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# **Phase II Environmental Site Assessment (ESA)**

**206105 Highway 26, Meaford, Ontario**

**“M1 Parcel”**

*Project #*

2001801

*Prepared For*

LC Development Group (LCDG Inc.)

June 3, 2020

June 3, 2020

Suresh Singh  
LC Development Group (LCDG Inc.)  
909 Davenport Road, 2nd Floor  
Toronto, Ontario  
M6G 2B7

Dear Suresh Singh:

Re: Phase II Environmental Site Assessment (ESA), 206105 Highway 26 "M1 Parcel", Meaford,  
ON  
Project #: 2001801

We are pleased to present our Phase II Environmental Site Assessment (ESA) report for the above-noted property. The scope of this Phase II ESA conforms to the requirements outlined in the Canadian Standards Association (CSA) Standard Z769-00 (R2013) - Phase II Environmental Site Assessment. The purpose of this Phase II ESA was for due diligence and to address the following potential on-site and off-site sources of environmental concern, identified in Golder's Phase I ESA conducted at the Site on January 6, 2020:

- Former vehicle maintenance/service garages on-Site – Two former garages located in the central portion of the Site.
- The property located at 206068 Highway 26 (50 m southwest – up-gradient) was occupied by a vehicle maintenance/service garage.
- The property located at 206066 Highway 26 (50 southwest – up-gradient) was formerly listed as a gasoline service station with expired fuel tanks.
- The property located at 206065 Highway 26 (adjoining property west of the southwest corner of the Site – up-gradient) currently and historically was occupied by a vehicle maintenance/service garage.

Based on the findings of the Phase II ESA and historical environmental investigations conducted on the Site, laboratory analyses revealed that all of the measured contaminant concentrations in soil and groundwater complied with the Table 3 criteria for RPI property uses with medium-fine textured soils in a non-potable ground water condition.

In conclusion, based on the aforementioned findings, no appreciable impacts to the subsurface or other environmental concerns have been identified in association with the subject property based on our Phase II ESA. Therefore, in our opinion, no further actions are currently warranted.

The report provides Site information from Palmer's site reconnaissance, drilling activities, soil and groundwater sampling, review of laboratory certificate of analysis, and our conclusions for your consideration. We trust that this report will be satisfactory for your current needs. If you have any questions or require further information, please contact our office at your convenience.

Yours truly,

**Palmer**<sup>™</sup>



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Bobby Katanchi, M.Sc., P.Geo. QP<sub>ESA</sub>  
Senior Hydrogeologist

## Executive Summary

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Palmer is pleased to provide this Phase II Environmental Site Assessment (ESA) report to Suresh Singh of LC Development Group (LCDG Inc.). The Phase II ESA was prepared for the parcel of land located at 206105 Highway 26, Meaford, Ontario (hereafter collectively referred to as the “Site”).

It is understood that the Phase II ESA is required for due diligence purposes. It should be noted that the format of this report is not intended to support the filing of a Record of Site Condition (RSC) with the Ministry of the Environment, Conservation and Parks (MECP).

The Phase II ESA was conducted to address the following potential on-site and off-site sources of environmental concern, identified in Golder’s Phase I ESA conducted at the Site on January 6, 2020:

- Former vehicle maintenance/service garages on-Site – Two former garages located in the central portion of the Site.
- The property located at 206068 Highway 26 (50 m southwest – up-gradient) was occupied by a vehicle maintenance/service garage.
- The property located at 206066 Highway 26 (50 southwest – up-gradient) was formerly listed as a gasoline service station with expired fuel tanks.
- The property located at 206065 Highway 26 (adjoining property west of the southwest corner of the Site – up-gradient) currently and historically was occupied by a vehicle maintenance/service garage.

The abovementioned Areas of Potential Environmental Concern (APECs) as identified by Golder were investigated as part of this report. Soil and groundwater samples were collected to investigate potential Petroleum Hydrocarbon (PHC), Volatile Organic Compound (VOC), and Metal related impacts.

The Phase II ESA was conducted in accordance with the Canadian Standards Association (CSA) Standard Z769-00 (R2013) - Phase II Environmental Site Assessment. For assessment purposes, the soil and groundwater analytical results were compared to 2011 Ministry of the Environment, Conservation and Parks (MECP) Table 3: Full Depth Generic Site Condition Standard (SCS) in a Non-Potable Ground Water Condition in medium-fine textured soil for residential/parkland/institutional land uses (MECP Table 3 Standards).

Based on the results of the Phase II ESA, Palmer presents the following summary of findings:

- a) Drilling of four (4) boreholes to a maximum depth of 8.10 metres below ground surface (mbgs) at strategically selected and accessible locations on-site during the geotechnical drilling investigation;
- b) All of the boreholes, BHM1-1, BHM1-2, BHM1-3, and BHM1-4 were installed with ground water monitoring wells;
- c) Representative soil and groundwater samples were collected and submitted to an accredited laboratory for chemical analysis of one or more of the following parameters: Petroleum Hydrocarbons Fractions F1 to F4 (PHCs), Volatile Organic Compounds (VOCs), and Metals;
- d) The general stratigraphy at the Site consisted of concrete and topsoil overlying fill material. The fill material was underlain by undisturbed native soil, consisting of layers of sandy silt, sand, clayey silt and silty clay till;

- e) Groundwater levels were measured on April 17 and May 13, 2020. Ground water levels were measured at two (2) monitoring wells (BH-M1-1 and BH-M1-2) at depths of 0.51 and 1.53 mbgs, the other two (2) wells remained dry, and were unable to be sampled;
- f) Based on laboratory soil and groundwater analysis, all tested soil and groundwater samples met the MECP Table 3 Standards;
- g) No evidence of free product (i.e. visible film or sheen), or odour was observed during purging and groundwater sampling; and,
- h) The total organic vapour (TOV) concentrations in the head-space of the soil samples were non-detect.

In conclusion, no appreciable impacts to the subsurface or other environmental concerns have been identified in association with the subject property based on our Phase II ESA. Therefore, in our opinion, no further actions are currently warranted.

The statements made in this Executive Summary are subject to the same limitations as contained in the report and should be read in conjunction with the entire report.

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## 1. Introduction

Palmer was retained by LC Development Group (LCDG Inc.) (the Client) to conduct a Phase II Environmental Site Assessment (Phase II ESA) for the parcel of land located at 206105 Highway 26, Meaford, Ontario (hereinafter referred to as the 'Site'), as shown in **Figure 1**. This report presents the results of the investigation and the conclusions we have drawn regarding the possible impact of the conditions observed.

### 1.1 Background

Golder Associates Ltd. (Golder) conducted a Phase I ESA at the Site with findings summarised in the report entitled "Phase I Environmental Site Assessment, 206105 Highway 26, Meaford, Ontario, Golder", dated January 6, 2020. Based on the findings of the Phase I ESA, the following potential on-site and off-site sources of environmental concern, identified in Golder's recent Phase I ESA conducted at the Site on January 6, 2020:

- Former vehicle maintenance/service garages on-Site – Two former garages located in the central portion of the Site.
- The property located at 206068 Highway 26 (50 m southwest – up-gradient) was occupied by a vehicle maintenance/service garage.
- The property located at 206066 Highway 26 (50 southwest – up-gradient) was formerly listed as a gasoline service station with expired fuel tanks.
- The property located at 206065 Highway 26 (adjoining property west of the southwest corner of the Site – up-gradient) currently and historically was occupied by a vehicle maintenance/service garage.

A Phase II ESA was recommended due to Golder's abovementioned findings.

### 1.2 Objective

The purpose of this Phase II ESA was to investigate soil and groundwater quality for potential environmental impacts due to vehicle maintenance/service garages on-site and off-site in accordance with the findings of the Phase I ESA conducted by Golder (see Section 1.1).

It is understood that the Phase II ESA is required for due diligence purposes. It should be noted that the format of this report is not intended to support the filing of a Record of Site Condition (RSC) with the Ministry of the Environment, Conservation and Parks (MECP).

The findings presented in this report may be used for this purpose subject to the limitations stated under Section 8.0. No other party shall have the right to rely on any service provided by Palmer without prior written consent. Use of this report by any other party shall be at such party's sole risk.

### 1.3 Scope of Work

The Phase II ESA was conducted in accordance with the Canadian Standard Association (CSA) Standard Z769-00 (R2013) - Phase II Environmental Site Assessment.

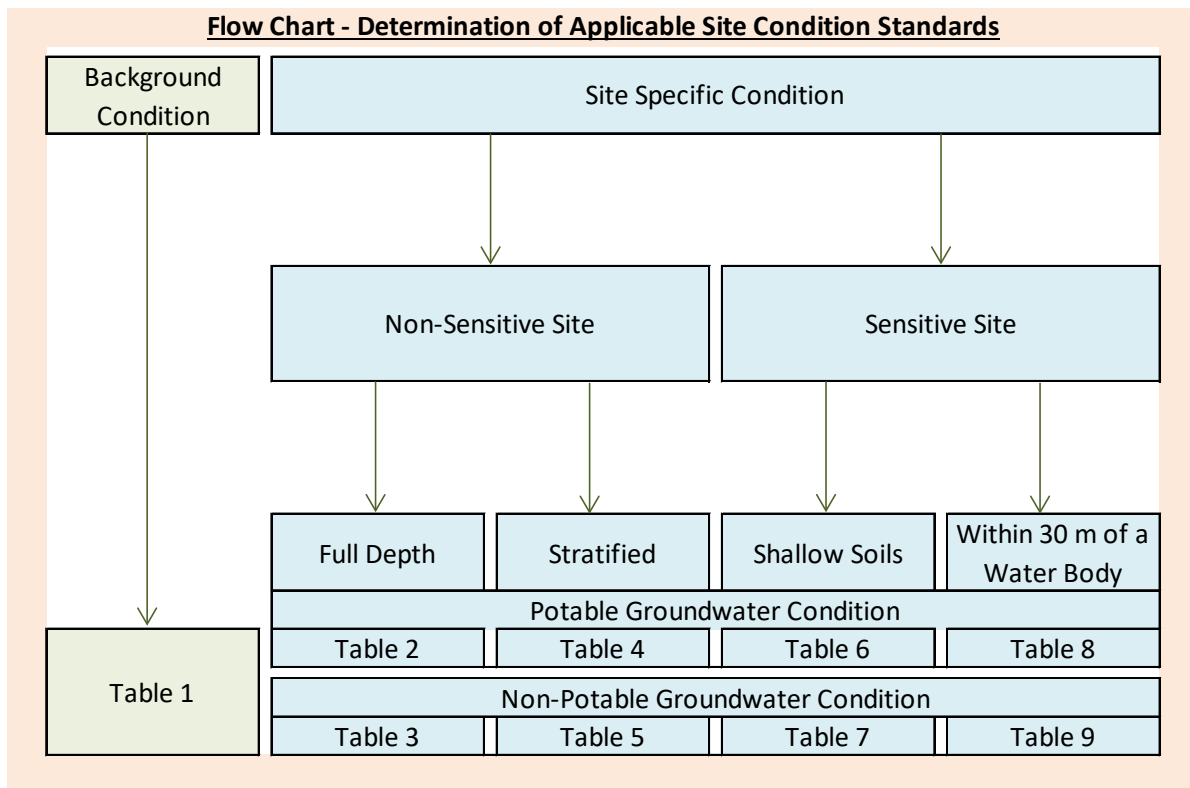


The Phase II ESA scope of work for the on-Site investigation consisted of the following activities:

- Conducted a Site-specific health and safety hazard assessment prior to commencing field activities;
- Requested local utility locating companies (cable, telephone, gas, hydro) to mark any underground utilities present at the Site;
- Palmer advanced a total of four (4) boreholes at the Site and instrumented all of the boreholes with monitoring wells during the geotechnical investigation conducted at the site;
- Screened soil sample head space for vapours using a photo ionization detector (PID);
- Measured the water level and purged ground water from installed monitoring wells prior to sampling;
- Collected representative soil samples and submitted to an accredited laboratory for chemical analysis of one or more of the following parameters: Petroleum Hydrocarbons Fractions F1 to F4 (PHCs), Volatile Organic Compounds (VOCs), and Metals;
- Collected three (3) groundwater samples (one (1) ground water sample collected during initial monitoring event and two ground water samples collected during second monitoring event) and submitted to an accredited laboratory for chemical analysis of the following parameters: PHCs, VOCs and Metals; and
- Reviewed the analytical data and prepared a report summarising the findings of this investigation.

## 2. Site Assessment Criteria

The following Figure shows a flow chart for selection of applicable criteria:



The Site specific details which formed the basis of the assessment criteria selection are provided below:

### Site Sensitivity:

- The Site does not include, nor is there evidence to suggest it could have an adverse effect on a sensitive environment;
- The borehole drilling program revealed that the bedrock is deeper than 8.1 m below existing grade across the Site; and,
- The subsurface soil pH values are between 7.94 and 8.06. Three (3) soil samples (including one (1) duplicate soil sample) were collected on April 2, 2020 at boreholes (BHM1-3 and BHM1-4) between the surface and 6.5 mbg, to determine the soil pH for the Site.

### Land Use:

- Currently, the subject Site is developed with a building and is primarily used for residential land uses. No change in land use is anticipated.

### Ground Water Use:

- Numerous records in the vicinity of the Site indicated the presence of drinking water well records. However, it has been assumed that the Site will be serviced by a municipal drinking water supply derived from the Nottawasaga Bay intake in the future.

**Depth and Soil Texture:**

- For the purpose of the report, the assessment criteria corresponding to the full depth option will be used for comparison to the laboratory analytical results.
- One (1) soil sample was collected on March 27, 2020 at the location of BH M2-5 Sample 3 between 1.5 and 2.1 mbg, to determine the soil grain size for the Site as part of the geotechnical investigation conducted at the site.
- Based upon field observations and soil grain size analyses conducted by Terrapex, 1% of the soil particles are greater than 75 micrometers ( $\mu\text{m}$ ). Therefore, for the purpose of this report, the assessment criteria corresponding to medium-fine textured soils were selected for comparison in laboratory analytical results.
- The selected soil texture is applicable to at least one-third of the Site being assessed. Therefore, the medium-fine textured soil standards can be used, as per Ontario Regulation 153/04, s.42 (1).

Based on the above information, the applicable Environmental Protection Act (EPA) Site assessment criteria selected for use at this Site at the Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition (Table 3) criteria for residential/parkland/institutional land uses with medium-fine textured soils.

### 3. Fieldwork, Sampling, & Analytical Testing

Palmer conducted a Site-specific health and safety hazard assessment and communicated it with the field staff prior to commencing the field activities, including clearing underground utility locations prior to commencement of drilling activities.

Fieldwork for the Phase II ESA commenced on March 9, 2020 by soil sampling from a total of four (4) boreholes (BH-M1-1, BH-M1-2, BH-M1-3, and BH-M1-4) drilled to a maximum depth of 8.1 mbg with the installation of four (4) ground water monitoring wells during the geotechnical investigation conducted at the site, as presented in **Figure 2**. The boreholes were strategically placed throughout the subject Site in order to address any environmental concerns that were previously discussed.

Standard operating procedures for on-site safety advocated by our firm include wearing of hard hats, safety vests, steel-toe boots bearing the CSA green triangle emblem, and usage of hearing protection. Other personal protective equipment can include fire-proof coveralls and rubber gloves, depending on the level of hazard/risk anticipated at the Site.

The borehole locations were established in the field by Palmer staff prior to drilling. *Ontario One-Call* was contracted to locate and clear buried utility lines including telephone cables, natural gas mains, and hydro power lines. All the detected underground lines were identified on the ground by marking paints of various colours.

#### 3.1 Soil: Drilling

Boreholes were advanced by using a track mounted power auger drilling rig on a track equipped with solid stem augers and split spoons, supplied and operated by Drilltech Drilling Ltd. under the direction of Palmer staff.

Disposable nitrile gloves were used and replaced between the handling of samples and all soil sampling equipment (stainless steel trowels, spatulas, etc.) were thoroughly decontaminated between soil sample locations to prevent potential cross-contamination. Decontamination activities included physical removal of any adhered debris, wash/scrub in "Alconox" soap solution, distilled water rinse, methanol rinse, and air dry.

Samples were collected continuously from the split spoons. Samples submitted to the laboratory were based on visual observations, results of headspace screening, and identified potential sources of environmental concern and associated parameters of concern.

#### 3.2 Soil: Sampling

Representative soil samples were recovered at each of the borehole locations. The soil stratigraphy was logged during drilling as soil samples were collected with split spoons. Visual observations of any foreign materials or odours were also logged. The finalized field logs are presented in **Appendix A**.

Soil samples were split into portions that were collected into a plastic bag and a sample jar. Head space vapour concentrations were determined by allowing the bags to warm up to ambient temperature, probing into partially opened bags using a monitoring probe, and measuring the sample head space with a photoionization detector (PID). Selected samples were placed in laboratory-supplied glass jars or vials and stored in a cooler during transport to the laboratory.

All soil samples were collected in accordance with strict environmental sampling protocols to ensure reliable results.

### **3.3 Ground Water: Monitoring Well Installation**

Upon completion of drilling, a 50-mm diameter, flush-joint threaded PVC monitoring well was installed in four (4) of the boreholes for ground water monitoring by Drilltech Drilling Ltd. under the direction of Palmer staff.

The monitoring wells included a 3 m length of slotted intake screen. The tops of the intake screens were then extended to the ground surface using solid riser pipe. A silica sand filter pack was placed between the intake screen and the wall of the borehole. The filter pack was extended approximately 0.6 m above the top of the well screen to allow for settlement of the sand packs and to accommodate expansion of the overlying well seals. A bentonite seal was placed above the sand pack and extended to approximately 0.3 m. No glue was used in the construction of the monitoring well.

All ground water monitoring wells installed at the Site were instrumented with sufficient lengths of low density polyethylene tubing to facilitate well development and purging requirements. Following the initial installation, depths to the static water level were measured and each monitoring well was developed by purging the well dry at least once to remove any fluids that may have been introduced into the well during drilling and to remove particulates that may have become entrained in the well and filter pack, and to stabilize and grade the filter pack, improve connectivity between the well and the formation, and restore ground water that may have been disturbed or altered during the drilling process to ensure the samples to be representative of true formation waters.

### **3.4 Ground Water: Sampling**

The wells were purged to waste and fresh ground water samples were drawn for chemical analyses. During the initial sampling round, ground water samples were collected using a foot valve with dedicated waterra tubing. The second round of ground water sampling was conducted using a low-flow peristaltic pump with dedicated tubing in each of the monitoring wells. This method minimizes the velocity of the formation waters entering the well screen, as the drawdown is kept to a minimum (i.e., less than 10 cm) by adjusting the pumping rate. The samples were placed in laboratory-supplied glass bottles or vials and stored in a cooler during transport to the laboratory.

Ground water monitoring, including measuring the depth to the stabilized water level, was conducted on April 17, 2020. Groundwater monitoring and sampling was conducted on May 13, 2020. Measurements of ground water depths were made using an electronic oil/water interface probe.

In addition, the ground water was screened (during all monitoring events) in the field for evidence of free product including presence of liquid petroleum hydrocarbons (LPH), sheen (iridescence), odour, and colour. No free-product was observed in any of the monitoring wells on the Site.

### 3.5 Analytical Testing

Soil and ground water samples collected during the Phase II investigation were submitted for laboratory analysis. The soil and ground water laboratory chemical analysis was conducted by ALS Environmental (ALS) of Waterloo, Ontario.

A total of seven (7) soil samples (not including QA/QC samples) and three (3) groundwater samples were submitted to ALS for chemical analysis of various organic and inorganic parameters (**Table 1**). The rationale for the selection of the soil samples for analysis was based on the location, depth, texture, classifications and any visible signs of organic impacts.

**Table 1. Sample Depths, Descriptions, and Chemical Analyses Performed**

BOREHOLE ID	SAMPLE ID	MATERIAL MATRIX	SAMPLE DEPTH BELOW GRADE (m)	SAMPLE DESCRIPTION	CHEMICAL ANALYSES PERFORMED
BHM1-1	SS1	Soil	0-0.6	Clayey Silt Fill	PHC/VOC, Metals
BHM1-2	SS1	Soil	0-0.6	Sand and Gravel Fill	Metals
BHM1-2	DUP1	Soil	0-0.6	Sand and Gravel Fill	Metals
BHM1-2	SS4	Soil	1.8-2.4	Silty Clay Till	PHC/VOC
BHM1-3	SS1	Soil	0-0.6	Sand and Gravel Fill	Metals
BHM1-3	SS6	Soil	3.1-3.4	Silty Clay Till	PHC/VOC
BHM1-4	SS1	Soil	0-0.6	Sand Fill	PHC/VOC
BHM1-4	SS2	Soil	0.6-1.2	Clayey Silt Fill	Metals

The Laboratory Certificate of Analyses and Analytical Reports are reproduced in **Appendix B**.

## 4. Quality Assurance

The laboratory used for this investigation, ALS, is accredited by the Standards Council of Canada (SCC) and the Canadian Association for Laboratory Accreditation (CALA), in accordance with the international standard ISO/IEC 17025:2005 – General Requirements for the Competence of Testing and Calibration Laboratories. ALS is accredited for analysis of all parameters required under the Ontario Regulation 153/04 – Record of Site Condition, as outlined in the MECP Technical Update entitled “Laboratory Accreditation Requirements Under the New Record of Site Condition Regulation (O. Reg. 153/04).”

The laboratory quality assurance program included the analysis of laboratory method blanks, matrix spikes, and samples of Reference Materials, in accordance with their analytical protocol. These analytical results comprise portions of the Certificate of Analysis in **Appendix B and C**. ALS’s overall quality control for the analysis meets their acceptability criteria, with the exception of an OWP Qualifier which pertains to “Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment”.

A strict Quality Assurance/Quality Control (QA/QC) program was implemented and maintained throughout the project to ensure the Site data represents the actual Site conditions.

The QA/QC program provides a method of documented checks to assess the precision and accuracy of collected data. Palmer field and QA/QC protocols have been developed to meet or exceed those defined in the Ministry of the Environment, Conservation and Parks (MECP) documents entitled Guide for Completing Phase II Environmental Site Assessments under Ontario Regulation 153/04 (June 2011) and Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the EPA (March 9, 2004, amended as of July 1, 2011).

The QA/QC program included the following set of standard procedures or protocols.

- i. The use of personal protective equipment (PPE);
- ii. Thorough documentation of all field activities and sample handling practices;
- iii. Thorough decontamination of all sampling equipment used during all investigation phases;
- iv. The incorporation of duplicate samples into the sampling and analytical programs to assess the validity of the data received from the analytical laboratory;
- v. The use of laboratory analytical protocols and method detection limits that have been established in accordance with regulatory requirements for the province of Ontario;
- vi. All sample jars, bottles, and vials were pre-cleaned, inspected, clearly labeled, and their contents recorded on the Finalized Field Log Sheets and Chain-of-Custody forms; and
- vii. Chain-of-Custody forms included sample identification, location, sampling date, and the analyses prescribed were completed and delivered to the laboratory with the cooled samples within 10 hours of sampling.

## 5. Subsurface Findings

The detailed soil profiles encountered in each borehole are provided in the attached Borehole Logs in **Appendix A**.

### 5.1 Soil Profile

The observed soil stratigraphy generally comprised surficial concrete or topsoil overlying sand and/or gravel, clayey silt, or silty sand fill, which was underlain by a stratum of silty clay, sandy silt, clayey silt or sand till.

The estimated thickness of each geologic unit is as follows:

**Table 2. Soil Stratigraphy**

	GEOLOGIC UNIT	DEPTH
<b>Surface</b>	Concrete	0.00 to 0.2 m
	Topsoil	0.00 to 0.3 m
<b>Fill Strata</b>	Sand Fill	0.1 to 0.8 m
	Clayey Silt Fill	0.2 to 1.1 m
	Sand and Gravel Fill	0.2 to 0.3 m
	Silty Sand Fill	0.5 to 0.6 m
<b>Till Strata</b>	Silty Clay Till	0.3 to 6.5 m
	Sandy Silt Till	0.7 to 4.0 m
	Clayey Silt Till (trace sand with occasional gravel)	0.8 to 8.1 m
	Sand Till	1.8 to 2.4 m
<b>Bedrock</b>	Not Encountered.	

The soil across the property is considered to be medium-fine-textured for the purpose of this ESA.

### 5.2 Ground Water

Stabilized ground water levels were measured at depths between 0.51 and 1.53 m below existing grade for BHM1-1 and BHM1-2 on May 13, 2020, respectively. The other two (2) ground water monitoring wells remained dry, and were unable to be sampled.

**Table 2** below illustrates the details of the monitoring wells and their respective measurements:



**Table 3. Monitoring Well Information**

MONITORING WELL ID	DATE MONITORED (M-D-Y)	DEPTH OF WATER BELOW GROUND SURFACE (m)	OBSERVATIONS
BHM1-1	04-17-20	0.42	None
	05-13-20	0.51	None
BHM1-2	04-17-20	Dry	None
	05-13-20	1.53	None
BHM1-3	04-17-20	Dry	None
	05-13-20	Dry	None
BHM1-4	04-17-20	Dry	None
	05-13-20	Dry	None

The results of the ground water monitoring indicated that the primary near surface water table resides within the clayey silt (fill) and silty clay (till) layers.

No free-product and/or odours were observed in any of the monitoring wells monitored on the Site.

Based on the Site topography, the ground water in the overburden layer is interpreted to flow across the Site in an easterly direction.

Temporal variability in the ground water flow direction could not be assessed during this Phase II ESA investigation since ground water elevations were obtained from all monitoring wells during one season and no historical ground water data was available.

### 5.3 Soil Vapour Screening

All soil samples were screened in the field for evidence of staining and odours. Soil sample headspace screening was also performed to facilitate sample selections for laboratory analysis and to provide an assessment of the vertical contaminant distributions at each borehole location.

The soil sample headspace screening was conducted with a PID Thermo 580B calibrated to a known isobutylene gas. Sample headspace screening with the PID yielded readings of non-detect.

## 6. Chemical Analysis

### 6.1 Soil Analytical Results

The laboratory certificate of analysis of the soil samples is included in **Appendix B**. In total, seven (7) soil samples were collected and analyzed for PHCs, VOCs, and Metals.

The analytical results of the soil samples tested for PHCs, VOCs, and Metals did not detect any of these compounds above the laboratory minimum detection limits, which are below the MECP Table 3 Standards.

No evidence of free product (i.e. visible film or sheen) was observed during Palmer's drilling program.

### 6.2 Ground Water Analytical Results

The laboratory certificate of analysis of the groundwater samples are included in **Appendix C**. In total, three (3) ground water samples (one (1) ground water sample collected during initial monitoring event and two ground water samples collected during second monitoring event) were collected and analyzed for PHCs, VOCs, and Metals parameters. The remaining two (2) ground water monitoring wells remained dry and were unable to be sampled and analyzed.

During the initial ground water sampling event conducted on April 17, 2020, one (1) ground water sample was collected and analyzed for PHCs, VOCs, and Metals parameters. The remaining three (3) ground water monitoring wells remained dry and were unable to be sampled and analyzed.

The analytical result of the groundwater sample analysed for VOCs and Metals did not detect any of these compounds above the laboratory minimum detection limits, which are below the MECP Table 3 Standards.

The analytical result of the groundwater sample analysed for PHCs detected PHC Fraction F3 above the MECP Table 3 Standards, as follows:

**Table 4. Ground Water Exceedances**

MONITORING WELL ID	DATE MONITORED (M-D-Y)	PARAMETER	GROUND WATER CONCENTRATION (µg/L)	TABLE 3 CRITERIA (µg/L)
BHM1-1	04-17-20	PHC Fraction F3 (C16-C34)	860	500

The ground water exceedance is likely a result due to the presence of sediment contained in the water sample, which can bias the PHC results. Hydrocarbon particles are known to adhere to sediment particles and when a large volume of sediment is present in the collected ground water sample, a false positive can be detected during laboratory analysis.

Due to the presence of sediment in the initial ground water sample that was collected, an additional ground water sampling event was conducted on May 13, 2020. One (1) ground water sample was recollected from BHM1-1 using low-flow sampling methodologies to re-evaluate the PHC Fraction F2-F4 concentrations in ground water and minimize the collection of sediment in the ground water sample. One (1) additional ground water sample was collected and analyzed for PHCs, VOCs, and Metals parameters at BHM1-2. The remaining two (2) ground water monitoring wells remained dry and were unable to be sampled and analyzed.

The analytical result of the groundwater samples analysed during the second monitoring event for PHCs, VOCs and Metals did not detect any of these compounds above the laboratory minimum detection limits, which are below the MECP Table 3 Standards. Therefore, Palmer was able to verify that the presence of sediment in the initial ground water sample collected at BHM1-1 caused a biased PHC Fraction F3 result.

No evidence of free product (i.e. visible film or sheen) was observed during Palmer's sampling program.

## 7. Conclusions

Based on the findings of the Phase II ESA and historical environmental investigations conducted on the Site, laboratory analyses revealed that all of the measured contaminant concentrations in soil and groundwater complied with the Table 3 criteria for RPI property uses with medium-fine textured soils in a non-potable ground water condition.

In conclusion, based on the aforementioned findings, no appreciable impacts to the subsurface or other environmental concerns have been identified in association with the subject property based on our Phase II ESA. Therefore, in our opinion, no further actions are currently warranted.

## 8. Limitations of Report

This report was prepared by Palmer for the account of LC Development Group (LCDG Inc.) in accordance with the professional services agreement.

The conclusions and recommendations detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations.

The nature of the sampling works makes it possible that contrary conditions may be identified in locations which were not sampled. However, it does suggest that the conditions will be localized and not extensive. The soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations made during drilling and therefore should not be interpreted as exact planes of geological change.

The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects Palmer's best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Palmer accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

Unless stated otherwise in this report, provided that the report is still reliable, and less than 12 months old, Palmer may issue a third-party reliance letter to parties, client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Palmer's report, by such reliance agree to be bound by our proposal and Palmer's standard reliance letter. Palmer's standard reliance letter indicates that in no event shall Palmer be liable for any damages, howsoever arising, relating to third-party reliance on Palmer's report. No reliance by any party is permitted without such agreement. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Palmer.

The original of the technology-based document sent herewith has been authenticated and will be retained by Palmer for a minimum of five years. Since the file transmitted is now out of Palmer's control and its integrity can no longer be ensured, no guarantee may be given with regards to any modifications made to this document.

## 9. Certification

This report was prepared by Chloe Stephenson, B.A., EPT, who is currently an Environmental Scientist with Palmer in the Toronto Office. She has experience numerous Phase I ESAs at various land use types, and conducting soil and ground water sampling procedures in accordance with Ontario Regulation 153/04 and 511/09 and the CSA Z768-01 and Z769-00 environmental protocols. Chloe is a recognized Environmental Professional (in training) with Eco Canada.

This report was reviewed by Sarah Sipak, B.Sc., an Environmental Due Diligence Team Lead in the Toronto office of Palmer. She has over ten years' experience conducting Phase I and II ESAs, soil and ground water sampling, and site remediation in accordance with Ontario Regulation 153/04 and 511/09, the CSA Z768-01 and Z769-00 environmental protocols, the Consulting Engineers of Ontario's Generally Accepted Standards for Environmental Investigations, and the Canadian Mortgage and Housing Corporation (CMHC) environmental site investigation procedures for mortgage loan insurance. The aforementioned ESAs have covered all land use types across Canada. Sarah also has numerous years of experience in preparing and filing Record of Site Conditions (RSCs) with the Ministry of the Environment, Conservation and Parks (MECP).

This report was reviewed by Bobby Katanchi, M.Sc., P.Geo., QP<sub>ESA</sub>, a Senior Hydrogeologist in the Toronto Office of Palmer, with a Masters of Science Degree in Hydrogeology, and is a recognized Professional Geoscientist in Ontario since 2013. Bobby has conducted and managed over 50 of environmental investigations including Phase One ESAs, Phase Two ESAs, and various site remediation projects across Ontario. Bobby is a Qualified Person (QP<sub>ESA</sub>) under the MECP O.Reg. 153/04 as amended.

**Prepared By:**



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Chloe Stephenson, B.A., EPT  
Environmental Scientist

**Reviewed By:**



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Sarah Sipak, B.Sc.  
Environmental Due Diligence Team Lead



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Bobby Katanchi, M.Sc., P.Geo. QP<sub>ESA</sub>  
Senior Hydrogeologist

## 10. References

- Chapman and Putnam, The Physiography of Southern Ontario, 1984;
- The Ontario Geological Survey, 1990;
- The Ontario Geological Survey, 2003;
- Phase I Environmental Site Assessment, 206105 Highway 26, Meaford, Ontario, Golder, 2020; and,
- ALS Environmental Laboratory Analytical Results; and,
- Google Earth, 2020.

# Figures



# **Appendix A**

## **Borehole Logs**

# **Appendix B**

## **Results of the Soil Chemical Analysis and Grain Size Analysis**

# **Appendix C**

## **Results of the Groundwater Chemical Analysis**