCs)	Soil and Groundwater

The assessment was conducted in accordance with professional standards and procedures, which generally reflect the guidance provided under Ontario Regulation (O. Reg.) 153/04, as amended. It should be noted that this assessment was completed strictly for the purposes of environmental due diligence and is not intended to be utilized as supporting documentation for the filing of a Record of Site Condition (RSC) in accordance with O. Reg. 153/04 (as amended).

The scope of work was outlined in DST's proposal dated January 28, 2021 and was performed in conjunction with a Geotechnical Investigation (Report Ref No. 02101208.000 dated April 12, 2021) and an ongoing Hydrogeology and Terrain Analysis and included the following activities:

1. Obtaining underground utility clearances and locates;
2. The advancement of twelve boreholes to depths ranging between 1.2 to 7.2 m bgs.
    a. Borehole locations MW21-01, BH21-02, BH21-03, MW21-06, BH21-11, and BH21-12 were positioned and advanced to investigate the Areas of Potential Environmental Concern (APECs) for the Site
    b. The remaining borehole locations (BH21-04, BH21-05, and BH21-07 through BH21-10) were positioned and advanced as part of the Geotechnical Investigation performed in conjunction with this Phase II ESA
3. The collection and screening of soil samples from the twelve advanced boreholes.
4. Submittal of a total of eight (8) soil sample, including one field duplicate, for laboratory analysis of contaminants of potential concern (COPCs):
    a. Five (5) soil samples were analysed for each of petroleum hydrocarbons (PHC) fractions F1 – F4 (PHCs F1-F4), benzene, toluene, ethylbenzene and xylenes (BTEX), and volatile organic compounds (VOCs);
    b. Two (2) soil samples were analysed for each of metals and polycyclic aromatic hydrocarbons (PAHs);
    c. One (1) duplicate soil sample was analysed for metals
5. The collection of groundwater samples, including field duplicate samples, from the two monitoring wells (MW21-01 and MW21-06), for laboratory analysis of COPCs:
    a. Two (2) ground water samples were analysed for each of PHCs F1-F4, BTEX, VOCs, Metals, Inorganics, General Chemistry, Anions, and Pesticides (OC)
    b. One (1) duplicate ground water sample from MW21-01 was analysed for PHCs F1-F4, BTEX, and VOCs
6. Removal and disposal of all residues consisting of drill cuttings and purge water; and,
7. The preparation of this Phase II ESA report documenting field observations and measurements, sampling locations, analytical sample results and subsequent compliance evaluation with environmental guidelines, as well as recommendations regarding further work, as required.

The eastern portion and pockets in the central area of the Site, as well as the properties immediately adjacent to the north, east and south are considered as wetlands. The creek located in the eastern portion of the Site is considered a Provincially Significant Wetland. (Ministry of Natural Resources and Forestry, 2021).

The Site is therefore designated as an environmentally sensitive area per clause 41(1)(a) of O. Reg. 153/04 (as amended). Therefore, the Site Condition Standards applicable to the Site are as follows:

Soil:

- Ontario Ministry of the Environment, Conservation and Parks (MECP) "Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act", April 2011, Table 1: Full Depth Background Site Condition Standards for Residential/Institutional/Industrial/Commercial/Community Property Use.

Groundwater:

- MECP "Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act", April 2011, Table 1: Full Depth Background Site Condition Standards for All Types of Property Use.

Based on the laboratory analytical results, the results of the investigation can be summarized as follows:

- Two soil samples, BH21-11 SS1 (0.0-0.6 m) and BH21-11 SS2 (0.6-1.2 m), exceeded the applicable MECP Table 1 standards for PHC F4 and PHC F4 (gravimetric). Soil sample BH21-11 SS1 (0.0-0.6 m) also exceeded Table 1 standards for PHC F3.
- The concentrations of the analyzed soil parameters of the other soil samples analyzed met the applicable MECP Table 1 standards.
- The groundwater sample collected from MW21-01 (including the duplicate sample) exceeded the applicable MECP Table 1 standard for ethylbenzene (reported concentration of 0.6 µg/L vs. the standard of 0.5 µg/L).
- The groundwater sample collected from MW21-06, exceeded the applicable MECP Table 1 standard for chloroform (reported concentration of 8.3 µg/L vs. the standard of 2 µg/L.

Therefore, based on the results of the Phase II ESA, PHC (F3 and F4) impacts above the applicable MECP Table 1 standards were identified in the fill material collected from the BH21-11 location. Also, ethylbenzene impacts above the applicable MECP Table 1 standards were identified in the groundwater sample collected from the MW21-01 location. Chloroform impacts above the applicable MECP Table 1 standards were identified in the groundwater sample collected from the MW21-06 location.

It is recommended that PHC-impacted fill materials are excavated and disposed of off Site (at an MECP-licensed waste disposal facility) during the construction of the proposed development on Site.

Regarding the observed MECP Table 1 exceedances in the Site groundwater, DST completed a further comparison of the results utilizing the MECP rational document, titled:

"Rationale for the Development of Soil and Groundwater Standards for Use at Contaminated Sites in Ontario, April 2011 - Groundwater Components for Non-potable Water Scenario for Coarse Textured Soil, Appendix A3".

The MECP rationale document is used to assess specific contaminant exposure pathways in order to develop soil and groundwater site condition standards (SCSs). Components used for the development of groundwater SCSs include: (1) the drinking water component (GW1); the protection of indoor air from vapours originating from groundwater component (GW2); and the protection of the aquatic environment component (GW3). Based on a comparison of the standards for ethylbenzene and chloroform for the GW1, GW2 and GW3 components, the drinking water component (GW1) is considered the groundwater pathway that represents the most stringent standards for ethylbenzene and chloroform applicable to the Site. The GW1 standards for ethylbenzene and chloroform in a potable water scenario, for commercial/industrial land use and coarse textured soil conditions, are 2.4 µg/L and 25 µg/L, respectively. Therefore, the groundwater analytical results for ethylbenzene in groundwater sample MW21-01 (including its field duplicate) and chloroform in groundwater sample MW21-06 are below the aforementioned pathway-based standards and, thus, at this time there is no risk associated with the groundwater quality on Site, as it pertains to the reported ethylbenzene and chloroform levels.

Furthermore, as the proposed development at the Site, including both monitoring well locations, are located more than 30 metres away from the Provincially Significant Wetland on Site, the MECP Table 1 background standards for ethylbenzene and chloroform (0.5 µg/L and 2 µg/L, respectively) are not considered applicable.

TABLE OF CONTENTS

Section EXECUTIVE SUMMARY i

Section APPENDICES viii

Section 1. Introduction 1

1.1 Site Description 1
1.2 Property Ownership 2
1.3 Current and Proposed Future Uses 2
1.4 Applicable Site Condition Standards 2
1.4.1 Potable Water Well Locations 2
1.4.2 Environmentally Sensitive Sites 2
1.4.3 Shallow Soil Conditions 3
1.4.4 Surface Water Features 3
1.4.5 Soil Texture 3

Section 2. Background Information 3

2.1 Physical Setting 3
2.2 Past Investigation 4

Section 3.Scope of The Investigation 4

3.1 Overview of Site Investigation 4
3.2 Media Investigated 5
3.3 Phase One Conceptual Site Model 5
3.4 Deviations from the Sampling and Analysis Plan 7
3.5 Impediments 7

Section 4. Investigation Method 7

4.1 General 7
4.2 Borehole Drilling 7
4.3 Soil Sampling 7
4.4 Field Screening Measurements 8
4.5 Groundwater: Monitoring Well Installation 9
4.6 Groundwater Level Measurements 9
4.7 Groundwater Sampling 9

4.8 Analytical Testing 10
4.9 Residue Maintenance 10
4.10 Borehole Elevations 10
4.11 Quality Assurance and Quality Control Measures 10

Section 5. Results and Evaluation 11

5.1 Stratigraphy 11
5.1.1 Surface Covers 11
5.1.2 Fill 11
5.1.3 Silty Sand to Sandy Silt 11
5.1.4 Clay 11
5.1.5 Till 12
5.1.6 Practical Refusal and Bedrock 12
5.2 Groundwater Elevations and Flow Direction 12
5.3 Field Observations 12
5.4 Soil Texture 12
5.5 Soil Sample Field Screening 13
5.6 Soil Quality 13
5.7 Groundwater Quality 13
5.8 Quality Assurance and Quality Control Results 13

Section 6. Phase II Conceptual Site Model 14

6.1 Potentially Contaminating Activities 15
6.2 Areas of Potential Environmental Concern 16
6.3 Subsurface Structures and Utilities 17
6.4 Physical Setting 17
6.4.1 Stratigraphy 17
6.4.2 Hydrogeological Characteristics 17
6.4.3 Approximate Depth to Bedrock 17
6.4.4 Approximate Depth to Water Table 17
6.4.5 Environmentally Sensitive Sites 18
6.4.6 Historical Fill Placement 18
6.4.7 Proposed Buildings and Structures 18
6.4.8 Migration of Contaminants 18

6.4.9 Influence of Climatic or Meteorological Conditions on Contaminants 18
6.4.10 Soil Vapour Intrusion into Buildings 18
6.4.11 Lateral and Vertical Distribution of Contaminants 18
6.4.12 Contaminant Transport Pathway 19
6.4.13 Human and Ecological Receptors 19

Section 7. Conclusions & Recommendations 19

Section 8. Closure 21

Section 9. References 22

LIST OF TABLES

Table 4-1: Soil Sample Locations and Analyses 8
Table 4-2: Groundwater Sample Locations and Analyses 10
Table 5-1: Groundwater Levels in Monitoring Wells 12
Table 6-1: Summary of Potentially Contaminating Activities 15
Table 6-2: Summary of Areas of Potential Environmental Concern 16

APPENDICES

Appendix A – Figures
- Figure 1 – Site Location Map
- Figure 2 – Study Area and Potentially Contaminating Activities
- Figure 3 – Areas of Potential Environmental Concern and Borehole Location Plan
- Figure 4 – Borehole and Exceedance Location Plan

Appendix B - Borehole Logs
Appendix C – Soil Laboratory Analytical Results
Appendix D – Groundwater Laboratory Analytical Results
Appendix E - Laboratory Certificates of Analyses
Appendix F - Limitations of Report

1. INTRODUCTION

DST, a division of Englobe (DST) was retained by Dilworth Development Inc. (herein referred to as the "Client") to conduct a Phase II Environmental Site Assessment (ESA) for the property parcel located at 2095 Dilworth Road (also referred to as 2097 and 2099 Dilworth Road) in Kars, Ontario (herein referred to as the "Site"). Refer to Figures 1 and 4 in Appendix A for Site Location Map and Borehole Location Plan, respectively.

The objective of the Phase II ESA was to conduct an intrusive investigation with sample collection and analyses to confirm the presence or absence of potential contaminants of concern in soils and groundwater at the Site, based on Areas of Potential Environmental Concern (APECs) identified within the following report:

- Phase One Environmental Site Assessment, 2095 Dilworth Road, Kars, Ontario. April 2021. DST, a division of Englobe, DST File No. 02101208.000 (DST, April 2021).

The Phase II ESA was conducted in conjunction with a Geotechnical Investigation (Report Ref No. 02101208.000 dated April 12, 2021) and an ongoing Hydrogeology and Terrain Analysis.

The assessment was conducted in accordance with professional standards and procedures, which generally reflect the guidance provided under Ontario Regulation (O. Reg.) 153/04, as amended. It should be noted that this assessment was completed for the purposes of environmental due diligence and is not intended to be utilized as supporting documentation for the filing of a Record of Site Condition (RSC) in accordance with O. Reg. 153/04 (as amended).

1.1 Site Description

The Site consist of an irregular-shaped parcel of land that has a total area of approximately 87 acres (35 hectares), located at 2095 Dilworth Road in Kars, Ontario (refer to Figure 1 – Site Location Map in Appendix A).

The Site is currently developed with the following structures:

- One-storey commercial snowmobile storage and service garage (approximately 625 m^2 building footprint);
- Two-storey residential dwelling (approximately 160 m^2 building footprint);
- One-storey residential trailer home (approximately 85 m^2 building footprint); and
- Two small storage sheds (approximately 30 m^2 total building footprints).

The Site buildings are currently active and used for commercial and residential purposes.

The Phase One Property is surrounded by the following:

- North: Vacant wooded area, followed by residential dwellings;
- East: Residential dwellings, followed by Third Line Road;
- South: Dilworth Road, followed by vacant wooded area and residential dwellings;

- West: Veterans Memorial Highway (HWY 416), followed by vacant wooded area and agricultural fields.

The legal description of the Site is:

- Lot 35, Concession 3 (Ottawa Front), Rideau-Goulbourn Ward, City of Ottawa.

1.2 Property Ownership

The Site is owned by Dilworth Development Inc. The contact information for the property owner's representative is as follows:

- Mr. Walter Griesseier of Dilworth Development Inc.
  - Telephone: 613-223-4900
  - Email: walterg@louconmetal.com
  - Business Address: 92 Bentley Avenue, Ottawa, ON, K2E 6T9.

1.3 Current and Proposed Future Uses

At the time of this assessment, the Site was utilized for mixed residential and commercial purposes (including a commercial service garage for repair of snowmobiles, farm equipment and other small engine repairs). The proposed future use of the Site is for a commercial subdivision.

1.4 Applicable Site Condition Standards

Based on Site conditions, the following Site Condition Standards were considered applicable to the Site:

Soil:

- Ontario Ministry of the Environment, Conservation and Parks (MECP) "Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act", April 2011, Table 1: Full Depth Background Site Condition Standards for Residential/Institutional/Industrial/Commercial/Community Property Use.

Groundwater:

- MECP "Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act", April 2011, Table 1: Full Depth Background Site Condition Standards for All Types of Property Use.

The rationale for the selection of the above-referenced Site Condition Standards is as follows.

1.4.1 Potable Water Well Locations

A potable water well is present on Site. Furthermore, based on a search of the available MECP well records, it is suspected that all occupied properties within 250 m of the Site are serviced by potable water wells on each property.

1.4.2 Environmentally Sensitive Sites

The eastern portion and pockets in the central area of the Site, as well as the properties immediately adjacent to the north, east and south are considered as wetlands. The creek located

in the eastern portion of the Site is considered a Provincially Significant Wetland. (Ministry of Natural Resources and Forestry, 2021).

The Site is therefore designated as an environmentally sensitive area per clause 41(1)(a) of O. Reg. 153/04 (as amended).

1.4.3 Shallow Soil Conditions

Bedrock or refusal on suspected bedrock was encountered during the drilling activities at depths ranging from 4.2 to 5.9 m below ground surface (bgs). Bedrock was confirmed at one borehole location, at a depth of 5.5 m bgs.

Based on the results of the drilling activities, an area greater than 1/3 of the Site has greater than 2 m of soil (not including fill) overlying the bedrock. Therefore, the Site is not a shallow soil site according to O. Reg. 153/04 (as amended).

1.4.4 Surface Water Features

There is a small unnamed creek within the Site property, approximately 130 m east of the on-Site buildings, oriented in the north-south direction. The closest major surface water body to the Site is the Rideau River, located approximately 650 m southeast of the Site.

1.4.5 Soil Texture

Based on field logging of soils during the Phase II ESA, the site condition standards for coarse textured soils are applicable for this Site, as at least 1/3 of the soil at the property is expected to consist of soils containing more than 50% or more by mass of particles that are larger than 75 µm in mean diameter.

2. BACKGROUND INFORMATION

2.1 Physical Setting

The topography of the Site was analyzed using maps and information provided by Ontario Base Maps ordered through ERIS. The Ontario Base Map shows the ground surface elevation for the Site ranging between 89 and 90 metres above mean sea level (amsl). The regional topography appears to slope downwards from north to south towards the Rideau River.

The ground surface at the Site is relatively flat.

As previously noted, there is a small unnamed creek within the Site, located approximately 130 m east of the on-Site buildings, and oriented in the north-south direction. The closest major surface water body to the Site is the Rideau River, located approximately 650 m southeast of the Site.

Based on the boreholes advanced as part of this investigation and the concurrent Geotechnical Investigation, the Site stratigraphy generally consists of a surface layer of silty sand with organics underlain by a silt to silty clay deposit. Underlying the silt to silty clay deposit was a till deposit consisting of a silty sand with varying amounts of clay and gravel across the Site. Bedrock was confirmed at the BH21-05 location as limestone bedrock. A fill material consisting of sand and

gravel to silty sand was encountered at the surface of the MW21-01, BH21-11, and BH21-12 locations.

2.2 Past Investigation

No historical environmental reports were available for review at the time of DST's assessment.

3. SCOPE OF THE INVESTIGATION

3.1 Overview of Site Investigation

The objective of the Phase II ESA was to conduct an intrusive investigation with sample collection and analyses to confirm the presence or absence of potential contaminants of concern in specific media, as identified during the DST's Phase One ESA (DST, April 2021).

The scope of work was outlined in DST's proposal dated January 28, 2021 and was performed in conjunction with a Geotechnical Investigation (Report Ref No. 02101208.000 dated April 12, 2021) and an ongoing Hydrogeology and Terrain Analysis and included the following activities:

1. Obtaining underground utility clearances and locates;
2. The advancement of twelve boreholes to depths ranging between 1.2 to 7.2 m bgs.
    a. Borehole locations MW21-01, BH21-02, BH21-03, MW21-06, BH21-11, and BH21-12 were positioned and advanced to investigate the Areas of Potential Environmental Concern (APECs) for the Site
    b. The remaining borehole locations (BH21-04, BH21-05, and BH21-07 through BH21-10) were positioned and advanced as part of the Geotechnical Investigation performed in conjunction with this Phase II ESA
3. The collection and screening of soil samples from all twelve advanced boreholes.
4. Submittal of a total of eight (8) soil samples, including one field duplicate, for laboratory analysis of contaminants of potential concern (COPCs):
    a. Five (5) soil samples were analysed for each of petroleum hydrocarbon fractions F1 – F4 (PHCs F1-F4) and volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene and xylenes (BTEX);
    b. Two (2) soil samples were analysed for each of metals and polycyclic aromatic hydrocarbons (PAHs);
    c. One (1) duplicate soil sample was analysed for metals.
5. The collection of groundwater samples, including one field duplicate sample, from the two monitoring wells (MW21-01 and MW21-06), for laboratory analysis of COPCs:
    a. Two (2) groundwater samples were analysed for each of PHCs F1-F4, VOCs (including BTEX), metals and inorganics, general chemistry, anions, and Pesticides (OC);

b. One (1) duplicate groundwater sample, collected from MW21-01, was analysed for PHCs F1-F4 and VOCs (including BTEX).

6. Removal and disposal of all residues consisting of drill cuttings and purge water; and
7. The preparation of a Phase II ESA report documenting field observations and measurements, sampling locations, analytical sample results and subsequent compliance evaluation with environmental guidelines, as well as recommendations regarding further work, as required.

3.2 Media Investigated

The media investigated included soil and groundwater.

3.3 Phase One Conceptual Site Model

The Potentially Contaminating Activities (PCAs) identified by the Phase One ESA (DST, April 2021) are provided in the following table:

PCA Number	Location of PCA	PCA	Description of PCA	Contributes to Area of Potential Environmental Concern?
1	On-Site - Developed portion of the Site	30 – Importation of Fill Material of Unknown Quality	Based on historical aerial photos and DST observations during the Site reconnaissance, fill material of an unknown quality was placed for the gravel parking lot and as part of the construction of the existing structures on the Site.	Yes (On Site)
2	On-Site - Commercial Garage (Developed portion of the site)	52 – Storage, maintenance, fueling and repair of equipment, vehicles, and material used to maintain transportation systems	Based on DST observations during the Site reconnaissance, the on-Site garage is used for the storage and repair of snowmobiles, farm equipment, and other small engines. There is also a hoist present in the garage.	Yes (On Site)
3	On-Site – Residential dwelling	28 – Gasoline and Associated Products Storage in Fixed Tanks	Based on DST observations during the Site reconnaissance, a former heating oil storage tank was present within the residential dwelling. There are no reported spills or leaks associated with the tank. No staining was observed around the tank location.	No (No record or evidence of spills)

PCA Number	Location of PCA	PCA	Description of PCA	Contributes to Area of Potential Environmental Concern?
4	Off-Site - 2022 Dilworth Road-170 m southeast of the Site	8 – Chemical Manufacturing, Processing and Bulk Storage	The property is a registered waste generator of petroleum distillates, waste oils and lubricants, aromatic solvents, and oil skimmings and sludges.	No (Distant, same approx. elevation as Site)
5	Off-Site - 2022 Dilworth Road-170 m southeast of the Site	40 – Pesticides (including Herbicides, Fungucides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	The property has two records of licenses to use pesticides.	No (Distant, same approx. elevation as Site)

The Areas of Potential Environmental Concern (APECs) associated with the above-mentioned PCAs are provided in the table below:

APEC	Location of APEC on Site	Potentially Contaminating Activity (PCA)	Contaminants of Potential Environmental Concern	Media Potentially Impacted
APEC 1 Fill material of unknown quality likely present on Site	Developed portion of the property	PCA Item #30 – Importation of Fill Material of Unknown Quality	- Metals - Polycyclic aromatic hydrocarbons (PAHs)	Soil
APEC 2 Existing commercial garage	Within the area of the on-Site garage	PCA Item #52 - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	- Petroleum hydrocarbons (PHCs F1-F4) - Volatile organic compounds (VOCs)	Soil and groundwater

The PCAs are shown in Figure 2, while the APEC limits are shows in Figure 3, in Appendix A.

3.4 Deviations from the Sampling and Analysis Plan

No deviations from the original sampling and analysis plan were made.

3.5 Impediments

No impediments were encountered during the field investigation work.

4. INVESTIGATION METHOD

4.1 General

A total of twelve boreholes, two of which were instrumented with groundwater monitoring wells, were completed as part of the investigation.

Borehole locations MW21-01, BH21-02, BH21-03, MW21-06, BH21-11, and BH21-12 were positioned and advanced to investigate the Areas of Potential Environmental Concern (APECs) for the Sit.

The remaining borehole locations (BH21-04, BH21-05, and BH21-07 through BH21-10) were positioned and advanced as part of the Geotechnical Investigation performed in conjunction with this Phase II ESA

Soil and groundwater samples were collected from the boreholes and monitoring wells and submitted for laboratory analysis of COPCs, including PHCs F1 – F4, BTEX, VOCs, metals, and PAHs. A total of eight soil samples were submitted for laboratory analysis of the COPCs above. Soil sample selection for laboratory analysis was based on field observations and screening, as described in the sections below.

4.2 Borehole Drilling

The drilling program took place in the period of February 16 to 19, 2021 and consisted of the advancement of twelve boreholes, two of which were instrumented with groundwater monitoring wells (monitoring wells MW21-01 and MW21-06). The boreholes were advanced by CCC Geotechnical & Environmental Drilling (CCC), a licenced well contractor, using a track-mounted drill rig. Representative soil samples were collected in split spoons, in 0.76 m intervals. The split spoons were decontaminated between each sample to prevent cross contamination. The boreholes were advanced to depths ranging from approximately 1.2 m bgs to 7.2 m bgs.

Refer to Figure 4 in Appendix A for the locations of the boreholes and monitoring wells.

4.3 Soil Sampling

The overburden was drilled using hollow-stem continuous flight auger. Representative soil samples were collected using split spoons in intervals of approximately 0.76 m. Soil samples were placed directly into laboratory-supplied sample jars and vials. The sample jars were filled completely with soil to reduce the amount of headspace vapour within the jars. Samples to be

submitted for laboratory analysis of non-volatile components (PHC F2 – F4, metals and inorganics, and PAHs) were placed in unpreserved 120 mL clear glass jars with Teflon lids, while samples to be submitted to the laboratory for analysis of volatile compounds (PHC F1 and VOCs, including BTEX) were collected using disposable soil plug sample collectors supplied by the laboratory. The soil plugs were placed in laboratory-supplied vials containing measured volumes of methanol for sample preservation.

Soil samples were logged in the field for texture, odour, moisture and visual appearance (e.g. staining, if present).

Soil sample locations and analysis are presented in Table 4-1 below.

Table 4-1: Soil Sample Locations and Analyses

Sampling Date (y/m/d)	Sample ID/Location	Sample Depth (m bgs)	Soil Type	Analyses Performed
2021-02-16	MW21-01 SS3	1.5 – 2.1	Native Silty Sand	Metals, VOCs, PHCs F1-F4, pH
2021-02-16	BH21-02 SS1	0.2 – 0.8	Native Silty Sand	Metals, VOCs, PHCs F1-F4, BTEX, PAH, pH
2021-02-16	BH21-03 SS1	0.2 – 0.8	Native Silty Sand	Metals, VOCs, PHCs F1-F4, PAHs
2021-03-18	BH21-03, SS1 (Duplicate)	0.2 – 0.8	Native Silty Sand	Metals
2021-02-19	BH21-11 SS1	0.0 – 0.6	Fill	PHCs F1-F4, VOCs
2021-02-19	BH21-11 SS2	0.6 – 1.2	Fill	PHCs F1-F4, VOCs
2021-02-19	BH21-12 SS1	0.0 – 0.6	Fill	PHCs F1-F4, VOCs
2021-02-19	BH21-12 SS2	0.6 – 1.2	Fill	PHCs F1-F4, VOCs

Refer to Figure 4, in Appendix A, for the borehole and monitoring well locations, and Appendix B for the borehole logs.

4.4 Field Screening Measurements

A portion of each collected soil sample was placed in a polyethylene bag and allowed to equilibrate for approximately 15 minutes prior to being tested for combustible vapour concentrations (CVCs). Combustible vapour concentrations of soil samples were measured using an RKI Eagle 2™ dual gas portable vapour meter. The RKI Eagle 2™ was equipped with a catalytic combustible gas detector (CCGD) calibrated to hexane, with a detection limit of 5 parts per million (ppm), for the detection of petroleum hydrocarbon and BTEX vapour concentrations. Additionally, the unit was equipped with a photoionization detector (PID) calibrated to isobutylene for the detection of VOC vapour concentrations. The vapour meter was operated in methane elimination mode and calibrated prior to use each day.

Based on visual and olfactory observations, CVC measurements, and the position of the collected soil samples with respect to the inferred groundwater table, soil samples were selected from select boreholes, and submitted for laboratory analysis of COPCs.

4.5 Groundwater: Monitoring Well Installation

Monitoring wells were installed by CCC within the advanced boreholes from February 16 to 19, 2021, using the same drilling equipment described in Section 4.2. The wells were constructed of a 50-mm diameter polyvinyl chloride (PVC) pipe and a #10 slotted PVC well screen, one approximately 3 m in length (MW21-01) and the second approximately 1.8 m in length (MW21-06), placed to intercept the inferred groundwater table. A sand-pack consisting of clean silica sand was placed within the annulus space surrounding the screened section of the wells, and a bentonite hole plug was used from the top of the sand layer to within 0.3 m of the surface to minimize the potential for cross-contamination between aquifers. A locking J-Plug cap was placed at the top of each well pipe, and a protective steel monument casing was installed and cemented at surface to protect the well. New disposable nitrile gloves were donned prior to the handling of the well materials for each monitoring well. The monitoring wells were installed and registered in accordance with O. Reg. 903 – Wells, made under the Ontario Water Resources Act.

Following monitoring well installation activities, the wells were equipped with dedicated Waterra™ tubing and inertial lift foot valves for well development purposes. On February 26, 2021 the monitoring wells were purged of a minimum of six casing volumes of water, or until dry, to remove any groundwater impacted by drilling activities and to reduce the amount of sediment within the wells.

Refer to Figure 4, in Appendix A, for the borehole and monitoring well locations, and Appendix B for the well installation details provided on the borehole logs.

4.6 Groundwater Level Measurements

DST field personnel collected groundwater level measurements from the installed monitoring wells prior to groundwater sampling activities on March 15, 2021. The water levels were measured using a Heron Instruments Inc. oil/water interface meter which was also used to confirm the presence/absence and thickness of free (petroleum) product that may potentially be residing on the surface of the groundwater table. The electronic interface probe was decontaminated prior to the collection of each water level measurement.

4.7 Groundwater Sampling

On March 15, 2021 groundwater was purged using low flow techniques using a submersible stainless-steel Monsoon™ pump complete with flow controller (target flow rate approximately 150 mL/min), through a flow-through cell fitted with a Horiba™ U52 multi-parameter water quality meter.

DST monitored the water quality parameters using the Horiba™ U52 multi-parameter water quality meter, including pH, conductivity, dissolved oxygen (DO), temperature, turbidity and oxygen redox potential (ORP), and recorded each reading every 3 to 5 minutes during purging prior to sampling.

Groundwater samples were collected after three consecutive readings of field groundwater parameters were within 10% of each other. Once field parameters stabilized, the flow-through cell was removed, and the groundwater sample was collected directly into laboratory-supplied sample containers. Samples collected for the analysis of metals were field filtered using 0.45-micron inline disposable field filters. Clean, new, powder-free nitrile gloves were worn by DST field staff during the sampling process and discarded between samples to prevent cross-contamination.

Table 4-2, below, summarizes the groundwater samples collected at the Site by DST on March 15, 2021, as well as the analyses performed for each sample.

Table 4-2: Groundwater Sample Locations and Analyses

Sample ID/Location	Analyses Performed
MW21-01	PHC F1 – F4, VOCs, metals and inorganics, general chemistry, anions, OC pesticides
MW21-01-1 (Duplicate to MW21-01)	PHC F1 – F4, VOCs
MW21-06	PHC F1 – F4, VOCs, metals and inorganics, general chemistry, anions, OC pesticides

4.8 Analytical Testing

Soil and groundwater samples were submitted to Paracel Laboratories Ltd. (Paracel) in Ottawa, Ontario for chemical analyses. Paracel is a Canadian Association for Laboratory Accreditation Inc. (CALA) and Standards Council of Canada (SCC) certified laboratory.

4.9 Residue Maintenance

All soil cuttings resulting from drilling activities, purge water resulting from well development and purging activities, and fluids resulting from equipment decontamination were appropriately contained in drums and secured on Site, to be disposed of off Site .

4.10 Borehole Elevations

The elevations of the borehole locations were interpolated from the topographic survey plan provided by the Client (refer to Appendix A).

4.11 Quality Assurance and Quality Control Measures

DST maintains a standard Quality Assurance / Quality Control (QA/QC) program for environmental assessments. The field sampling and QA/QC program was completed in accordance with the applicable *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MOE, 1996). All project documentation was maintained and controlled by the appointed field supervisor. All borehole advancement and soil and groundwater sampling was completed in accordance with industry standards, and applicable provincial standards/guidelines.

Soil and groundwater samples were placed in laboratory-supplied containers and maintained at or below 10^{o}C in ice-packed coolers, under a Chain of Custody protocol, prior to being submitted for chemical analysis to a CALA/SCC certified laboratory (Paracel, Ottawa, Ontario).

The potential for cross-contamination between samples was minimized by, where applicable, washing sampling tools with phosphorous-free soap and water followed by rinsing with distilled water, and by wearing new disposable nitrile gloves prior to the handling of each sample.

Variance between the detected concentration of the parent and duplicate samples collected were within acceptable limits. Refer to Section 5.8 for details regarding the Quality Control and Quality Assurance results.

5. RESULTS AND EVALUATION

5.1 Stratigraphy

The subsurface conditions encountered at the borehole locations are briefly discussed in the following subsections.

It is important to note that the subsoil descriptions presented below represent the soils encountered at the discrete borehole locations only. They may vary between and beyond borehole locations.

5.1.1 Surface Covers

A topsoil surface cover was encountered at the BH21-08 and BH21-09 borehole locations. The thickness of the topsoil at these borehole locations was approximately 200 mm.

The recorded thicknesses of the topsoil layer described within this report and on the borehole logs are for information and planning purposes only. They should not be used for quantity take-offs for the Site

In all other boreholes, a fill material or native deposit was encountered at the surface. The fill material and native deposits encountered are discussed in section 5.1.2 to 5.1.6 below.

5.1.2 Fill

A fill material was encountered at borehole locations MW21-01, BH21-11, and BH21-12. The fill material consisted of layer of sand and gravel underlain by a silty sand and gravel. The fill material extended to an approximate depth of 1.0 m at the location of MW21-01 and to the maximum investigation depth of 1.2 m at the locations of BH21-11 and BH21-12. The encountered fill material was brown and grey and was recovered in a frozen to damp condition.

5.1.3 Silty Sand to Sandy Silt

A native deposit of silty sand to sandy silt was encountered in most borehole locations either from ground surface or below the encountered fill material or organic surface covers. This native deposit extended to depths ranging from 1.6 m to 3.2 mbgs. The encountered deposit was brown in colour, very loose to compact, and was recovered in a damp to moist condition.

5.1.4 Clay

A native clay deposit was encountered below the native silty sand to sandy silt deposit at various locations. This native deposit extended to depths ranging from 3.0 to 5.0 mbgs. The encountered

deposit was brown in colour becoming grey with depth, firm to stiff, and was recovered in a damp to wet condition.

5.1.5 Till

A native till deposit consisting of varying amounts of sand, silt, clay and gravel was encountered below the sandy and clayey deposits. This deposit was encountered at depths ranging from 1.0 to 5.0 mbgs. The encountered deposit was brown to grey in colour, compact to very dense, and was recovered in a moist to wet condition.

5.1.6 Practical Refusal and Bedrock

Auger refusal on assumed bedrock was encountered at depths ranging from 4.2 m (BH21-09) to 5.9 m (BH21-07). Bedrock was confirmed at the location of BH21-05 through diamond coring techniques at a depth of approximately 5.6 m bgs. Bedrock consisted of a highly weathered and fractured grey limestone of very poor quality.

5.2 Groundwater Elevations and Flow Direction

As discussed in Section 4.7, DST field personnel collected groundwater level measurements from the installed monitoring wells prior to groundwater sampling activities on March 15, 2021. The water levels were measured using a Heron Instruments Inc. oil/water interface meter which was also used to confirm the presence/absence and thickness of free (petroleum) product that may potentially be residing on the surface of the groundwater table.

Monitoring well groundwater elevation data is presented in Tables 5-1 below.

Table 5-1: Groundwater Levels in Monitoring Wells

Monitoring Well	Groundwater Level (m bgs) (2021-03-15)	Groundwater Elevation (m)[(1)]
MW21-01	1.20	86.70
MW21-06	1.50	86.10

Notes:
mbgs: meters below ground surface
(1) Elevations were interpreted based on the ground surface elevations interpolated based on the survey plan provided by the client.

5.3 Field Observations

There was no visual or olfactory evidence of petroleum or other impacts observed in any of the soil or groundwater samples collected during the investigation. No buried debris, waste materials, sheen, free phase liquid petroleum hydrocarbons, or odours were noted during the drilling or sampling activities.

5.4 Soil Texture

Based on field logging of soils during intrusive investigation, the site condition standards for coarse textured soils are applicable for this Site, as at least 1/3 of the soil at the property, is expected to consist of soils containing more than 50% or more by mass of particles that are larger than 75 µm in mean diameter.

5.5 Soil Sample Field Screening

Combustible vapour concentrations, as measured by the CCGD, as well as volatile vapour concentrations measured by the PID, of the analyzed soil samples and monitoring well locations are provided in Appendix B.

All CCGD and PID readings of the soil samples collected from the borehole locations advanced as part of the Geotechnical Investigation (BH21-04, BH21-05, and BH21-07 through BH21-10) had readings of 0 ppm. The borehole logs for these borehole locations are provided in the Geotechnical Investigation Report. Refer to Section 4.4 for the field screening methods implemented by DST field personnel during the investigation.

5.6 Soil Quality

As detailed in Section 1.4, analytical results of the soil samples submitted for laboratory analyses were compared against the applicable MECP Table 1: Full Depth Background Site Condition Standards for Residential/Institutional/Industrial/Commercial/Community Property Use.

Based on the laboratory soil analytical results, two soil samples, BH21-11 SS1 (0.0-0.6 m) and BH21-11 SS2 (0.6-1.2 m), exceeded the applicable MECP Table 1 standards for PHC F4 and PHC F4 (gravimetric). Soil sample BH21-11 SS1 (0.0-0.6 m) also exceeded Table 1 standards for PHC F3. The concentration and location of the exceedances are shown on Figure 4.

Refer to Tables C-1 to C-4, in Appendix C, for the soil analytical results. The laboratory certificates of analysis are provided in Appendix E.

5.7 Groundwater Quality

As detailed in Section 1.4, analytical results of the groundwater samples submitted for laboratory analyses were compared against the applicable MECP Table 1: Full Depth Background Site Condition Standards for All Types of Property Use.

Based on the laboratory groundwater analytical results, the groundwater sample collected from MW21-01 (including the duplicate sample collected) exceeded the applicable MECP Table 1 standard for ethylbenzene (reported concentration of 0.6 µg/L vs. the standard of 0.5 µg/L). Also, the groundwater sample collected from MW21-06 exceeded the applicable MECP Table 1 standard for chloroform (reported concentration of 8.3 µg/L vs. the standard of 2 µg/L). The concentrations and locations of the exceedances are shown on Figure 4.

Refer to Tables D-1 to D-4, in Appendix D, for the groundwater analytical results. The laboratory certificates of analysis are provided in Appendix E.

5.8 Quality Assurance and Quality Control Results

The field program included the submission of one field duplicate soil sample for laboratory analysis of metals (duplicate of BH21-03 SS1) and one field duplicate groundwater sample for laboratory analysis of PHCs and VOCs (duplicate of MW21-01).

The analytical results of an original (parent) sample and its corresponding field duplicate are generally quantitatively comparable. Relative percent differences (RPDs) between analytical results from parent and field duplicate samples are calculated using the following formula:

$$RPD = \frac{(\text{Sample Result} - \text{Duplicate Result}) \times 100}{(\text{Sample Result} + \text{Duplicate Result}) / 2}$$

Relative percent differences are only calculated for a parameter when both sample concentrations (the original and the duplicate) are greater than five times the laboratory reportable detection limit (RDL). All calculated RPDs were within the acceptable limits for soil and groundwater field duplicates.

No quality control issues that would affect the reliability of the analytical results were identified by the laboratory. Therefore, based on this information, the analytical results are considered reproducible. Laboratory quality control data is included within the laboratory certificates of analysis in Appendix E.

6. PHASE II CONCEPTUAL SITE MODEL

The Site consist of an irregular-shaped parcel of land that has a total area of approximately 87 acres (35 hectares), located at 2095 Dilworth Road in Kars, Ontario (refer to Figure 1 – Site Location Map in Appendix A).

The Site is currently developed with the following structures:

- One-storey commercial snowmobile storage and service garage (approximately 625 m^2 building footprint);
- Two-storey residential dwelling (approximately 160 m^2 building footprint);
- One-storey residential trailer home (approximately 85 m^2 building footprint); and
- Two small storage sheds (approximately 30 m^2 total building footprints).

The Site buildings are currently active and used for commercial and residential purposes.

The Phase One Property is surrounded by the following:

- North: Vacant wooded area, followed by residential dwellings;
- East: Residential dwellings, followed by Third Line Road;
- South: Dilworth Road, followed by vacant wooded area and residential dwellings;
- West: Veterans Memorial Highway (HWY 416), followed by vacant wooded area and agricultural fields.

A gravel parking area and driveway is accessible from Dilworth Road to the South.

The legal description of the Site is:

- Lot 35, Concession 3 (Ottawa Front), Rideau-Goulbourn Ward, City of Ottawa, Civic Addresses of 2095, 2097, and 2099 Dilworth Road.

6.1 Potentially Contaminating Activities

Based on the findings of the Phase One ESA (DST, April 2021), five (5) PCAs were identified within the Phase One Study Area, which resulted in two (2) APECs at the Site.

The PCAs identified by the Phase One ESA (DST, April 2021) are provided in Table 6-1 below:

Table 6-1: Summary of Potentially Contaminating Activities

PCA Number	Location of PCA	PCA	Description of PCA	Contributes to Area of Potential Environmental Concern?
1	On Site-Gravel parking area and area surrounding the existing structures	30 – Importation of Fill Material of Unknown Quality	Based on historical aerial photos and DST observations during the Site reconnaissance, fill material of an unknown quality was placed for the gravel parking lot and as part of the construction of the existing structures on the Site.	Yes
2	On Site-Commercial Garage	52 – Storage, maintenance, fueling, and repair of equipment, vehicles, and material used to maintain transportation systems	Based on DST observations during the Site reconnaissance, the on site garage is used for the storage and repair of snowmobiles, farm equipment, and other small engines. There is also a hoist present in the garage.	Yes
3	On Site-Two-Storey residential dwelling	28 – Gasoline and Associated Products Storage in Fixed Tanks	Based on DST observations during the Site reconnaissance, a former heating oil storage tank was present within the residential dwelling. There are no reported spills or leaks associated with the tank. No staining was observed around the tank location.	No
4	Off Site- 2022 Dilworth Road - 170 m southeast of the Site	8 – Chemical Manufacturing, Processing and Bulk Storage	Based on the ERIS database report, the property is a registered waste generator of petroleum distillates, waste oils and lubricants, aromatic solvents, and oil skimmings and sludges.	No

PCA Number	Location of PCA	PCA	Description of PCA	Contributes to Area of Potential Environmental Concern?
5	Off Site-2022 Dilworth Road - 170 m southeast of the Site	40 –Pesticides (including Herbicides, Fungucides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large Scale Applications	Based on ERIS database report, the property has two records of licenses to use pesticides.	No

6.2 Areas of Potential Environmental Concern

The Areas of Potential Environmental Concern (APECs) associated with the above-mentioned PCAs are provided in the Table 6-2 below:

Table 6-2: Summary of Areas of Potential Environmental Concern

APEC	Location of APEC on Site	Potentially Contaminating Activity (PCA)	Contaminants of Potential Environmental Concern	Media Potentially Impacted
APEC 1 Fill material of unknown quality likely present on Site	Developed portion of the property	PCA Item #30 – Importation of Fill Material of Unknown Quality	- Metals - Polycyclic aromatic hydrocarbons (PAHs)	Soil
APEC 2 Existing commercial garage	Within the area of the on-Site garage	PCA Item #52 - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	- Petroleum hydrocarbons (PHCs F1-F4) -Volatile organic compounds (VOCs)	Soil and Groundwater

6.3 Subsurface Structures and Utilities

In accordance with public and private utilities locates completed in February 2021 for the Site, there are no public utilities (Bell, Gas, Hydro, Water and Sewer) present on the site.

Underground private utilities at the Site generally consist of a potable water line supplied from the on-Site well to the residential dwelling through an underground water line. A buried water and electrical line travel from the north side of the residential dwelling to a wood-fired boiler, which then leads to the on-Site garage. The septic tank for the two-storey residence is located to the west of the dwelling. The exact location of the septic bed is unknown. No other underground utilities or corridors were located at the Site. It is not anticipated that underground utilities will affect contaminant distribution and transport.

6.4 Physical Setting

6.4.1 Stratigraphy

Based on the boreholes advanced as part of this investigation and the concurrent Geotechnical Investigation, the Site stratigraphy generally consists of a surface layer of silty sand with organics underlain by a silt to silty clay deposit. Underlying the silt to silty clay deposit was a till deposit consisting of a silty sand with varying amounts of clay and gravel across the Site. Bedrock was confirmed at the BH21-05 location as limestone bedrock. A fill material consisting of sand and gravel to silty sand was encountered at the surface of the MW21-01, BH21-11, and BH21-12 locations.

6.4.2 Hydrogeological Characteristics

In general, the groundwater monitoring wells were screened within the shallow groundwater table. Monitoring well locations were chosen to assess potential contaminant sources.

Groundwater table elevations were measured at approximate elevations of 86.70 (MW21-01) and 86.10 (MW21-06) on March 15, 2021. The groundwater gradient appears to be downward toward the northwest. The nearest water body is the on-Site creek, located in the eastern portion of the Site.

6.4.3 Approximate Depth to Bedrock

Bedrock or practical refusal on suspected bedrock was encountered in five of the advanced boreholes at depths ranging from 4.2 to 5.9 m. Limestone bedrock was confirmed in one borehole location only at a depth of 5.6 m bgs.

6.4.4 Approximate Depth to Water Table

The most recent groundwater elevations on Site were measured by DST on March 15, 2021. Based upon these measurements, the groundwater elevation in the shallow groundwater table on Site varied from between 1.2 to 1.5 m bgs.

6.4.5 Environmentally Sensitive Sites

The eastern portion and pockets in the central area of the Site, as well as the properties immediately adjacent to the north, east and south are considered as wetlands. The creek located in the eastern portion of the Site is considered a Provincially Significant Wetland. (Ministry of Natural Resources and Forestry, 2021).

The Site is therefore designated as an environmentally sensitive area per clause 41(1)(a) of O. Reg. 153/04 (as amended).

6.4.6 Historical Fill Placement

Suspected importation fill material of unknown quality is suspected to have occurred at the time of construction of the on-Site buildings and associated gravel driveway and parking area.

6.4.7 Proposed Buildings and Structures

Current plans for the redevelopment of the Site include the demolition of the existing buildings on Site and the construction of a new commercial subdivision with low-rise buildings and private servicing. The southern portion of the Site is proposed to consist of construction of four new buildings with a store in the southwest section of the Site. A new parking area is proposed in the western portion of the Site. The northern portion of the Site is planned for a future expansion.

6.4.8 Migration of Contaminants

As no other exceedances of the applicable MECP Table 1 criteria was detected in any of the other submitted samples, it is suspected the soil contamination is isolated to the area underneath and immediately adjacent to the existing commercial garage.

6.4.9 Influence of Climatic or Meteorological Conditions on Contaminants

It is not currently anticipated that climatic or meteorological conditions will have a substantial impact on the fate or transport of the on-Site contaminants of concern. Due to their chemical characteristics, PHCs tend to bind to soil, and do not easily dissolve in groundwater. As such, they should not be significantly influenced by climatic conditions.

6.4.10 Soil Vapour Intrusion into Buildings

It is anticipated that all the PHC-impacted soils will be removed from the proposed building footprints at the time of the construction. Therefore, vapour intrusion into the new buildings is not a concern. Furthermore, based on the nature of the contaminants (i.e. non-volatile contaminants – PHCs F3 and F4) there are no concerns with soil vapour intrusion into buildings.

6.4.11 Lateral and Vertical Distribution of Contaminants

It is not anticipated that underground utilities are present near the groundwater table and, therefore, it is unlikely that underground utilities will affect contaminant distribution and transport.

6.4.12 Contaminant Transport Pathway

As no other exceedances of the applicable MECP Table 1 criteria were detected in any of the other submitted samples, it is suspected that PHC impacts are isolated to the area immediately underneath and adjacent to the existing commercial garage.

There was no evidence of PHC transport in the groundwater on Site. Therefore, the potential for transport of these contaminants of concern (PHCs F3 and F4) are low.

6.4.13 Human and Ecological Receptors

Human receptors that could come into contact with the on-site contaminants could include any construction workers or other personnel on Site at the time of construction.

Exposure pathways could include; soil ingestion, dermal contact with the soil, or particulate inhalation.

Terrestrial ecological receptors for the Site could include; soil invertebrates (earthworms), mammals, and birds.

7. CONCLUSIONS AND RECOMMENDATIONS

DST was retained by Dilworth Development Inc. to conduct a Phase II ESA for the property located at 2095 Dilworth Road in Kars, Ontario.

The Phase II ESA was conducted in conjunction with a Geotechnical Investigation (Report Ref No. 02101208.000 dated April 12, 2021) and an ongoing Hydrogeology and Terrain Analysis.

The field program consisted of the advancement of twelve boreholes, with two instrumented with groundwater monitoring wells at strategic locations within the Site.

- Borehole locations MW21-01, BH21-02, BH21-03, MW21-06, BH21-11, and BH21-12 were positioned and advanced to investigate the Areas of Potential Environmental Concern (APECs) for the Site
- The remaining borehole locations (BH21-04, BH21-05, and BH21-07 through BH21-10) were positioned and advanced as part of the Geotechnical Investigation performed in conjunction with this Phase II ESA

Eight (8) soil samples and two (2) groundwater samples, were collected from the twelve advanced boreholes and monitoring wells, for laboratory analysis of contaminants of potential concern, including metals, PAHs, PHCs, BTEX, and VOCs.

Based on the laboratory analytical results, the results of the investigation can be summarized as follows:

- Two soil samples, BH21-11 SS1 (0.0-0.6 m) and BH21-11 SS2 (0.6-1.2 m), exceeded the applicable MECP Table 1 standards for PHC F4 and PHC F4 (gravimetric). Soil sample BH21-11 SS1 (0.0-0.6 m) also exceeded Table 1 standards for PHC F3.
- The concentrations of the analyzed soil parameters of the other soil samples analyzed met the applicable MECP Table 1 standards

- The groundwater sample collected from MW21-01 (including the duplicate sample) exceeded the applicable MECP Table 1 standards for ethylbenzene.
- The groundwater sample collected from MW21-06, exceeded the applicable MECP Table 1 standards for chloroform.

Therefore, based on the results of the Phase II ESA, PHC (F3 and F4) impacts above the applicable MECP Table 1 standards were identified in the fill material collected from the BH21-11 location. Also, ethylbenzene impacts above the applicable MECP Table 1 standards were identified in the groundwater sample collected from the MW21-01 location. Chloroform impacts above the applicable MECP Table 1 standards were identified in the groundwater sample collected from the MW21-06 location.

It is recommended that PHC-impacted fill materials are excavated and disposed of off Site (at an MECP-licensed waste disposal facility) during the construction of the proposed development on Site.

Regarding the observed MECP Table 1 exceedances in the Site groundwater, DST completed a further comparison of the results utilizing the MECP rational document, titled:

"Rationale for the Development of Soil and Groundwater Standards for Use at Contaminated Sites in Ontario, April 2011 - Groundwater Components for Non-potable Water Scenario for Coarse Textured Soil, Appendix A3".

The MECP rationale document is used to assess specific contaminant exposure pathways in order to develop soil and groundwater site condition standards (SCSs). Components used for the development of groundwater SCSs include: (1) the drinking water component (GW1); the protection of indoor air from vapours originating from groundwater component (GW2); and the protection of the aquatic environment component (GW3). Based on a comparison of the standards for ethylbenzene and chloroform for the GW1, GW2 and GW3 components, the drinking water component (GW1) is considered the groundwater pathway that represents the most stringent standards for ethylbenzene and chloroform applicable to the Site. The GW1 standards for ethylbenzene and chloroform in a potable water scenario, for commercial/industrial land use and coarse textured soil conditions, are 2.4 µg/L and 25 µg/L, respectively. Therefore, the groundwater analytical results for ethylbenzene in groundwater sample MW21-01 (including its field duplicate) and chloroform in groundwater sample MW21-06 are below the aforementioned pathway-based standards and, thus, at this time there is no risk associated with the groundwater quality on Site, as it pertains to the reported ethylbenzene and chloroform levels.

Furthermore, as the proposed development at the Site, including both monitoring well locations, are located more than 30 metres away from the Provincially Significant Wetland on Site, the MECP Table 1 background standards for ethylbenzene and chloroform (0.5 µg/L and 2 µg/L, respectively) are not considered applicable.

8. CLOSURE

We trust that the above meets your present requirements; should you have any questions or concerns regarding this report, please feel free to contact the undersigned at your convenience.

We appreciate this opportunity to provide environmental consulting services to you. If you have any questions or comments, please contact the undersigned.

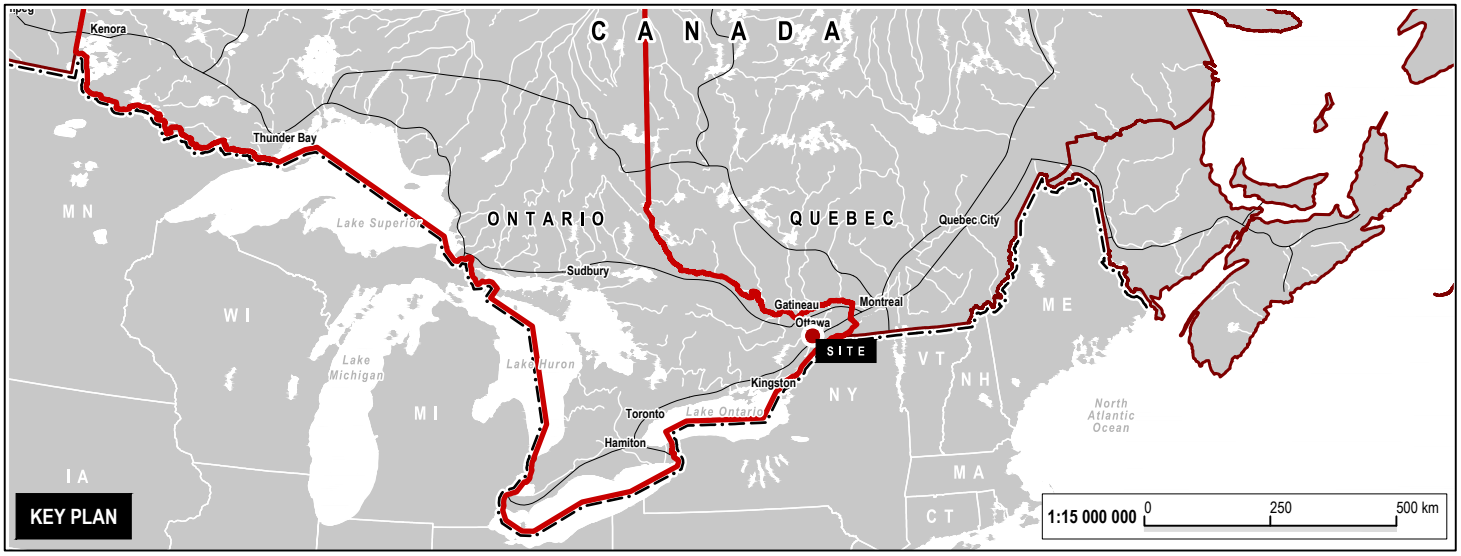
For **DST, a division of Englobe**

Salim Eid, P.Eng.
Team Lead

9. REFERENCES

1. DST, a division of Englobe, April 2021 *"Phase One Environmental Site Assessment, 2095 Dilworth Road, Kars, Ontario"*
2. DST, a division of Englobe, April 12, 2021 *"Preliminary Geotechnical Investigation Report, Proposed Commercial Development, 2095 Dilworth Road, Kars, Ontario"*
3. Ontario Ministry of the Environment, Conservation and Parks, December 1996. *"Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario"*.
4. Ontario Ministry of the Environment and Climate Change, March 2004. *"Protocol for Analytical Methods Used in Assessment of Properties under Part XV.1 of the Environmental Protection Act"*.
5. Ontario Ministry of the Environment, Conservation and Parks 2011. *"Soil, Ground Water and Sediment Standards for Use Under Part XV.I of the Environmental Protection Act"*.
6. Ontario Ministry of the Environment and Climate Change, as amended January 2014. *"Ontario Resources Act R.R.O. 1990, Regulation 903 – Wells".*
7. Ontario Ministry of the Environment, Conservation and Parks, and Climate Change, Map: Well Records, updated March 2016.

APPENDIX A
FIGURES



Note

1. This drawing shall be read in conjunction with the associated technical report.

Revision	Date	Issue	Approval
0	03/29/2021	Original	S.V.

Client: Dilworth Development Inc.	Site: 2095 Dilworth Road, Kars, ON		
DST consulting engineers a division of Englobe	Report Title: Phase II Environmental Site Assessment Proposed Commercial Subdivision and Private Servicing	Designed By: S.R.	Date: April 2021
		Drawn By: K.M.	Project No.: 02101208.000
	Drawing Title: Site Location Map	Approved By: S.V.	Figure No.: 1
		Scale: As shown	

Folder: C:\DST\02101208.000 2095 Dilworth\Phase II ESA\DWGs Tuesday, April 27, 2021 @ 14:26 by Kris Morin

Drawing: 1 site location map.dwg

PCA	Description
1	Importation of fill material of unknown quality
2	Storage, maintenance, fueling, and repair of equipment, vehicles, and material used to maintain transportation systems
3	Gasoline and associated products storage in fixed tanks
4	Chemical manufacturing, processing, and bulk storage
5	Pesticides (including herbicides, fungucides, and anti-fouling agents) manufacturing, processing, bulk storage, and large-scale applications

DST consulting engineers
a division of Englobe

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Site Boundary
- Phase One Study Area - 250 m Buffer (DST Phase One ESA, April 2021)

1:5 000

0 50 100 150 200 250 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

0	2021/04/27	Original	S.V.
Revision	Date	Issue	Approval

Client
Dilworth Development Inc.

Site
2095 Dilworth Road in Kars, ON

Report Title
Phase II Environmental Site Assessment

Drawing Title
Study Area and Potentially Contaminating Activities (PCAs)

Designed By	Scale
R.V.	As shown
Drawn By	**Date**
J.M.	April 2021
Approved By	**Project No.**
S.V.	02101208

Figure No.
2

Drawing: 2 Study Area.dwg Folder: C:\DST\02101208.000 2095 Dilworth\2021 Phase I Site Assessment\DWGs Wednesday, April 28, 2021 @ 10:33 by Kris Morin

885 Regent Street, Suite 2-1B, Sudbury, Ontario P3E 5M4 Tel: (705) 523-6680 Fax: (705) 523-6690 Website: www.dstgroup.com

Areas of Potential Environmental Concern (APECs)	
APEC 1	Importation of fill material of unknown quality
APEC 2	Storage, maintenance, fueling, and repair of equipment, vehicles, and material used to maintain transportation systems

DST consulting engineers
a division of Englobe

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate location of borehole
- Approximate location of monitoring well
- APEC 1
- APEC 2

1:2 500

0 20 40 60 80 100 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
0	03/29/2021	Original	S.V.

Client
Dilworth Development Inc.

Site
2095 Dilworth Road, Kars, ON

Report Title
Phase II Environmental Site Assessment
Proposed Commercial Subdivision
and Private Servicing

Drawing Title
Areas of Potential Environmental Concern (APECs)
and Borehole Location Plan

Designed By	Scale
S.R.	As shown
Drawn By	**Date**
K.M.	April 2021
Approved By	**Project No.**
S.V.	02101208.000

Figure No.
3

Drawing: 3 APEC.dwg Folder: C:\DST\02101208.000 2095 Dilworth\Phase II ESA\DWGs Tuesday, April 27, 2021 @ 14:51 by Kris Morin

2150 Thurston Drive, Suite 203, Ottawa, Ontario K1G 5T9 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.dstgroup.com

MW21-06 GROUNDWATER SAMPLE			
Parameter	Analytical (µg/L)	MECP Table 1 Standard (µg/L)	Sample Date
Chloroform	8.3	2.4	March 15, 2021

BH21-11 SOIL SAMPLES				
Sample Depth (m)	Parameter	Analytical (µg/g)	MECP Table 1 Standard (µg/g)	Sample Date
0.0 - 0.6	PHC F3	511	240	February 16, 2021
	PHC F4	377	120	
	PHC F4G (gravimetric)	1490	120	
0.6 - 1.2	PHC F4	134	120	
	PHC F4G (gravimetric)	348	120	

MW21-01 GROUNDWATER SAMPLE			
Parameter	Analytical (µg/L)	MECP Table 1 Standard (µg/L)	Sample Date
Ethylbenzene	0.6	0.5	March 15, 2021
Ethylbenzene (Duplicate Sample)	0.8		

DST consulting engineers
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Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate location of borehole
- Approximate location of monitoring well

1:2 000

0 20 40 60 80 100 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

0	03/29/2021	Original	S.V.
Revision	Date	Issue	Approval

Client
Dilworth Development Inc.

Site
2095 Dilworth Road, Kars, ON

Report Title
Phase II Environmental Site Assessment
Proposed Commercial Subdivision
and Private Servicing

Drawing Title
Borehole and Exceedance Location Plan

Designed By	Scale
S.R.	As shown
Drawn By	**Date**
K.M.	April 2021
Approved By	**Project No.**
S.V.	02101208.000

Figure No. **4**

Drawing: 4 exceedance.dwg Folder: C:\DST\02101208.000 2095 Dilworth\Phase II ESA\DWGs Tuesday, April 27, 2021 @ 14:50 by Kris Morin

2150 Thurston Drive, Suite 203, Ottawa, Ontario K1G 5T9 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.dstgroup.com

APPENDIX B
BOREHOLE LOGS

Page 1 of 1

MW21-01

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DST Project No. 02101208
Client Dilworth Development Inc.
Project Phase II Environmental Site Assessment
Address 2095 Dilworth Road, Kars, ON

Date February 16, 2021
Method Hollow Stem Augers
Diameter 203 mm
Surface Elevation 87.9 masl

Depth (m)	Elevation (m)	Water level (mREL)	Well construction	Depth (m) Elevation (m)	Symbol	Material Description	Sample #	Sample Type	% Samp. Recov	CCGD / PID Reading: CCGD	CCGD / PID Reading: PID	Analysis: PAHs	Analysis: PHC/BTEX	Analysis: Metals	Analysis: VOCs	Analysis: pH	Remarks
0	87.9			0 87.9		FILL - sand and gravel, brownish grey, frozen	SS1		50+	0 ppm	0 ppm						
0.5																	
1.0	87			0.8 87.1		FILL - silty sand some gravel, grey, frozen	SS2		62	0 ppm	5 ppm						
1.5		86.40		1.1 86.8		SILT & SAND - loose, black, moist	SS3		7	0 ppm	0 ppm		✓	✓	✓	✓	Groundwater level at 1.50 mbgs
2.0	86			1.8 86.1		- Becomes grey below 1.8 m											
2.5				2.3 85.6		SILTY CLAY - firm, light brown, moist - Contains signs of oxidation	SS4		3	0 ppm	0 ppm						
3.0	85			3 84.9		TILL - SANDY CLAYEY SILT- compact, brown, moist to wet	SS5		19	0 ppm	0 ppm						
3.5																	
4.0	84			3.8 84.1		- Becomes gravelly below 3.8 m	SS6		14	0 ppm	0 ppm						
4.5				4.6 83.3		TILL - SILTY SAND- some gravel, loose, brown, wet	SS7		7	0 ppm	0 ppm						
5.0	83																
5.5				5.3 82.6		- Becomes coarse and compact below 5.3 m	SS8		11	0 ppm	0 ppm						
6.0	82			5.8 82.1		- Spoon refual at 5.8 m on inferred cobbles or boulders; Advanced auger to 6.1m											
6.5				6.1 81.8		End of Borehole at 6.10 m. Water level in monitoring well measured to be at 1.5 mbgs (~Elev. 86.4 masl) on March 15, 2021.											
7.0	81																
7.5																	
8.0	80																
8.5																	
9.0	79																
9.5																	
	78																

BH21-02

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DST Project No. 02101208
Client Dilworth Development Inc.
Project Phase II Environmental Site Assessment
Address 2095 Dilworth Road, Kars, ON

Date February 16, 2021
Method Hollow Stem Augers
Diameter 203 mm

Surface Elevation 87.6 masl

Depth (m)	Elevation (m)	Water level (mREL)	Well construction	Depth (m) Elevation (m)	Symbol	Material Description	Sample #	Sample Type	% Samp. Recov	CCGD / PID Reading: CCGD	CCGD / PID Reading: PID	Analysis: PAHs	Analysis: PHC/BTEX	Analysis: Metals	Analysis: VOCs	Analysis: pH	Remarks
0	87.6			0 87.6		SILTY SAND - compact, brown, moist	SS1		18	0 ppm	1 ppm	✓	✓	✓	✓	✓	
0.5	87						SS2		10	0 ppm	0 ppm						
1.0																	
1.5	86			1.7 85.9		SILTY CLAY - stiff, brown, moist	SS3		2	0 ppm	0 ppm						
2.0																	
2.5	85			2.4 85.2		- Becomes grey and firm below 2.4 m	SS4		0	0 ppm	0 ppm						
3.0																	
3.5	84						SS5		0	0 ppm	0 ppm						
4.0							VN1										
4.5	83						VN2										
5.0							SS6		18	0 ppm	0 ppm						
5.5	82			5.1 82.5		TILL - SILTY SAND AND GRAVEL - trace clay, compact, grey, wet	SS7		14	0 ppm	0 ppm						
6.0																	
6.5	81			6.1 81.5		End of Borehole at 6.10 m. Water level measure to be at approximatley 1.1 mbgs (~Elev. 86.5 masl) in open borheole.											
7.0																	
7.5	80																
8.0																	
8.5	79																
9.0																	
9.5	78																

BH21-03

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DST Project No.	02101208	Date	February 16, 2021
Client	Dilworth Development Inc.	Method	Hollow Stem Augers
Project	Phase II Environmental Site Assessment	Diameter	203 mm
Address	2095 Dilworth Road, Kars, ON		
		Surface Elevation	87.2 masl

Depth (m)	Elevation (m)	Water level (mREL)	Well construction	Depth (m) Elevation (m)	Symbol	Material Description	Sample #	Sample Type	% Samp. Recov	CCGD / PID Reading: CCGD	CCGD / PID Reading: PID	Analysis: PAHs	Analysis: PHC/BTEX	Analysis: Metals	Analysis: VOCs	Analysis: pH	Remarks
0	87			0 87.2		SILTY SAND - loose, brown, damp	SS1		5	0 ppm	0 ppm	✓	✓	✓	✓	✓	
0.5																	
1.0	86			0.9 86.3		SILT - some sand some clay, very loose, brown, damp	SS2		3	0 ppm	0 ppm						
1.5				1.7 85.5		- Contains trace shells and becomes brownish grey below 1.7 m	SS3		2	0 ppm	0 ppm						
2.0	85																
2.5				2.4 84.8		TILL - GRAVELLY SILTY SAND - very dense to compact, brown, wet Presences of cobbles and/or boulders to be expected based on sporadic blow counts	SS4		55	0 ppm	0 ppm						
3.0	84																
3.5				3.2 84		- Becomes grey below 3.2m	SS5		28	0 ppm	0 ppm						
4.0	83			4 83.2		TILL - SILTY SAND - some gravel, compact to very dense, grey, wet Presences of cobbles and/or boulders to be expected based on sporadic blow counts	SS6		14	0 ppm	0 ppm						
4.5																	
5.0	82			4.7 82.5		- Becoming coarse sand below 4.7 m	SS7		60	0 ppm	0 ppm						
5.5				5.5 81.7		TILL - CLAYEY SILTY SAND -some gravel, compact, grey, wet	SS8		28	0 ppm	0 ppm						
6.0	81			6.1 81.1		End of Borehole at 6.10 m. Water level measure to be at approximatley 1.8 mbgs (~Elev. 85. 4 masl) in open borehole.											
6.5																	
7.0	80																
7.5																	
8.0	79																
8.5																	
9.0	78																
9.5																	

MW21-06

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DST Project No.	02101208	Date	February 17, 2021
Client	Dilworth Development Inc.	Method	Hollow Stem Augers
Project	Phase II Environmental Site Assessment	Diameter	203 mm
Address	2095 Dilworth Road, Kars, ON		
		Surface Elevation	87.6 masl

Depth (m)	Elevation (m)	Water level (mREL)	Well construction	Depth (m) Elevation (m)	Symbol	Material Description	Sample #	Sample Type	% Samp. Recov	CCGD / PID Reading: CCGD	CCGD / PID Reading: PID	Analysis: PAHs	Analysis: PHC/BTEX	Analysis: Metals	Analysis: VOCs	Analysis: pH	Remarks
0.5	87			0 87.6		ORGANIC - silty sand with gravel, dense, dark brown, damp	SS1		39	0 ppm	0 ppm						
1.0		86.40					SS2		7	2 ppm	0 ppm						Groundwater level at 1.20 mbgs
1.5	86			1.7 85.9		TILL - SILTY SAND - some gravel, dense, brown, damp Presences of cobbles and/or boudlers to be expected based on sporadic blow counts	SS3		34	0 ppm	0 ppm						
2.0																	
2.5	85			2.4 85.2		- Becomes with to some gravel below 2.4 m	SS4		11	0 ppm	0 ppm						
3.0																	
3.5	84						SS5		39	0 ppm	0 ppm						
4.0				3.8 83.8		- Boulder cored from 3.8 to 4.0 m											
				4 83.6		- Becomes grey and wet below 4.0 m	SS6		54	0 ppm	0 ppm						
4.5	83																
5.0							SS7		41	0 ppm	0 ppm						
5.5	82						SS8		61	0 ppm	0 ppm						
6.0				6.1 81.5		End of Borehole at 6.10 m. Water level in monitoring well measured to be at 1.2 mbgs (~Elev. 86.4 masl) on March 15, 2021.											
6.5	81																
7.0																	
7.5	80																
8.0																	
8.5	79																
9.0																	
9.5	78																

BH21-11

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DST Project No.	02101208	Date	February 19, 2021
Client	Dilworth Development Inc.	Method	Hollow Stem Augers
Project	Phase II Environmental Site Assessment	Diameter	203 mm
Address	2095 Dilworth Road, Kars, ON		
		Surface Elevation	87.8 masl

Depth (m)	Elevation (m)	Water level (mREL)	Well construction	Depth (m) Elevation (m)	Symbol	Material Description	Sample #	Sample Type	% Samp. Recov	CCGD / PID Reading: CCGD	CCGD / PID Reading: PID	Analysis: PAHs	Analysis: PHC/BTEX	Analysis: Metals	Analysis: VOCs	Analysis: pH	Remarks
0	87.8			0 87.8		FILL - silty sand and gravel, brown, frozen	SS1		66	0 ppm	3 ppm		✓		✓		
0.5																	
1.0	87			0.6 87.2		- compact below 0.6 m	SS2		17	0 ppm	1 ppm		✓		✓		
1.5				1.2 86.6		End of Borehole at 1.20 m.											
2.0	86																
2.5																	
3.0	85																
3.5																	
4.0	84																
4.5																	
5.0	83																
5.5																	
6.0	82																
6.5																	
7.0	81																
7.5																	
8.0	80																
8.5																	
9.0	79																
9.5																	
	78																

BH21-12

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DST Project No.	02101208	Date	February 19, 2021
Client	Dilworth Development Inc.	Method	Hollow Stem Augers
Project	Phase II Environmental Site Assessment	Diameter	203 mm
Address	2095 Dilworth Road, Kars, ON		
		Surface Elevation	87.7 masl

Depth (m)	Elevation (m)	Water level (mREL)	Well construction	Depth (m) Elevation (m)	Symbol	Material Description	Sample #	Sample Type	% Samp. Recov	CCGD / PID Reading: CCGD	CCGD / PID Reading: PID	Analysis: PAHs	Analysis: PHC/BTEX	Analysis: Metals	Analysis: VOCs	Analysis: pH	Remarks
				0 87.7		FILL - sand and gravel, brown, frozen											
0.5	87			0.3 87.4		FILL - sandy silt, brown, compact	SS1		31	0 ppm	0 ppm		✓		✓		
1.0							SS2		10	0 ppm	0 ppm		✓		✓		
1.5	86			1.2 86.5		End of Borehole at 1.20 m.											
2.0																	
2.5	85																
3.0																	
3.5	84																
4.0																	
4.5	83																
5.0																	
5.5	82																
6.0																	
6.5	81																
7.0																	
7.5	80																
8.0																	
8.5	79																
9.0																	
9.5	78																

APPENDIX C
SOIL LABORATORY ANALYTICAL RESULTS

Table C-1 - Petroleum Hydrocarbons and Benzene, Toluene, Ethylbenzene and Xylenes in Soil

Parameter	MECP Table 1 Criteria	Units	MDL	Sample ID						
				Sample Depth (metres below ground surface)						
				Sample Collection Date (yyyy-mm-dd)						
				MW21-01 SS3	BH21-02 SS1	BH21-03 SS1	BH21-11 SS1	BH21-11 SS2	BH21-12 SS1	BH21-12 SS2
				1.5 - 2.1	0.2 - 0.8	0.2 - 0.8	0.0 - 0.6	0.6 - 1.2	0.0 - 0.6	0.6 - 1.2
				2021-02-16	2021-02-16	2021-02-16	2021-02-19	2021-02-19	2021-02-19	2021-02-19
PHCs										
F1 (C6-C10)	25	ug/g	7	<7	<7	<7	<7	<7	<7	<7
F2 (C10-C16)	10	ug/g	4	<4	<4	<4	<4	<4	<4	<4
F3 (C16-C34)	240	ug/g	8	40	27	<8	**511**	164	223	85
F4 (C34-C50)	120	ug/g	6	56	24	<6	**377**	**134**	87	43
F4G (gravimetric)	120	ug/g	50	NV	NV	NV	**1490**	**348**	NV	NV
BTEX										
Benzene	0.02	ug/g	0.02	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	0.2	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
p+m-Xylene	NV	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	NV	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes, Total	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes	
MECP Table 1 Criteria	Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Commercial/Community Property Use, Ontario Ministry of the Environment "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*" (MECP July 2011).
MDL	Method Detection Limit
NV	No Criteria/RDL Value
'<'	Values is less than the MDL
Exceeds MECP Table 1 Criteria	**Result**

Table C-2 - Volatile Organic Compounds in Soil

Parameter	MECP Table 1 Criteria	Units	MDL	Sample ID						
				Sample Depth (metres below ground surface)						
				Sample Collection Date (yyyy-mm-dd)						
				MW21-01 SS3	BH21-02 SS1	BH21-03 SS1	BH21-11 SS1	BH21-11 SS2	BH21-12 SS1	BH21-12 SS2
				1.5 - 2.1	0.2 - 0.8	0.2 - 0.8	0.0 - 0.6	0.6 - 1.2	0.0 - 0.6	0.6 - 1.2
				2021-02-16	2021-02-16	2021-02-16	2021-02-19	2021-02-19	2021-02-19	2021-02-19
VOCs										
Acetone	0.5	ug/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropene	NV	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropene	NV	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene (cis+trans)	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hexane (n-Hexane)	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone	0.5	ug/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.5	ug/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether (MTBE)	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride (Dichloromethane)	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.25	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	0.02	ug/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Notes	
MECP Table 1 Criteria	Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Commercial/Community Property Use, Ontario Ministry of the Environment "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (MECP July 2011).
MDL	Method Detection Limit
NV	No Criteria/RDL Value
'<'	Values is less than the RDL
Exceeds MECP Table 1 Criteria	**Result**

Table C-3 - Metals and pH in Soil

Parameter	MECP Table 1 Criteria	Units	MDL	*Sample ID* *Sample Depth (metres below ground surface)* *Sample Collection Date (yyyy-mm-dd)*			
				MW21-01 SS3	BH21-02 SS1	BH21-03 SS1	BH21-03 SS1 (Duplicate)
				1.5 - 2.1	0.2 - 0.8	0.2 - 0.8	0.2 - 0.8
				2021-02-16	2021-02-16	2021-02-16	2021-02-18
Metals							
Antimony	1.3	ug/g	1.0	<1.0	<1.0	<1.0	1.1
Arsenic	18	ug/g	1.0	2.4	2.7	1.9	1.8
Barium	220	ug/g	1.0	55.5	39.7	31.9	35.0
Beryllium	2.5	ug/g	0.5	<0.5	<0.5	<0.5	<0.5
Boron (total)	36	ug/g	5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	1.2	ug/g	0.5	<0.5	<0.5	<0.5	<0.5
Chromium	70	ug/g	5.0	11.5	11.9	10.9	12.2
Cobalt	21	ug/g	1.0	3.1	3.3	3.6	4.3
Copper	92	ug/g	5.0	<5.0	<5.0	<5.0	<5.0
Lead	120	ug/g	1.0	6.8	2.3	1.7	1.6
Molybdenum	2	ug/g	1.0	<1.0	<1.0	<1.0	<1.0
Nickel	82	ug/g	5.0	<5.0	5.8	5.7	6.3
Selenium	1.5	ug/g	1.0	<1.0	<1.0	<1.0	<1.0
Silver	0.5	ug/g	0.3	<0.3	<0.3	<0.3	<0.3
Thallium	1	ug/g	1.0	<1.0	<1.0	<1.0	<1.0
Uranium	2.5	ug/g	1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	86	ug/g	10.0	21.1	22.4	17.9	20.6
Zinc	290	ug/g	20.0	47.9	<20.0	<20.0	<20.0
General Inorganics							
pH	NV	NV	0.05	6.78	7.14	-	-

Notes	
MECP Table 1 Criteria	Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Commercial/Community Property Use, Ontario Ministry of the Environment "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (MECP July 2011).
MDL	Method Detection Limit
NV	No Criteria/RDL Value
'<'	Values is less than the RDL
Exceeds MECP Table 1 Criteria	**Result**

Table C-4 - Polycyclic Aromatic Hydrocarbons in Soil

Parameter	MECP Table 1 Criteria	Units	MDL	*Sample ID*	
				Sample Depth (metres below ground surface)	
				Sample Collection Date (yyyy-mm-dd)	
				BH21-02 SS1	BH21-03 SS1
				0.2 - 0.8	0.2 - 0.8
				2021-02-16	2021-02-16
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.072	ug/g	0.02	<0.02	<0.02
Acenaphthylene	0.093	ug/g	0.02	<0.02	<0.02
Anthracene	0.16	ug/g	0.02	<0.02	<0.02
Benzo(a)anthracene	0.36	ug/g	0.02	<0.02	<0.02
Benzo(a)pyrene	0.3	ug/g	0.02	<0.02	<0.02
Benzo(b)fluoranthene	0.47	ug/g	0.02	<0.02	<0.02
Benzo(g,h,i)perylene	0.68	ug/g	0.02	<0.02	<0.02
Benzo(k)fluoranthene	0.48	ug/g	0.02	<0.02	<0.02
Chrysene	2.8	ug/g	0.02	<0.02	<0.02
Dibenz(a,h)anthracene	0.1	ug/g	0.02	<0.02	<0.02
Fluoranthene	0.56	ug/g	0.02	<0.02	<0.02
Fluorene	0.12	ug/g	0.02	<0.02	<0.02
Indeno(1,2,3-cd)pyrene	0.23	ug/g	0.02	<0.02	<0.02
1-Methylnaphthalene	0.59	ug/g	0.02	<0.02	<0.02
2-Methylnaphthalene	0.59	ug/g	0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.59	ug/g	0.04	<0.04	<0.04
Naphthalene	0.09	ug/g	0.01	<0.01	<0.01
Phenanthrene	0.69	ug/g	0.02	<0.02	<0.02
Pyrene	1.0	ug/g	0.02	<0.02	<0.02

Notes	
MECP Table 1 Criteria	Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Commercial/Community Property Use, Ontario Ministry of the Environment "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (MECP July 2011).
MDL	Method Detection Limit
NV	No Criteria/RDL Value
'<'	Values is less than the RDL
Exceeds MECP Table 1 Criteria	**Result**

APPENDIX D

GROUNDWATER LABORATORY ANALYTICAL RESULTS

Table D-1 - Petroleum Hydrocarbons and Benzene, Toluene, Ethylbenzene and Xylenes in Groundwater

Parameter	MECP Table 1 Criteria	Units	MDL	*Sample ID*		
				Sample Collection Date (yyyy-mm-dd)		
				MW21-01	MW21-01-1 (Duplicate of MW21-01)	MW21-06
				2021-03-15	2021-03-15	2021-03-15
PHCs						
F1 (C6-C10)	420	µg/L	25	<25	<25	<25
F2 (C10-C16)	150	µg/L	100	<100	<100	<100
F3 (C16-C34)	500	µg/L	100	<100	109	<100
F4 (C34-C50)	500	µg/L	100	<100	<100	<100
Reached Baseline at C50	NV	NV	NV	Yes	Yes	Yes
BTEX						
Benzene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
Toluene	0.8	µg/L	0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	µg/L	0.5	**0.6**	**0.8**	<0.5
p+m-Xylene	NV	µg/L	0.5	2.4	3.2	<0.5
o-Xylene	NV	µg/L	0.5	0.9	1.3	<0.5
Xylenes, Total	72	µg/L	0.5	3.3	4.6	<0.5

Notes	
MECP Table 1 Criteria	Table 1, Full Depth Background Site Condition Standards, All Types of Property Use, Ontario Ministry of the Environment "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act"* (MECP July 2011).
MDL	Method Detection Limit
NV	No Criteria/RDL Value
'<'	Values is less than the MDL
Exceeds MECP Table 1 Criteria	**Result**

Table D-2 - Volatile Organic Compounds in Groundwater

Parameter	MECP Table 1 Criteria	Units	MDL	Sample ID		
				Sample Collection Date (yyyy-mm-dd)		
				MW21-01	MW21-01-1 (Duplicate of MW21-01)	MW21-06
				2021-03-15	2021-03-15	2021-03-15
VOCs						
Acetone	2700	µg/L	5.0	<5.0	<5.0	<5.0
Bromodichloromethane	2	µg/L	0.5	<0.5	<0.5	1
Bromoform	5	µg/L	0.5	<0.5	<0.5	<0.5
Bromomethane	0.89	µg/L	0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2	µg/L	0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
Chloroform	2	µg/L	0.5	<0.5	<0.5	**8.3**
Dibromochloromethane	2	µg/L	0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	590	µg/L	1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5	µg/L	0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5	µg/L	0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	1.6	µg/L	0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	1.6	µg/L	0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	µg/L	0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	NV	µg/L	0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	NV	µg/L	0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene (cis+trans)	0.5	µg/L	0.5	<0.5	<0.5	<0.5
Ethylene Dibromide	0.2	µg/L	0.2	<0.2	<0.2	<0.2
Hexane (n-Hexane)	5	µg/L	1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone	400	µg/L	5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	640	µg/L	5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether (MTBE)	15	µg/L	2.0	<2.0	<2.0	<2.0
Methylene Chloride (Dichloromethane)	5	µg/L	5.0	<5.0	<5.0	<5.0
Styrene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	1.1	µg/L	0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	µg/L	0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5	µg/L	0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	µg/L	0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5	µg/L	0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	150	µg/L	1.0	<1.0	<1.0	<1.0
Vinyl Chloride	0.5	µg/L	0.5	<0.5	<0.5	<0.5

Notes	
MECP Table 1 Criteria	Table 1, Full Depth Background Site Condition Standards, All Types of Property Use, Ontario Ministry of the Environment "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (MECP July 2011).
MDL	Method Detection Limit
NV	No Criteria/RDL Value
'<'	Values is less than the RDL
Exceeds MECP Table 1 Criteria	**Result**

Table D-3 - Metals, Anions, and Inorganics in Groundwater

Parameter	MECP Table 1 Criteria	Units	MDL	Sample ID	
				Sample Collection Date (yyyy-mm-dd)	
				MW21-01	MW21-06
				2021-03-15	2021-03-15
Metals					
Calcium	NV	µg/L	100	116000	58500
Iron	NV	µg/L	100	898	<100
Magnesium	NV	µg/L	200	44900	34400
Manganese	NV	µg/L	5	4240	70
Potassium	NV	µg/L	100	21500	514
Sodium	490000	µg/L	200	63000	17000
Anions					
Chloride	790	mg/L	1	36.0	30.0
Fluoride	NV	mg/L	0.1	<0.1	<0.1
Nitrate as N	NV	mg/L	0.1	<0.1	<0.1
Nitrite as N	NV	mg/L	0.05	<0.05	<0.05
Phosphate as P	NV	mg/L	0.2	<0.2	<0.2
Sulphate	NV	mg/L	1	174	8
General Inorganics					
Alkalinity, total	NV	mg/L	5	454	396
Hardness	NV	mg/L	0.0824	475	387
Ammonia as N	NV	mg/L	0.01	2.96	0.03
Dissolved Organic Carbon	NV	mg/L	0.5	10.3	15.2
Colour, apparent	NV	ACU	2	24600	4750
Conductivity	NV	µS/cm	5	1250	660
pH	NV	NV	0.1	7.6	8.1
Phenolics	NV	mg/L	0.001	<0.001	<0.001
Total Dissolved Solids	NV	mg/L	10	754	328
Sulphide	NV	mg/L	0.02	<0.02	<0.02
Tannin & Lignin	NV	mg/L	0.1	5.5	0.7
Total Kjeldahl Nitrogen	NV	mg/L	0.1	4.1	0.3
Turbidity	NV	NTU	0.1	6850	1400

Notes	
MECP Table 1 Criteria	Table 1, Full Depth Background Site Condition Standards, All Types of Property Use, Ontario Ministry of the Environment "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (MECP July 2011).
MDL	Method Detection Limit
NV	No Criteria/RDL Value
'<'	Values is less than the RDL
Exceeds MECP Table 1 Criteria	**Result**

Table D-4 - OC Pesticides in Groundwater

Parameter	MECP Table 1 Criteria	Units	MDL	Sample ID	
				Sample Collection Date (yyyy-mm-dd)	
				MW21-01	MW21-06
				2021-03-15	2021-03-15
Aldrin	0.01	µg/L	0.01	<0.01	<0.01
alpha-Chlordane	NV	µg/L	0.01	<0.01	<0.01
gamma-Chlordane	NV	µg/L	0.01	<0.01	<0.01
Chlordane	0.06	µg/L	0.01	<0.01	<0.01
o,p-DDD	NV	µg/L	0.01	<0.01	<0.01
p,p-DDD	NV	µg/L	0.01	<0.01	<0.01
DDD	1.8	µg/L	0.01	<0.01	<0.01
o,p-DDE	NV	µg/L	0.01	<0.01	<0.01
p,p-DDE	NV	µg/L	0.01	<0.01	<0.01
DDE	10	µg/L	0.01	<0.01	<0.01
o,p-DDT	NV	µg/L	0.01	<0.01	<0.01
p,p-DDT	NV	µg/L	0.01	<0.01	<0.01
DDT	0.05	µg/L	0.01	<0.01	<0.01
Dieldrin	0.05	µg/L	0.01	<0.01	<0.01
Endosulfan I	NV	µg/L	0.01	<0.01	<0.01
Endosulfan II	NV	µg/L	0.01	<0.01	<0.01
Endosulfan I/II	0.05	µg/L	0.01	<0.01	<0.01
Endrin	0.05	µg/L	0.01	<0.01	<0.01
Heptachlor	0.01	µg/L	0.01	<0.01	<0.01
Heptachlor Epoxide	0.01	µg/L	0.01	<0.01	<0.01
Hexachlorobenzene	0.01	µg/L	0.01	<0.01	<0.01
Hexachlorobutadiene	0.01	µg/L	0.01	<0.01	<0.01
G-BHC (LINDANE)	NV	µg/L	0.01	<0.01	<0.01
Hexachloroethane	0.01	µg/L	0.01	<0.01	<0.01
Methoxychlor	0.05	µg/L	0.01	<0.01	<0.01

Notes	
MECP Table 1 Criteria	Table 1, Full Depth Background Site Condition Standards, All Types of Property Use, Ontario Ministry of the Environment "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (MECP July 2011).
MDL	Method Detection Limit
NV	No Criteria/RDL Value
'<'	Values is less than the RDL
Exceeds MECP Table 1 Criteria	**Result**

APPENDIX E

LABORATORY CERTIFICATES OF ANALYSIS

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Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Salim Eid

Client PO:
Project: 2101208.00
Custody: 129456

Report Date: 16-Mar-2021
Order Date: 23-Feb-2021

Revised Report

Order #: 2109131

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

Paracel ID	Client ID
2109131-01	MW21-1,SS3
2109131-02	BH21-2,SS1
2109131-03	BH21-3,SS1

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 16-Mar-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 23-Feb-2021

Client PO:

Project Description: 2101208.00

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	15-Mar-21	15-Mar-21
PHC F1	CWS Tier 1 - P&T GC-FID	23-Feb-21	24-Feb-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	23-Feb-21	24-Feb-21
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	24-Feb-21	24-Feb-21
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	24-Feb-21	25-Feb-21
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	23-Feb-21	24-Feb-21
Solids, %	Gravimetric, calculation	23-Feb-21	24-Feb-21

Certificate of Analysis

Report Date: 16-Mar-2021

Client: **DST Consulting Engineers Inc. (Ottawa)**

Order Date: 23-Feb-2021

Client PO:

Project Description: 2101208.00

	Client ID:	MW21-1,SS3	BH21-2,SS1	BH21-3,SS1	-
	Sample Date:	16-Feb-21 00:00	16-Feb-21 00:00	16-Feb-21 00:00	-
	Sample ID:	2109131-01	2109131-02	2109131-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	73.7	79.1	77.4	-
General Inorganics					
pH	0.05 pH Units	6.78	7.14	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	2.4	2.7	1.9	-
Barium	1.0 ug/g dry	55.5	39.7	31.9	-
Beryllium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Boron	5.0 ug/g dry	<5.0	<5.0	<5.0	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	5.0 ug/g dry	11.5	11.9	10.9	-
Cobalt	1.0 ug/g dry	3.1	3.3	3.6	-
Copper	5.0 ug/g dry	<5.0	<5.0	<5.0	-
Lead	1.0 ug/g dry	6.8	2.3	1.7	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Nickel	5.0 ug/g dry	<5.0	5.8	5.7	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	10.0 ug/g dry	21.1	22.4	17.9	-
Zinc	20.0 ug/g dry	47.9	<20.0	<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	-
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	-

Certificate of Analysis

Report Date: 16-Mar-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 23-Feb-2021

Client PO:

Project Description: 2101208.00

	Client ID:	MW21-1,SS3	BH21-2,SS1	BH21-3,SS1	-
	Sample Date:	16-Feb-21 00:00	16-Feb-21 00:00	16-Feb-21 00:00	-
	Sample ID:	2109131-01	2109131-02	2109131-03	-
	MDL/Units	Soil	Soil	Soil	-
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, 1,2-)	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	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
4-Bromofluorobenzene	Surrogate	100%	99.9%	101%	-
Dibromofluoromethane	Surrogate	94.3%	94.3%	96.4%	-
Toluene-d8	Surrogate	121%	119%	120%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-

Certificate of Analysis

Report Date: 16-Mar-2021

Client: **DST Consulting Engineers Inc. (Ottawa)**

Order Date: 23-Feb-2021

Client PO:

Project Description: 2101208.00

	Client ID:	MW21-1,SS3	BH21-2,SS1	BH21-3,SS1	-
	Sample Date:	16-Feb-21 00:00	16-Feb-21 00:00	16-Feb-21 00:00	-
	Sample ID:	2109131-01	2109131-02	2109131-03	-
	MDL/Units	Soil	Soil	Soil	-
F3 PHCs (C16-C34)	8 ug/g dry	40	27	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	56	24	<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	<0.02	-
Fluorene	0.02 ug/g dry	-	<0.02	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	<0.02	<0.02	-
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	-	<0.02	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	-	<0.04	<0.04	-
Naphthalene	0.01 ug/g dry	-	<0.01	<0.01	-
Phenanthrene	0.02 ug/g dry	-	<0.02	<0.02	-
Pyrene	0.02 ug/g dry	-	<0.02	<0.02	-
2-Fluorobiphenyl	Surrogate	-	71.9%	101%	-
Terphenyl-d14	Surrogate	-	87.0%	112%	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*0.885*		*ug/g*		*66.4*	*50-140*			
Surrogate: Terphenyl-d14	*1.09*		*ug/g*		*81.7*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g						
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						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*8.71*		*ug/g*		*109*	*50-140*			
Surrogate: Dibromofluoromethane	*7.44*		*ug/g*		*93.1*	*50-140*			
Surrogate: Toluene-d8	*9.82*		*ug/g*		*123*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	7.39	0.05	pH Units	7.38			0.1	2.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND			NC	30	
Metals									
Antimony	1.3	1.0	ug/g dry	1.3			6.2	30	
Arsenic	2.4	1.0	ug/g dry	2.4			3.7	30	
Barium	87.1	1.0	ug/g dry	80.0			8.5	30	
Beryllium	ND	0.5	ug/g dry	ND			NC	30	
Boron	7.2	5.0	ug/g dry	6.0			17.7	30	
Cadmium	ND	0.5	ug/g dry	ND			NC	30	
Chromium	15.1	5.0	ug/g dry	14.2			6.0	30	
Cobalt	4.9	1.0	ug/g dry	4.7			3.9	30	
Copper	10.1	5.0	ug/g dry	9.7			4.5	30	
Lead	4.0	1.0	ug/g dry	3.8			5.8	30	
Molybdenum	1.0	1.0	ug/g dry	1.0			0.3	30	
Nickel	8.6	5.0	ug/g dry	8.4			2.6	30	
Selenium	ND	1.0	ug/g dry	ND			NC	30	
Silver	ND	0.3	ug/g dry	ND			NC	30	
Thallium	ND	1.0	ug/g dry	ND			NC	30	
Uranium	ND	1.0	ug/g dry	ND			NC	30	
Vanadium	26.8	10.0	ug/g dry	25.2			6.2	30	
Zinc	ND	20.0	ug/g dry	ND			NC	30	
Physical Characteristics									
% Solids	93.3	0.1	% by Wt.	93.2			0.2	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g dry	ND			NC	40	
Anthracene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g dry	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g dry	ND			NC	40	
Chrysene	ND	0.02	ug/g dry	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND			NC	40	
Fluoranthene	ND	0.02	ug/g dry	ND			NC	40	
Fluorene	ND	0.02	ug/g dry	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g dry	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND			NC	40	
Naphthalene	ND	0.01	ug/g dry	ND			NC	40	
Phenanthrene	ND	0.02	ug/g dry	ND			NC	40	
Pyrene	ND	0.02	ug/g dry	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.52*		*ug/g dry*		*91.3*	*50-140*			
Surrogate: Terphenyl-d14	*1.63*		*ug/g dry*		*97.8*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g dry	ND			NC	50	
Benzene	ND	0.02	ug/g dry	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g dry	ND			NC	50	
Bromoform	ND	0.05	ug/g dry	ND			NC	50	
Bromomethane	ND	0.05	ug/g dry	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
Chloroform	ND	0.05	ug/g dry	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g dry	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.05	ug/g dry	ND			NC	50	
Hexane	ND	0.05	ug/g dry	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g dry	ND			NC	50	
Styrene	ND	0.05	ug/g dry	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND			NC	50	
Toluene	ND	0.05	ug/g dry	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g dry	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			NC	50	
o-Xylene	ND	0.05	ug/g dry	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*8.56*		*ug/g dry*		*99.7*	*50-140*			
Surrogate: Dibromofluoromethane	*7.71*		*ug/g dry*		*89.8*	*50-140*			
Surrogate: Toluene-d8	*10.4*		*ug/g dry*		*121*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	221	7	ug/g	ND	111	80-120			
F2 PHCs (C10-C16)	89	4	ug/g	ND	101	60-140			
F3 PHCs (C16-C34)	234	8	ug/g	ND	108	60-140			
F4 PHCs (C34-C50)	154	6	ug/g	ND	112	60-140			
Metals									
Antimony	43.9	1.0	ug/g	ND	86.8	70-130			
Arsenic	50.6	1.0	ug/g	ND	99.3	70-130			
Barium	80.8	1.0	ug/g	32.0	97.6	70-130			
Beryllium	46.4	0.5	ug/g	ND	92.5	70-130			
Boron	44.9	5.0	ug/g	ND	85.0	70-130			
Cadmium	45.1	0.5	ug/g	ND	90.0	70-130			
Chromium	55.9	5.0	ug/g	5.7	100	70-130			
Cobalt	49.9	1.0	ug/g	1.9	96.0	70-130			
Copper	50.4	5.0	ug/g	ND	93.1	70-130			
Lead	45.3	1.0	ug/g	1.5	87.6	70-130			
Molybdenum	46.5	1.0	ug/g	ND	92.1	70-130			
Nickel	50.1	5.0	ug/g	ND	93.5	70-130			
Selenium	46.2	1.0	ug/g	ND	92.4	70-130			
Silver	42.5	0.3	ug/g	ND	84.8	70-130			
Thallium	42.7	1.0	ug/g	ND	85.1	70-130			
Uranium	45.6	1.0	ug/g	ND	90.7	70-130			
Vanadium	60.9	10.0	ug/g	10.1	102	70-130			
Zinc	51.0	20.0	ug/g	ND	88.7	70-130			
Semi-Volatiles									
Acenaphthene	0.194	0.02	ug/g	ND	93.1	50-140			
Acenaphthylene	0.180	0.02	ug/g	ND	86.2	50-140			
Anthracene	0.202	0.02	ug/g	ND	96.6	50-140			
Benzo [a] anthracene	0.172	0.02	ug/g	ND	82.6	50-140			
Benzo [a] pyrene	0.195	0.02	ug/g	ND	93.3	50-140			
Benzo [b] fluoranthene	0.279	0.02	ug/g	ND	133	50-140			
Benzo [g,h,i] perylene	0.201	0.02	ug/g	ND	96.3	50-140			
Benzo [k] fluoranthene	0.262	0.02	ug/g	ND	126	50-140			
Chrysene	0.209	0.02	ug/g	ND	100	50-140			
Dibenzo [a,h] anthracene	0.206	0.02	ug/g	ND	98.7	50-140			
Fluoranthene	0.185	0.02	ug/g	ND	88.7	50-140			
Fluorene	0.199	0.02	ug/g	ND	95.4	50-140			
Indeno [1,2,3-cd] pyrene	0.207	0.02	ug/g	ND	99.0	50-140			
1-Methylnaphthalene	0.212	0.02	ug/g	ND	101	50-140			
2-Methylnaphthalene	0.231	0.02	ug/g	ND	111	50-140			
Naphthalene	0.227	0.01	ug/g	ND	109	50-140			
Phenanthrene	0.197	0.02	ug/g	ND	94.3	50-140			
Pyrene	0.192	0.02	ug/g	ND	92.0	50-140			
Surrogate: 2-Fluorobiphenyl	*1.52*		*ug/g*		*91.0*	*50-140*			
Surrogate: Terphenyl-d14	*1.77*		*ug/g*		*106*	*50-140*			
Volatiles									
Acetone	11.6	0.50	ug/g	ND	116	50-140			
Benzene	4.51	0.02	ug/g	ND	113	60-130			
Bromodichloromethane	3.70	0.05	ug/g	ND	92.5	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromoform	4.89	0.05	ug/g	ND	122	60-130			
Bromomethane	3.32	0.05	ug/g	ND	83.1	50-140			
Carbon Tetrachloride	3.67	0.05	ug/g	ND	91.7	60-130			
Chlorobenzene	4.40	0.05	ug/g	ND	110	60-130			
Chloroform	3.96	0.05	ug/g	ND	99.0	60-130			
Dibromochloromethane	4.35	0.05	ug/g	ND	109	60-130			
Dichlorodifluoromethane	3.46	0.05	ug/g	ND	86.6	50-140			
1,2-Dichlorobenzene	4.51	0.05	ug/g	ND	113	60-130			
1,3-Dichlorobenzene	4.30	0.05	ug/g	ND	108	60-130			
1,4-Dichlorobenzene	4.25	0.05	ug/g	ND	106	60-130			
1,1-Dichloroethane	4.24	0.05	ug/g	ND	106	60-130			
1,2-Dichloroethane	3.75	0.05	ug/g	ND	93.8	60-130			
1,1-Dichloroethylene	4.17	0.05	ug/g	ND	104	60-130			
cis-1,2-Dichloroethylene	4.25	0.05	ug/g	ND	106	60-130			
trans-1,2-Dichloroethylene	4.30	0.05	ug/g	ND	107	60-130			
1,2-Dichloropropane	4.37	0.05	ug/g	ND	109	60-130			
cis-1,3-Dichloropropylene	3.95	0.05	ug/g	ND	98.7	60-130			
trans-1,3-Dichloropropylene	3.67	0.05	ug/g	ND	91.9	60-130			
Ethylbenzene	4.47	0.05	ug/g	ND	112	60-130			
Ethylene dibromide (dibromoethane, 1,2-	4.69	0.05	ug/g	ND	117	60-130			
Hexane	4.11	0.05	ug/g	ND	103	60-130			
Methyl Ethyl Ketone (2-Butanone)	11.1	0.50	ug/g	ND	111	50-140			
Methyl Isobutyl Ketone	11.1	0.50	ug/g	ND	111	50-140			
Methyl tert-butyl ether	7.86	0.05	ug/g	ND	78.6	50-140			
Methylene Chloride	3.85	0.05	ug/g	ND	96.2	60-130			
Styrene	4.95	0.05	ug/g	ND	124	60-130			
1,1,1,2-Tetrachloroethane	4.36	0.05	ug/g	ND	109	60-130			
1,1,2,2-Tetrachloroethane	4.77	0.05	ug/g	ND	119	60-130			
Tetrachloroethylene	4.67	0.05	ug/g	ND	117	60-130			
Toluene	5.06	0.05	ug/g	ND	127	60-130			
1,1,1-Trichloroethane	3.87	0.05	ug/g	ND	96.7	60-130			
1,1,2-Trichloroethane	5.00	0.05	ug/g	ND	125	60-130			
Trichloroethylene	4.06	0.05	ug/g	ND	102	60-130			
Trichlorofluoromethane	3.37	0.05	ug/g	ND	84.2	50-140			
Vinyl chloride	3.45	0.02	ug/g	ND	86.2	50-140			
m,p-Xylenes	9.03	0.05	ug/g	ND	113	60-130			
o-Xylene	4.25	0.05	ug/g	ND	106	60-130			
Surrogate: 4-Bromofluorobenzene	*8.16*		*ug/g*		*102*	*50-140*			
Surrogate: Dibromofluoromethane	*7.27*		*ug/g*		*90.8*	*50-140*			
Surrogate: Toluene-d8	*8.45*		*ug/g*		*106*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

REVISION 1: This report includes an updated parameter list as per the client.

Other Report Notes:

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

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

CCME PHC additional information:

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

PARACEL LABORATORIES LTD.

Paracel ID: 2109131

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2109131	№ 129456

Client Name: DST Group	Project Ref: 2101208.00	Page 1 of 1
Contact Name: Salim Eid	Quote #:	Turnaround Time
Address: 2150 Thurston Drive Ottawa, ON	PO #:	☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Telephone: 613-402-0393	E-mail: cfisch1@dstgroup.com seid@dstgroup.com	Date Required:

Regulation 153/04	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)

	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	CrVI	B (HWS)	Required Analysis
1	MW21-1, 553	S		2	2021/02/16		X	X		X				
2	BH21-2, 551	S		2	↓		X	X		X				
3	BH21-3, 551	S		2	↓		X	X		X				
4														
5														
6														
7														
8														
9														
10														

Comments:

Method of Delivery: DIB

Relinquished By (Sign): Cam Fisch	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Cam Fisch	Date/Time:	Date/Time: 2-23-21 8:40	Date/Time: Feb 23/21 10:30
Date/Time: 2021/02/22 1600	Temperature: °C	Temperature: °C	pH Verified: ☐ By: N/A

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Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Salim Eid

Client PO:
Project: 2101208-00
Custody: 129455

Report Date: 25-Feb-2021
Order Date: 23-Feb-2021

Order #: 2109196

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

Paracel ID	Client ID
2109196-04	BH 21-11, SS1
2109196-05	BH 21-11, SS2
2109196-06	BH 21-12, SS1
2109196-07	BH 21-12, SS2

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Report Date: 25-Feb-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 23-Feb-2021

Client PO:

Project Description: 2101208-00

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	24-Feb-21	24-Feb-21
PHC F4G (gravimetric)	CWS Tier 1 - Extraction Gravimetric	25-Feb-21	25-Feb-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	23-Feb-21	24-Feb-21
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	24-Feb-21	24-Feb-21
Solids, %	Gravimetric, calculation	24-Feb-21	24-Feb-21

Certificate of Analysis

Report Date: 25-Feb-2021

Client: **DST Consulting Engineers Inc. (Ottawa)**

Order Date: 23-Feb-2021

Client PO:

Project Description: 2101208-00

	Client ID:	BH 21-11, SS1	BH 21-11, SS2	BH 21-12, SS1	BH 21-12, SS2
	Sample Date:	19-Feb-21 09:00	19-Feb-21 09:00	19-Feb-21 09:00	19-Feb-21 09:00
	Sample ID:	2109196-04	2109196-05	2109196-06	2109196-07
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	89.2	90.2	88.7	82.9
Volatiles					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethane, 1,2-)	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Report Date: 25-Feb-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 23-Feb-2021

Client PO:

Project Description: 2101208-00

	Client ID:	BH 21-11, SS1	BH 21-11, SS2	BH 21-12, SS1	BH 21-12, SS2
	Sample Date:	19-Feb-21 09:00	19-Feb-21 09:00	19-Feb-21 09:00	19-Feb-21 09:00
	Sample ID:	2109196-04	2109196-05	2109196-06	2109196-07
	MDL/Units	Soil	Soil	Soil	Soil
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
4-Bromofluorobenzene	Surrogate	98.2%	97.0%	98.1%	98.8%
Dibromofluoromethane	Surrogate	92.8%	92.1%	82.4%	92.3%
Toluene-d8	Surrogate	102%	104%	105%	104%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	511	164	223	85
F4 PHCs (C34-C50)	6 ug/g dry	377 [1]	134 [1]	87	43
F4G PHCs (gravimetric)	50 ug/g dry	1490	348	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
F4G PHCs (gravimetric)	ND	50	ug/g						
Volatiles									
Acetone	ND	0.50	ug/g						
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	*7.60*		*ug/g*		*94.9*	*50-140*			
Surrogate: Dibromofluoromethane	*6.02*		*ug/g*		*75.3*	*50-140*			
Surrogate: Toluene-d8	*8.30*		*ug/g*		*104*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND			NC	30	
Physical Characteristics									
% Solids	89.7	0.1	% by Wt.	89.2			0.6	25	
Volatiles									
Acetone	ND	0.50	ug/g dry	ND			NC	50	
Benzene	ND	0.02	ug/g dry	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g dry	ND			NC	50	
Bromoform	ND	0.05	ug/g dry	ND			NC	50	
Bromomethane	ND	0.05	ug/g dry	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
Chloroform	ND	0.05	ug/g dry	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g dry	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g dry	ND			NC	50	
Hexane	ND	0.05	ug/g dry	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g dry	ND			NC	50	
Styrene	ND	0.05	ug/g dry	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND			NC	50	
Toluene	ND	0.05	ug/g dry	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g dry	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND			NC	50	
Vinyl chloride	ND	0.02	ug/g dry	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			NC	50	
o-Xylene	ND	0.05	ug/g dry	ND			NC	50	
Surrogate: 4-Bromofluorobenzene	*8.36*		*ug/g dry*		*93.2*	*50-140*			
Surrogate: Dibromofluoromethane	*8.09*		*ug/g dry*		*90.2*	*50-140*			
Surrogate: Toluene-d8	*9.23*		*ug/g dry*		*103*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	213	7	ug/g	ND	107	80-120			
F2 PHCs (C10-C16)	89	4	ug/g	ND	101	60-140			
F3 PHCs (C16-C34)	234	8	ug/g	ND	108	60-140			
F4 PHCs (C34-C50)	154	6	ug/g	ND	112	60-140			
F4G PHCs (gravimetric)	850	50	ug/g	ND	85.0	80-120			
Volatiles									
Acetone	7.05	0.50	ug/g	ND	70.5	50-140			
Benzene	3.69	0.02	ug/g	ND	92.4	60-130			
Bromodichloromethane	3.82	0.05	ug/g	ND	95.5	60-130			
Bromoform	4.16	0.05	ug/g	ND	104	60-130			
Bromomethane	3.67	0.05	ug/g	ND	91.7	50-140			
Carbon Tetrachloride	3.62	0.05	ug/g	ND	90.4	60-130			
Chlorobenzene	3.97	0.05	ug/g	ND	99.2	60-130			
Chloroform	3.45	0.05	ug/g	ND	86.2	60-130			
Dibromochloromethane	4.04	0.05	ug/g	ND	101	60-130			
Dichlorodifluoromethane	4.66	0.05	ug/g	ND	117	50-140			
1,2-Dichlorobenzene	4.14	0.05	ug/g	ND	103	60-130			
1,3-Dichlorobenzene	4.32	0.05	ug/g	ND	108	60-130			
1,4-Dichlorobenzene	4.30	0.05	ug/g	ND	108	60-130			
1,1-Dichloroethane	3.30	0.05	ug/g	ND	82.6	60-130			
1,2-Dichloroethane	3.36	0.05	ug/g	ND	83.9	60-130			
1,1-Dichloroethylene	3.41	0.05	ug/g	ND	85.3	60-130			
cis-1,2-Dichloroethylene	3.40	0.05	ug/g	ND	85.0	60-130			
trans-1,2-Dichloroethylene	3.49	0.05	ug/g	ND	87.3	60-130			
1,2-Dichloropropane	3.67	0.05	ug/g	ND	91.7	60-130			
cis-1,3-Dichloropropylene	4.06	0.05	ug/g	ND	102	60-130			
trans-1,3-Dichloropropylene	3.99	0.05	ug/g	ND	99.8	60-130			
Ethylbenzene	4.34	0.05	ug/g	ND	109	60-130			
Ethylene dibromide (dibromoethane, 1,2-	3.69	0.05	ug/g	ND	92.1	60-130			
Hexane	3.49	0.05	ug/g	ND	87.2	60-130			
Methyl Ethyl Ketone (2-Butanone)	7.09	0.50	ug/g	ND	70.9	50-140			
Methyl Isobutyl Ketone	8.04	0.50	ug/g	ND	80.4	50-140			
Methyl tert-butyl ether	8.30	0.05	ug/g	ND	83.0	50-140			
Methylene Chloride	3.38	0.05	ug/g	ND	84.5	60-130			
Styrene	3.83	0.05	ug/g	ND	95.7	60-130			
1,1,1,2-Tetrachloroethane	4.00	0.05	ug/g	ND	99.9	60-130			
1,1,2,2-Tetrachloroethane	3.94	0.05	ug/g	ND	98.4	60-130			
Tetrachloroethylene	4.15	0.05	ug/g	ND	104	60-130			
Toluene	4.28	0.05	ug/g	ND	107	60-130			
1,1,1-Trichloroethane	3.42	0.05	ug/g	ND	85.5	60-130			
1,1,2-Trichloroethane	3.73	0.05	ug/g	ND	93.1	60-130			
Trichloroethylene	4.12	0.05	ug/g	ND	103	60-130			
Trichlorofluoromethane	3.74	0.05	ug/g	ND	93.4	50-140			
Vinyl chloride	3.48	0.02	ug/g	ND	86.9	50-140			
m,p-Xylenes	8.15	0.05	ug/g	ND	102	60-130			
o-Xylene	4.08	0.05	ug/g	ND	102	60-130			
Surrogate: 4-Bromofluorobenzene	*8.22*		*ug/g*		*103*	*50-140*			
Surrogate: Dibromofluoromethane	*7.15*		*ug/g*		*89.4*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: Toluene-d8	*7.74*		*ug/g*		*96.7*	*50-140*			

Qualifier Notes:

Sample Qualifiers :

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

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

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

CCME PHC additional information:

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

PARACEL LABORATORIES LTD

Paracel ID: 2109196

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2109196	№ 129455

Page 1 of 1

Client Name: DST Group	Project Ref: 2101208.00
Contact Name: Salim Erd	Quote #:
Address: 2150 Thurston Drive Ottawa, ON	PO #:
Telephone: 613-402-0393	E-mail: serd@dstgroup.com cfischl@dstgroup.com

Turnaround Time

☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular

Date Required: _____

Regulation 153/04	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)

	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	CrVI	B (HWS)
1	BH21-6, SS2	S		3	2021/02/19		X	X					
2	BH21-7, SS3	S		2	2021/02/18		X	X					
3	BH21-8, SS2	S		2	↓		X	X					
4	BH21-11, SS1	S		2	2021/02/19		X	X					
5	BH21-11, SS2	S		2	|		X	X					
6	BH21-12, SS1	S		2	|		X	X					
7	BH21-12, SS2	S		2	↓		X	X					
8													
9													
10													

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign): Cam Fischl	Received By Driver/Depot:	Received at Lab: Juneepam Dokmai	Verified By:
Relinquished By (Print): Cam Fischl	Date/Time:	Date/Time: Feb 23, 2021 02:26	Date/Time: Feb 23, 2021 12:50
Date/Time: 2021/02/23 1300	Temperature: °C	Temperature: 11.1 °C	pH Verified: ☐ By:

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Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Salim Eid

Client PO:
Project: 2101208
Custody: 129486

Report Date: 23-Mar-2021
Order Date: 19-Mar-2021

Order #: 2112607

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

Paracel ID	Client ID
2112607-01	BH21-3, SS1

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Report Date: 23-Mar-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 19-Mar-2021

Client PO:

Project Description: 2101208

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	23-Mar-21	23-Mar-21
Solids, %	Gravimetric, calculation	22-Mar-21	22-Mar-21

Certificate of Analysis

Report Date: 23-Mar-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 19-Mar-2021

Client PO:

Project Description: 2101208

	Client ID:	BH21-3, SS1	-	-	-
	Sample Date:	18-Mar-21 09:00	-	-	-
	Sample ID:	2112607-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	78.9	-	-	-
Metals					
Antimony	1.0 ug/g dry	1.1	-	-	-
Arsenic	1.0 ug/g dry	1.8	-	-	-
Barium	1.0 ug/g dry	35.0	-	-	-
Beryllium	0.5 ug/g dry	<0.5	-	-	-
Boron	5.0 ug/g dry	<5.0	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	12.2	-	-	-
Cobalt	1.0 ug/g dry	4.3	-	-	-
Copper	5.0 ug/g dry	<5.0	-	-	-
Lead	1.0 ug/g dry	1.6	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	6.3	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	20.6	-	-	-
Zinc	20.0 ug/g dry	<20.0	-	-	-

Certificate of Analysis

Report Date: 23-Mar-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 19-Mar-2021

Client PO:

Project Description: 2101208

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g dry	ND			NC	30	
Arsenic	2.3	1.0	ug/g dry	2.2			1.8	30	
Barium	54.9	1.0	ug/g dry	54.2			1.4	30	
Beryllium	ND	0.5	ug/g dry	ND			NC	30	
Boron	5.5	5.0	ug/g dry	ND			NC	30	
Cadmium	ND	0.5	ug/g dry	ND			NC	30	
Chromium	14.9	5.0	ug/g dry	14.1			6.0	30	
Cobalt	5.0	1.0	ug/g dry	4.9			3.2	30	
Copper	11.4	5.0	ug/g dry	11.7			2.6	30	
Lead	6.3	1.0	ug/g dry	6.1			3.2	30	
Molybdenum	ND	1.0	ug/g dry	ND			NC	30	
Nickel	10.8	5.0	ug/g dry	10.9			0.3	30	
Selenium	ND	1.0	ug/g dry	ND			NC	30	
Silver	ND	0.3	ug/g dry	ND			NC	30	
Thallium	ND	1.0	ug/g dry	ND			NC	30	
Uranium	ND	1.0	ug/g dry	ND			NC	30	
Vanadium	27.3	10.0	ug/g dry	26.0			4.9	30	
Zinc	31.6	20.0	ug/g dry	31.7			0.4	30	
Physical Characteristics									
% Solids	81.7	0.1	% by Wt.	81.8			0.2	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	45.0	1.0	ug/g	ND	89.8	70-130			
Arsenic	46.7	1.0	ug/g	ND	91.6	70-130			
Barium	71.2	1.0	ug/g	21.7	99.1	70-130			
Beryllium	48.4	0.5	ug/g	ND	96.4	70-130			
Boron	48.3	5.0	ug/g	ND	92.6	70-130			
Cadmium	49.0	0.5	ug/g	ND	97.9	70-130			
Chromium	55.9	5.0	ug/g	5.6	101	70-130			
Cobalt	50.5	1.0	ug/g	1.9	97.1	70-130			
Copper	51.1	5.0	ug/g	ND	92.9	70-130			
Lead	37.5	1.0	ug/g	2.4	70.2	70-130			
Molybdenum	48.2	1.0	ug/g	ND	96.2	70-130			
Nickel	51.9	5.0	ug/g	ND	95.2	70-130			
Selenium	43.1	1.0	ug/g	ND	86.1	70-130			
Silver	33.5	0.3	ug/g	ND	67.0	70-130			QM-07
Thallium	45.7	1.0	ug/g	ND	91.3	70-130			
Uranium	35.7	1.0	ug/g	ND	71.1	70-130			
Vanadium	62.3	10.0	ug/g	10.4	104	70-130			
Zinc	57.0	20.0	ug/g	ND	88.7	70-130			

Qualifier Notes:

QC Qualifiers :

QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable 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

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

PARACEL LABORATORIES LTD

Paracel ID: 2112607

Paracel Order Number (Lab Use Only): 2112607

Chain Of Custody (Lab Use Only)

№ 129486

Client Name: DST Group	Project Ref: 2101208
Contact Name: Salim Eid	Quote #:
Address: 2150 Thurston Drive Ottawa, ON	PO #:
Telephone: 613-402-	E-mail: seid@dstgroup.com

Page 1 of 1

Turnaround Time

☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular

Date Required: ____

Regulation 153/04

☒ 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)

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	CrVI	B (HWS)						
1	BH21-3, SS1	S		1	2020/03/18					X									
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign): Cam Fischl	Received By Driver/Depot:	Received at Lab: Suneepam Dokmai	Verified By: BJam
Relinquished By (Print): Cam Fischl	Date/Time:	Date/Time: May 19, 2021 12:42	Date/Time: March 19, 2021 12:55
Date/Time: 2021/03/19 12:30	Temperature: °C	Temperature: 16.0 °C	pH Verified: ☐ By:

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Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Salim Eid

Client PO:
Project: 2101208.00
Custody: 129465

Report Date: 22-Mar-2021
Order Date: 16-Mar-2021

Order #: 2112199

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

Paracel ID	Client ID
2112199-01	MW21-1
2112199-02	MW21-1-1
2112199-03	MW21-6

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	17-Mar-21	17-Mar-21
Ammonia, as N	EPA 351.2 - Auto Colour	18-Mar-21	18-Mar-21
Anions	EPA 300.1 - IC	16-Mar-21	16-Mar-21
Colour, apparent	SM2120 - Spectrophotometric	16-Mar-21	16-Mar-21
Conductivity	EPA 9050A- probe @25 °C	17-Mar-21	17-Mar-21
Dissolved Organic Carbon	MOE E3247B - Combustion IR, filtration	18-Mar-21	18-Mar-21
Hardness	Hardness as CaCO3	17-Mar-21	17-Mar-21
Ion Balance	Calculated	22-Mar-21	22-Mar-21
Metals, ICP-MS	EPA 200.8 - ICP-MS	17-Mar-21	17-Mar-21
pH	EPA 150.1 - pH probe @25 °C	17-Mar-21	17-Mar-21
PHC F1	CWS Tier 1 - P&T GC-FID	16-Mar-21	17-Mar-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	18-Mar-21	18-Mar-21
Phenolics	EPA 420.2 - Auto Colour, 4AAP	16-Mar-21	16-Mar-21
REG 153: Pesticides, OC	EPA 8081B - GC-ECD	17-Mar-21	17-Mar-21
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	16-Mar-21	17-Mar-21
Hardness	Hardness as CaCO3	17-Mar-21	17-Mar-21
Sulphide	SM 4500SE - Colourimetric	18-Mar-21	18-Mar-21
Tannin/Lignin	SM 5550B - Colourimetric	17-Mar-21	17-Mar-21
Total Dissolved Solids	SM 2540C - gravimetric, filtration	16-Mar-21	17-Mar-21
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	17-Mar-21	17-Mar-21
Turbidity	SM 2130B - Turbidity meter	16-Mar-21	16-Mar-21

Certificate of Analysis

Report Date: 22-Mar-2021

Client: **DST Consulting Engineers Inc. (Ottawa)**

Order Date: 16-Mar-2021

Client PO:

Project Description: 2101208.00

	Client ID:	MW21-1	MW21-1-1	MW21-6	-
	Sample Date:	15-Mar-21 09:00	15-Mar-21 09:00	15-Mar-21 09:00	-
	Sample ID:	2112199-01	2112199-02	2112199-03	-
	MDL/Units	Water	Water	Water	-
Calculated Parameters					
Ion balance	0.1 %	-3.6	-	-3.3	-
General Inorganics					
Alkalinity, total	5 mg/L	454	-	296	-
Hardness	mg/L	475	-	287	-
Ammonia as N	0.01 mg/L	2.96	-	0.03	-
Dissolved Organic Carbon	0.5 mg/L	10.3	-	15.2	-
Colour, apparent	2 ACU	24600	-	4750	-
Conductivity	5 uS/cm	1250	-	660	-
Hardness	0.824 mg/L	475	-	287	-
pH	0.1 pH Units	7.6	-	8.1	-
Phenolics	0.001 mg/L	<0.001	-	<0.001	-
Total Dissolved Solids	10 mg/L	754	-	328	-
Sulphide	0.02 mg/L	<0.02	-	<0.02	-
Tannin & Lignin	0.1 mg/L	5.5	-	0.7	-
Total Kjeldahl Nitrogen	0.1 mg/L	4.1	-	0.3	-
Turbidity	0.1 NTU	6850	-	1400	-
Anions					
Chloride	1 mg/L	36	-	30	-
Fluoride	0.1 mg/L	<0.1	-	<0.1	-
Nitrate as N	0.1 mg/L	<0.1	-	<0.1	-
Nitrite as N	0.05 mg/L	<0.05	-	<0.05	-
Phosphate as P	0.2 mg/L	<0.2	-	<0.2	-
Sulphate	1 mg/L	174	-	8	-
Metals					
Calcium	100 ug/L	116000	-	58500	-
Iron	100 ug/L	898	-	<100	-
Magnesium	200 ug/L	44900	-	34400	-
Manganese	5 ug/L	4240	-	70	-
Potassium	100 ug/L	21500	-	514	-
Sodium	200 ug/L	63000	-	17000	-
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	1.0	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-

Certificate of Analysis

Report Date: 22-Mar-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 16-Mar-2021

Client PO:

Project Description: 2101208.00

	Client ID:	MW21-1	MW21-1-1	MW21-6	-
	Sample Date:	15-Mar-21 09:00	15-Mar-21 09:00	15-Mar-21 09:00	-
	Sample ID:	2112199-01	2112199-02	2112199-03	-
	MDL/Units	Water	Water	Water	-
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	8.3	-
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	-
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	0.6	0.8	<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	-

Certificate of Analysis

Report Date: 22-Mar-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 16-Mar-2021

Client PO:

Project Description: 2101208.00

	Client ID:	MW21-1	MW21-1-1	MW21-6	-
	Sample Date:	15-Mar-21 09:00	15-Mar-21 09:00	15-Mar-21 09:00	-
	Sample ID:	2112199-01	2112199-02	2112199-03	-
	MDL/Units	Water	Water	Water	-
m,p-Xylenes	0.5 ug/L	2.4	3.2	<0.5	-
o-Xylene	0.5 ug/L	0.9	1.3	<0.5	-
Xylenes, total	0.5 ug/L	3.3	4.6	<0.5	-
4-Bromofluorobenzene	Surrogate	108%	87.8%	94.4%	-
Dibromofluoromethane	Surrogate	90.7%	104%	102%	-
Toluene-d8	Surrogate	114%	110%	89.4%	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	-
F3 PHCs (C16-C34)	100 ug/L	<100	109	<100	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-
Pesticides, OC					
Aldrin	0.01 ug/L	<0.01	-	<0.01	-
alpha-Chlordane	0.01 ug/L	<0.01	-	<0.01	-
gamma-Chlordane	0.01 ug/L	<0.01	-	<0.01	-
Chlordane	0.01 ug/L	<0.01	-	<0.01	-
o,p'-DDD	0.01 ug/L	<0.01	-	<0.01	-
p,p'-DDD	0.01 ug/L	<0.01	-	<0.01	-
DDD	0.01 ug/L	<0.01	-	<0.01	-
o,p'-DDE	0.01 ug/L	<0.01	-	<0.01	-
p,p'-DDE	0.01 ug/L	<0.01	-	<0.01	-
DDE	0.01 ug/L	<0.01	-	<0.01	-
o,p'-DDT	0.01 ug/L	<0.01	-	<0.01	-
p,p'-DDT	0.01 ug/L	<0.01	-	<0.01	-
DDT	0.01 ug/L	<0.01	-	<0.01	-
Dieldrin	0.01 ug/L	<0.01	-	<0.01	-
Endosulfan I	0.01 ug/L	<0.01	-	<0.01	-
Endosulfan II	0.01 ug/L	<0.01	-	<0.01	-
Endosulfan I/II	0.01 ug/L	<0.01	-	<0.01	-
Endrin	0.01 ug/L	<0.01	-	<0.01	-
Heptachlor	0.01 ug/L	<0.01	-	<0.01	-
Heptachlor epoxide	0.01 ug/L	<0.01	-	<0.01	-
Hexachlorobenzene	0.01 ug/L	<0.01	-	<0.01	-
Hexachlorobutadiene	0.01 ug/L	<0.01	-	<0.01	-
Hexachlorocyclohexane, gamma	0.01 ug/L	<0.01	-	<0.01	-
Hexachloroethane	0.01 ug/L	<0.01	-	<0.01	-

Certificate of Analysis

Report Date: 22-Mar-2021

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 16-Mar-2021

Client PO:

Project Description: 2101208.00

	Client ID:	MW21-1	MW21-1-1	MW21-6	-
	Sample Date:	15-Mar-21 09:00	15-Mar-21 09:00	15-Mar-21 09:00	-
	Sample ID:	2112199-01	2112199-02	2112199-03	-
	MDL/Units	Water	Water	Water	-
Methoxychlor	0.01 ug/L	<0.01	-	<0.01	-
Decachlorobiphenyl	Surrogate	119%	-	111%	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
Fluoride	ND	0.1	mg/L						
Nitrate as N	ND	0.1	mg/L						
Nitrite as N	ND	0.05	mg/L						
Phosphate as P	ND	0.2	mg/L						
Sulphate	ND	1	mg/L						
General Inorganics									
Alkalinity, total	ND	5	mg/L						
Ammonia as N	ND	0.01	mg/L						
Dissolved Organic Carbon	ND	0.5	mg/L						
Colour, apparent	ND	2	ACU						
Conductivity	ND	5	uS/cm						
Phenolics	ND	0.001	mg/L						
Total Dissolved Solids	ND	10	mg/L						
Sulphide	ND	0.02	mg/L						
Tannin & Lignin	ND	0.1	mg/L						
Total Kjeldahl Nitrogen	ND	0.1	mg/L						
Turbidity	ND	0.1	NTU						
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									
Calcium	ND	100	ug/L						
Iron	ND	100	ug/L						
Magnesium	ND	200	ug/L						
Manganese	ND	5	ug/L						
Potassium	ND	100	ug/L						
Sodium	ND	200	ug/L						
Pesticides, OC									
Aldrin	ND	0.01	ug/L						
alpha-Chlordane	ND	0.01	ug/L						
gamma-Chlordane	ND	0.01	ug/L						
Chlordane	ND	0.01	ug/L						
o,p'-DDD	ND	0.01	ug/L						
p,p'-DDD	ND	0.01	ug/L						
DDD	ND	0.01	ug/L						
o,p'-DDE	ND	0.01	ug/L						
p,p'-DDE	ND	0.01	ug/L						
DDE	ND	0.01	ug/L						
o,p'-DDT	ND	0.01	ug/L						
p,p'-DDT	ND	0.01	ug/L						
DDT	ND	0.01	ug/L						
Dieldrin	ND	0.01	ug/L						
Endosulfan I	ND	0.01	ug/L						
Endosulfan II	ND	0.01	ug/L						
Endosulfan I/II	ND	0.01	ug/L						
Endrin	ND	0.01	ug/L						
Heptachlor	ND	0.01	ug/L						
Heptachlor epoxide	ND	0.01	ug/L						
Hexachlorobenzene	ND	0.01	ug/L						
Hexachlorobutadiene	ND	0.01	ug/L						
Hexachlorocyclohexane, gamma	ND	0.01	ug/L						
Hexachloroethane	ND	0.01	ug/L						
Methoxychlor	ND	0.01	ug/L						
Surrogate: Decachlorobiphenyl	*0.618*		*ug/L*		*124*	*50-140*			

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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						
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	*89.3*		*ug/L*		*112*	*50-140*			
Surrogate: Dibromofluoromethane	*79.8*		*ug/L*		*99.8*	*50-140*			
Surrogate: Toluene-d8	*92.2*		*ug/L*		*115*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	204	1	mg/L	198			2.8	10	
Fluoride	0.60	0.1	mg/L	0.61			2.9	10	
Nitrate as N	ND	0.1	mg/L	ND			NC	10	
Nitrite as N	ND	0.05	mg/L	ND			NC	10	
Phosphate as P	ND	0.2	mg/L	ND			NC	10	
Sulphate	38.6	1	mg/L	38.3			0.7	10	
General Inorganics									
Alkalinity, total	1050	25	mg/L	1050			0.6	14	
Ammonia as N	0.036	0.01	mg/L	0.025			NC	18	
Dissolved Organic Carbon	3.6	0.5	mg/L	3.7			2.7	37	
Colour, apparent	4900	50	ACU	4750			3.1	12	
Conductivity	2080	5	uS/cm	2060			0.8	5	
pH	7.4	0.1	pH Units	7.4			0.5	3.3	
Phenolics	0.002	0.001	mg/L	0.002			1.1	10	
Total Dissolved Solids	244	10	mg/L	258			5.6	10	
Sulphide	ND	0.02	mg/L	ND			NC	10	
Tannin & Lignin	0.6	0.1	mg/L	0.7			9.8	11	
Turbidity	1400	0.4	NTU	1400			0.0	10	
Hydrocarbons									
F1 PHCs (C6-C10)	69	25	ug/L	71			2.9	30	
Metals									
Calcium	ND	100	ug/L	ND			NC	20	
Iron	ND	100	ug/L	ND			NC	20	
Magnesium	ND	200	ug/L	ND			NC	20	
Manganese	ND	5	ug/L	ND			NC	20	
Potassium	ND	100	ug/L	ND			NC	20	
Sodium	ND	200	ug/L	221			NC	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	0.55	0.5	ug/L	0.68			21.1	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	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
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	*79.7*		*ug/L*		*99.6*	*50-140*			
Surrogate: Dibromofluoromethane	*81.8*		*ug/L*		*102*	*50-140*			
Surrogate: Toluene-d8	*90.9*		*ug/L*		*114*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	208	1	mg/L	198	94.8	77-123			
Fluoride	1.50	0.1	mg/L	0.61	88.7	79-121			
Nitrate as N	1.06	0.1	mg/L	ND	106	79-120			
Nitrite as N	0.944	0.05	mg/L	ND	94.4	84-117			
Phosphate as P	5.28	0.2	mg/L	ND	106	59-141			
Sulphate	47.8	1	mg/L	38.3	95.5	74-126			
General Inorganics									
Ammonia as N	0.284	0.01	mg/L	0.025	104	81-124			
Dissolved Organic Carbon	9.9	0.5	mg/L	3.7	61.4	60-133			
Phenolics	0.026	0.001	mg/L	0.002	96.6	69-132			
Total Dissolved Solids	100	10	mg/L	ND	100	75-125			
Sulphide	0.52	0.02	mg/L	ND	103	79-115			
Tannin & Lignin	1.6	0.1	mg/L	0.7	96.2	71-113			
Total Kjeldahl Nitrogen	4.07	0.1	mg/L	2.15	95.9	81-126			
Hydrocarbons									
F1 PHCs (C6-C10)	1990	25	ug/L	ND	99.7	68-117			
F2 PHCs (C10-C16)	1580	100	ug/L	ND	98.6	60-140			
F3 PHCs (C16-C34)	3570	100	ug/L	ND	91.2	60-140			
F4 PHCs (C34-C50)	2220	100	ug/L	ND	89.5	60-140			
Metals									
Calcium	12600	100	ug/L	ND	125	80-120			QM-07
Iron	2340	100	ug/L	ND	93.5	80-120			
Magnesium	11500	200	ug/L	ND	115	80-120			
Manganese	50.8	5	ug/L	ND	101	80-120			
Potassium	12100	100	ug/L	ND	121	80-120			QM-07
Sodium	11400	200	ug/L	221	112	80-120			
Pesticides, OC									
Aldrin	0.58	0.01	ug/L	ND	116	50-140			
alpha-Chlordane	0.58	0.01	ug/L	ND	115	50-140			
gamma-Chlordane	0.56	0.01	ug/L	ND	113	50-140			
o,p'-DDD	0.70	0.01	ug/L	ND	140	50-140			
p,p'-DDD	0.61	0.01	ug/L	ND	123	50-140			
o,p'-DDE	0.68	0.01	ug/L	ND	135	50-140			
p,p'-DDE	0.62	0.01	ug/L	ND	123	50-140			
o,p'-DDT	0.68	0.01	ug/L	ND	135	50-140			
p,p'-DDT	0.62	0.01	ug/L	ND	125	50-140			
Dieldrin	0.60	0.01	ug/L	ND	120	50-140			
Endosulfan I	0.60	0.01	ug/L	ND	120	50-140			
Endosulfan II	0.57	0.01	ug/L	ND	115	50-140			
Endrin	0.18	0.01	ug/L	ND	35.0	50-140			QS-02
Heptachlor	0.58	0.01	ug/L	ND	116	50-140			
Heptachlor epoxide	0.55	0.01	ug/L	ND	110	50-140			
Hexachlorobenzene	0.40	0.01	ug/L	ND	80.4	50-140			
Hexachlorobutadiene	0.54	0.01	ug/L	ND	108	50-140			
Hexachlorocyclohexane, gamma	0.55	0.01	ug/L	ND	110	50-140			
Hexachloroethane	0.36	0.01	ug/L	ND	71.0	50-140			
Methoxychlor	0.55	0.01	ug/L	ND	110	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: Decachlorobiphenyl	*0.643*		*ug/L*		*129*	*50-140*			
Volatiles									
Acetone	94.6	5.0	ug/L	ND	94.6	50-140			
Benzene	37.6	0.5	ug/L	ND	94.0	60-130			
Bromodichloromethane	36.6	0.5	ug/L	ND	91.5	60-130			
Bromoform	37.5	0.5	ug/L	ND	93.7	60-130			
Bromomethane	44.0	0.5	ug/L	ND	110	50-140			
Carbon Tetrachloride	39.6	0.2	ug/L	ND	99.1	60-130			
Chlorobenzene	44.4	0.5	ug/L	ND	111	60-130			
Chloroform	38.2	0.5	ug/L	ND	95.4	60-130			
Dibromochloromethane	41.9	0.5	ug/L	ND	105	60-130			
Dichlorodifluoromethane	43.8	1.0	ug/L	ND	110	50-140			
1,2-Dichlorobenzene	33.5	0.5	ug/L	ND	83.8	60-130			
1,3-Dichlorobenzene	31.6	0.5	ug/L	ND	79.0	60-130			
1,4-Dichlorobenzene	36.7	0.5	ug/L	ND	91.8	60-130			
1,1-Dichloroethane	37.9	0.5	ug/L	ND	94.7	60-130			
1,2-Dichloroethane	36.6	0.5	ug/L	ND	91.4	60-130			
1,1-Dichloroethylene	37.9	0.5	ug/L	ND	94.6	60-130			
cis-1,2-Dichloroethylene	35.5	0.5	ug/L	ND	88.8	60-130			
trans-1,2-Dichloroethylene	37.7	0.5	ug/L	ND	94.3	60-130			
1,2-Dichloropropane	37.1	0.5	ug/L	ND	92.7	60-130			
cis-1,3-Dichloropropylene	36.1	0.5	ug/L	ND	90.2	60-130			
trans-1,3-Dichloropropylene	39.5	0.5	ug/L	ND	98.8	60-130			
Ethylbenzene	37.4	0.5	ug/L	ND	93.5	60-130			
Ethylene dibromide (dibromoethane, 1,2-	41.3	0.2	ug/L	ND	103	60-130			
Hexane	35.6	1.0	ug/L	ND	89.0	60-130			
Methyl Ethyl Ketone (2-Butanone)	89.2	5.0	ug/L	ND	89.2	50-140			
Methyl Isobutyl Ketone	78.0	5.0	ug/L	ND	78.0	50-140			
Methyl tert-butyl ether	82.7	2.0	ug/L	ND	82.7	50-140			
Methylene Chloride	38.0	5.0	ug/L	ND	94.9	60-130			
Styrene	35.7	0.5	ug/L	ND	89.2	60-130			
1,1,1,2-Tetrachloroethane	45.1	0.5	ug/L	ND	113	60-130			
1,1,2,2-Tetrachloroethane	41.6	0.5	ug/L	ND	104	60-130			
Tetrachloroethylene	44.5	0.5	ug/L	ND	111	60-130			
Toluene	41.6	0.5	ug/L	ND	104	60-130			
1,1,1-Trichloroethane	38.6	0.5	ug/L	ND	96.6	60-130			
1,1,2-Trichloroethane	36.8	0.5	ug/L	ND	91.9	60-130			
Trichloroethylene	39.8	0.5	ug/L	ND	99.5	60-130			
Trichlorofluoromethane	39.7	1.0	ug/L	ND	99.2	60-130			
Vinyl chloride	39.0	0.5	ug/L	ND	97.6	50-140			
m,p-Xylenes	74.1	0.5	ug/L	ND	92.6	60-130			
o-Xylene	36.7	0.5	ug/L	ND	91.8	60-130			
Surrogate: 4-Bromofluorobenzene	*73.8*		*ug/L*		*92.3*	*50-140*			
Surrogate: Dibromofluoromethane	*78.5*		*ug/L*		*98.1*	*50-140*			
Surrogate: Toluene-d8	*79.3*		*ug/L*		*99.1*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Sample - Received with >5% sediment, instructed to decant and analyze without sediment

Applies to samples: MW21-1, MW21-1-1

QC Qualifiers :

QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

QS-02 : Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.

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: 2112199

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2112199	№ 129465

Client Name: DST Group	Project Ref: 2101208.00	Page 1 of 1
Contact Name: Salim Eid	Quote #:	
Address: 2150 Thurston Drive Ottawa, ON	PO #:	Turnaround Time: ☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Telephone: 613-402-0393	E-mail: seid@dstgroup.com cfischl@dstgroup.com	Date Required:

Regulation 153/04	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)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals	Hg	CrVI	B (HWS)	Inorganics	General Chemistry	Nutrients	Pesticides/ Herbicides		
1	MW21-1	S	15	~~4~~	2020/03/15		X	X		X				X	X	X	X		
2	MW21-1-1	S		3	↓		X	X											
3	MW21-6	S	15	~~4~~	↓		X	X		X				X	X	X	X		
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments: Please see attached communication for exact analysis.

Method of Delivery: Drop Box

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: Suneeporn Dokmai	Verified By:
Relinquished By (Print): Cam Fischl	Date/Time:	Date/Time: Mar 16, 2021 11:52	Date/Time: March 16, 2021 12:34
Date/Time: 2021/03/16 10:30	Temperature: °C	Temperature: 2.4 °C	pH Verified: ☑ By:

Do you require the bacteria portion of the Subdivision package?

Scott Clark
Account Manager

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COVID 19 Update

Paracel continues to take strong measures to ensure the health, safety and well-being of our employees and clients. While our reception areas may be closed, we are open for contactless sample drop off and bottle order pickups. Our service group remains available by phone and email to assist you.

Take care and stay healthy.

From: Sonny Sundaram [mailto:ssundaram@dstgroup.com]
Sent: Thursday, March 11, 2021 3:01 PM
To: Scott Clark <sclark@paracellabs.com>
Cc: Salim Eid <seid@dstgroup.com>; Cameron Fischl <cfischl@dstgroup.com>; Shanti Ratmono <sratmono@dstgroup.com>
Subject: FW: Bottle Order -Dilworth Road - water samples

Hi Scott,

Refer to the list of parameters below for the general inorganics, anions, nutrients pesticides and herbicides (these parameters will be compared to the Ontario Drinking Water Quality Standards in addition to metals). For PHCs and VOCs, these parameters will be compared to O.Reg. 153/04. There is no need for mercury or chromium VI

For metals, can we just sample the metals included in the subdivision package? Not the entire group of metals, please let us know, thanks

General Inorganics	***Anions***
Alkalinity, total	Chloride
Ammonia as N	Fluoride
Colour	Nitrate as N
Conductivity	Nitrite as N
Dissolved Organic Carbon	Orthophosphate (P)
Hardness	Sulphide as H_2S

Ion Balance	Sulphate
pH	
Phenols	
Tannins & Lignins	
Total Dissolved Solids	
Total Kjeldahl Nitrogen	
Turbidity	

Paracel ID: 2112199

Calculated Parameters
Aldrin + Dieldrin
Chlordane (Total)
DDT+ Metabolites
Heptachlor + Heptachlor epoxide
o,p-DDD + p,p-DDD
o,p-DDE + p,p-DDE
o,p-DDT + p,p-DDT
Total Endosulfan
Total PCB
Pesticides & Herbicides
Lindane
Heptachlor
Aldrin
Heptachlor epoxide
Oxychlordane
g-Chlordane
a-Chlordane
Dieldrin
o,p-DDE
p,p-DDE
o,p-DDD
p,p-DDD
o,p-DDT
p,p-DDT
Methoxychlor
Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260

APPENDIX F
LIMITATIONS OF REPORT

LIMITATIONS

The information, conclusions and recommendations given herein are specifically for this project and this Client only, and for the scope of work described herein. It may not be sufficient for other uses. DST, a division Englobe does not accept responsibility for use by third parties.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the Client. Note, however, that no scope of work, no matter how exhaustive, can identify all contaminants or all conditions above and below ground. For example, conditions between test holes may differ from those encountered in the investigation and observed or measured conditions may change with time. This report therefore cannot warranty that all conditions on or off the Site are represented by those identified at specific locations.

Any recommendations and conclusions provided that are based on conditions or assumptions reported herein will inherently include any uncertainty associated with those conditions or assumptions. In fact many aspects involving professional judgement such as subsurface models and remediation criteria contain a degree of uncertainty which cannot be eliminated. This uncertainty should be managed by periodic review and refinement as additional information becomes available.

Note also that standards, guidelines and practices related to environmental investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any topographic benchmarks and elevations documented in this report are primarily to establish relative elevation differences between test locations and should not be used for other purposes such as grading, excavation, planning, development, etc.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction or clean-up methods and costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory, title searcher or other subcontractor reported herein have been carried out by others, and DST, a division of Englobe cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.