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Phase Two Environmental Site Assessment

222-228 Barton Street East
and
255-265 Wellington Street North
Hamilton, Ontario

Prepared for:

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File: 19239

September 17, 2018

EXECUTIVE SUMMARY

Landtek Limited (Landtek) is pleased to submit the findings of the Phase Two Environmental Site Assessment (ESA) report for the property located at 222-228 Barton Street East and 255 265 Wellington Street North in Hamilton, Ontario ("the Phase Two Property" or "the Site"). The work was initiated following authorization to proceed from Ms. Amber Lindsay of 467052 Ontario Limited, Urban Solutions (the Client) in July of 2019.

The Phase Two ESA was completed in general accordance with CSA Standard Z769-00 as well as current guidelines described in Ontario Regulation 153/04 as amended. The current soil and groundwater quality standards and regulations came into effect in 2011 (Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, April 15, 2011). The Phase Two ESA covers physical sampling of soils and groundwater and chemical analyses where potential risks of environmental liability are evident from previous findings or past use of the property.

This Phase Two ESA has been completed to support the preparation of a Record of Site Condition (RSC) for the Phase Two Property in accordance with Ontario Regulation 153/04 (2011) ("O. Reg. 153/04").

SITE DESCRIPTION

The current land-use for the Site is zoned as commercial which is consistent with the zoning of the area (residential and commercial usage), while the intended land-use for the property is reported to be residential. O. Reg. 153/04 stipulates that for a property, the Site Condition Standards (SCS) that are applicable to the property are the standards that are applicable to the most sensitive type of property use, in this case "residential" is the most sensitive land use, therefore for the purpose of this Phase Two ESA, the more stringent land-use (i.e., "residential") is considered as the intended land-use.

The Phase Two Property is generally rectangular in shape and comprises an area of 0.39 hectares. The Phase Two Property is bounded by Barton Street East to the north (followed by institutional properties); Wellington Street North to the east (followed by a vacant lot and residential); a parking lot to the southwest and residential to the southeast street); and a parking lot and commercial properties. The Phase Two Property is currently utilized as a vacant lot, with no buildings or structures present.

SUMMARY OF WORK PLAN

In January of 2019, Landtek was retained by the Client, to prepare a Phase One ESA report for the Site, titled "Phase One Environmental Site Assessment, 222-228 Barton Street East and 255-265 Wellington Street North Hamilton, Ontario, dated January 2019" (Phase One ESA). The Phase One ESA was conducted to assess the environmental liability, if any, associated with the Site.

The findings of the Phase One ESA identified Potentially Contaminating Activities (PCA) and corresponding areas of potential environmental concern (APEC) and associated contaminants of potential concern (CPC) at the Site. These PCAs, APECs and CPCs are related to:

- Former fuel oil AST at the former residence at 265 Wellington St. N. spill and remediation reported to the TSSA (APEC 1);
- Former fuel oil AST at the former residence at 255 Wellington St. N., based on Site visit and observation of fill pipe (APEC 2A);
- Presence of fill of unknown quality imported, at various depths across the Phase One Property backfill of the former buildings on Site from 1875 to the 1990s (APEC 3);
- North of the Phase Two Property was a service station, the 1964 FIP identify fuel underground storage tanks on the neighbouring property (APEC 2B);
- South of the Phase Two Property, the 1964 FIP of P.B. Yate Machinery identified a fuel underground storage tanks on a neighbouring property (APEC 4A);
- The 1964 FIP identified a former auto wrecking yard to the northwest of the Site on the neighbouring property (APEC 5A);
- The 1964 FIP identified a former autobody garage, east of the Site on a neighbouring property (APEC 4B); and,
- The 1947 and 1964 FIPs identified Canada Steel was steel manufacturing, north of the Site on the neighbouring property (APEC 5B).

Based on the results of the Phase One ESA, a Phase Two ESA was recommended to investigate the areas of potential environmental concern identified. The investigation included sampling of soil and groundwater on the Phase Two Property.

Based on the Areas of Potential Environmental Concern (APECs) identified in the Phase One ESA, a program of soil sampling and chemical analysis for inorganic and organic parameters, including petroleum hydrocarbons (PHC), metals and inorganic parameters (M&I), polyaromatic hydrocarbons (PAH), and volatile organic compounds (VOCs) [collectively referred to as contaminants of concern (COCs)], was proposed.

Seven (7) boreholes (BH(MW)1, BH(MW)2, BH(MW)3, BH(MW)4, BH5, BH6 and BH7) were drilled on the Site in August of 2019, as shown on **Figure 3**; Four (4) boreholes were installed as groundwater monitoring wells (BH(MW)1, BH(MW)2, BH(MW)3, and BH(MW)4). The boreholes were advanced using a track mounted CME 75 drill rig and final borehole depths of between 3.0 m (borehole BH7) and 7.6 m (boreholes BH(MW)2 and BH(MW)3) below existing pavement surface were achieved and were established based on the subsurface conditions and likelihood of groundwater being encountered.

Selected soil samples from the boreholes were obtained and submitted for laboratory analysis from the native soils and fill material for the COCs identified based on field-screening vapour measurements and/or field observations.

Laboratory analysis was carried out by ALS Environmental (ALS). The laboratory is accredited by the Canadian Association for Laboratory Accreditation (CALA). The parameters for which samples were analysed were selected based on a Sampling and Analysis Plan (SAP) and field conditions encountered.

Soil and groundwater samples were analysed for selected contaminants CPCs that included:

- petroleum hydrocarbons (PHCs), including benzene, toluene, xylenes, and ethylbenzene (collectively referred to as BTEX);
- volatile organic compounds (VOCs);
- polyaromatic hydrocarbons (PAHs) and,
- metals and inorganics (including calcium and magnesium); hydrides (including arsenic, antimony, selenium); and Other Related Parameters (ORPs) (including boron (hot water soluble), chloride, cyanide, electrical conductivity (EC), sodium absorption ratio (SAR), hexavalent chromium, nitrate/nitrogen, mercury, methyl mercury, and pH).

The Site Condition Standards (SCS) adopted for this assessment were the Ontario Regulation 153/04 (O. Reg. 153/04) *Table 3 SCS Full Depth Generic Site Condition Standards in a Potable Ground Water Condition and Residential/Parkland/Institutional (RPI) property use (O. Reg. 153/04 Table 2 SCS)* were selected as the applicable standards for the Phase Two Property.

All field work was carried out in accordance with standard quality assurance / quality control procedures as discussed in the report and the quality control samples analysed included duplicates and trip blanks.

CONCLUSIONS

Based on the available background information and testing completed during the course of this investigation, the findings and recommendations of the Phase Two ESA are summarized as follows:

Soil samples tested for PHC F1 to F4, VOCs, PAHs, and metals and inorganics (including hydrides and ORPs) were below the O. Reg. 153/04 Table 3 SCS, with the exception of the following see **Figure 4**:

Sample	Depth (mbgs)	Analyses	Exceedances		
			Parameter	Sample Results	Table 3 SCS**
MW1-2	0.7 to 1.4	M&I	Lead SAR [1]	**200** µg/g **16.1**	120 µg/g 5
MW1-3	1.5 to 2.1	PAHs	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	**0.822** µg/g **0.755** µg/g **1.04** µg/g **0.124** µg/g **1.79** µg/g **0.521** µg/g	0.63 µg/g 0.3 µg/g 0.78 µg/g 0.1 µg/g 0.69 µg/g 0.48 µg/g
MW3-1	0.0 to 0.6	M&I	Lead	**129** µg/g	120 µg/g
BH5-1	0.0 to 0.6	M&I	Conductivity	**1.74** mS/cm	0.7 mS/cm

Sample	Depth (mbgs)	Analyses	Exceedances		
			Parameter	Sample Results	Table 3 SCS**
BH6-1	0.0 to 0.6	M&I	SAR Boron (B), HWS	**18.6** **1.81**	5 1.5 ug/g
BH7-1	0.0 to 0.6	PAHs	Benzo(a)pyrene Dibenzo(ah)anthracene	**0.728** ug/g **0.151** ug/g	0.3 ug/g 0.1 ug/g

Groundwater samples tested for PHC F1 to F4, metals and inorganics (including hydrides and ORPs), PAHs and VOCs were below the O. Reg. 153/04 Table 3 SCS for R/P/I shallow soils in a non-potable groundwater condition in accordance with O. Reg. 153/04.

RECOMMENDATIONS

Based on the findings of the Phase Two ESA, soil did not meet the applicable O. Reg. 153/04 Table 3 SCS for R/P/I on the Site.

The fill material tested on-Site exceeded the applicable O. Reg. 153/04 Table 3 SCS for R/P/I for various parameters up to depths of approximately 2.1 m below ground surface; the native soils tested on-Site were reported to be below the applicable O. Reg. 153/04 Table 3 SCS for R/P/I.

Based on the results of this Phase Two ESA, further work is required on the Site. An appropriate remediation strategy will need to be considered to confirm the suitability of the Site for its intended development and use.

An RSC cannot be submitted based on the work completed on the Site with out Site remediation.

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APPENDICES

Appendix A: Sampling and Analysis Plan
Appendix B: Laboratory Certificates of Analysis
Appendix C: Borehole Logs

1.0 INTRODUCTION

Landtek Limited (Landtek) is pleased to submit the findings of the Phase Two Environmental Site Assessment (ESA) report for the property located at 222, 226 and 228 Barton Street East and 255, 257, 261, 263 and 265 Wellington Street North in Hamilton, Ontario ("the Phase Two Property" or theSite"), as shown on **Figure 1**. The work was initiated following authorization to proceed from Ms. Amber Lindsay of 467052 Ontario Limited, Urban Solutions (the Client) in July of 2019.

The Phase Two ESA was completed in general accordance with CSA Standard Z769-00 as well as current guidelines described in Ontario Regulation 153/04 as amended. The current soil and groundwater quality standards and regulations came into effect in 2011 (Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, April 15, 2011). The Phase Two ESA covers physical sampling of soils and groundwater and chemical analyses where potential risks of environmental liability are evident from previous findings or past use of the property.

This Phase Two ESA has been completed to support the preparation of a Record of Site Condition (RSC) for the Phase Two Property in accordance with Ontario Regulation 153/04 (2011) ("O. Reg. 153/04").

1.1 Site Description

The current land-use for the Site is zoned as commercial which is consistent with the zoning of the area (residential and commercial usage), while the intended land-use for the property is reported to be residential. O. Reg. 153/04 stipulates that for a property, the Site Condition Standards (SCS) that are applicable to the property are the standards that are applicable to the most sensitive type of property use, in this case "residential" is the most sensitive land use, therefore the more stringent land-use (i.e., "residential") is considered as the intended land-use.

The Phase Two Property has an area of approximately 0.39 hectares in size and is bound by Barton Street East to the north (followed by institutional properties); Wellington Street North to the east (followed by a vacant lot and residential); a parking lot to the southwest and residential to the southeast street); and a parking lot and commercial properties. The Phase Two Property is currently utilized as a vacant lot, with no buildings or structures present.

Figure 1 shows the general location of the Site.

1.2 Property Ownership

A Chain of Title was compiled for the Site by Ecolog ERIS. The Phase Two Property is legally described as Lot 61, Part Lot 3, 4, and 5; Hamilton, Ontario. The Site has been used for commercial and residential uses since the 1870s.

The current property owner's contact information is:
467052 Ontario Limited
105 Main Street East, Suite 501
Hamilton, Ontario
L8N 1G6

1.3 Applicable Site Condition Standards (SCS)

Under the O. Reg. 153/04, Part XV.1 of the Environmental Protection Act, the selection of SCS, against which laboratory results are compared, is based on a number of criteria. The SCS are published in the Ontario Ministry of the Environment and Conservation and Parks (MOE) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act dated April 15, 2011.

Landtek considered the following criteria for the selection of the applicable SCS for the Site:

- Land Use: The current land is zoned commercial, while the intended land-use for the property is reported to be residential. The more sensitive land-use (i.e., "residential") was considered the intended land-use;
- Potable or non-potable groundwater: Commercial and domestic water supply wells are located within the Study Area; therefore, the potable groundwater standards are applicable for the Site;
- Proximity to surface water body: The Phase Two Property is not located within 30 metres (m) of a waterbody;
- Proximity to areas of natural significance or environmentally sensitive areas: The Site is not considered to be within the proximity of an environmentally sensitive area based on the information reviewed as part of the Phase One ESA completed for the Site;
- Depth to bedrock: A property is considered a shallow soil property if one-third or more of the Phase Two Property consists of soil depths of 2 metres below ground surface (mbgs) or less. Based on the subsurface conditions observed as part of the Phase Two ESA work conducted to date, the depth to bedrock is considered to be greater than 2 m and therefore, shallow soil was not observed on the Site at the locations investigated on the Phase Two Property;
- For the purposes of this assessment the pH was found to be within the allowable limits and therefore, the Site is not considered to be an environmentally sensitive area; and,
- Soil texture: Based on the results of grain size analysis completed on the Site and the subsurface conditions encountered, the soil texture is considered to be fine textured as defined in O. Reg 153/04.

Based on the above information the Ontario Regulation (O. Reg.) 153/04 *Table 3 SCS Full Depth Generic Site Condition Standards in a Potable Ground Water Condition and Residential/Parkland/Institutional (RPI) property use (O. Reg. 153/04 Table 2 SCS)* were selected as the applicable standards for the Phase Two Property.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

A review of the Ontario Base Mapping (OBM) map (Reference Map: Ontario Base Mapping (OBM) Data, Scale 1:22,000, Ontario Ministry of Natural Resources, 2010) provided by Ecolog ERIS for the Site and a 2 km radial search from the property boundaries indicates the local topography of the land in the vicinity of the Site slopes towards the north, towards Lake Ontario, located approximately 1.2 km north of the Site. Based on the local topography, the direction of groundwater flow is inferred to be northerly.

The elevation of the Site ranges between approximately 85 metres above sea level (masl).

The properties surrounding the Phase Two Property and are commercial, institutional and residential.

Based on the Phase One ESA completed for the Site, there are no Areas of Natural and Scientific Interest (ANSIs) within 250 m of the Site.

2.2 Previous Investigations

The following environmental report was provided to Landtek for review, *Soil Verification Sampling and Analyses Aboveground Storage Tank Removal - 265 Wellington Street North, City of Hamilton, Ontario* dated July 20, 2016 Ref# 16178 prepared by Landtek Limited for 467052 Ontario.

Removal and decommissioning of the furnace oil tank was completed on April 2016 by Claybar Contracting Inc. Landtek Limited was not present on site during the removal of the tank however, removal and disposal of the following items were reportedly completed removal of 200 gallon (909.2 litre) single wall ¼'' gauge steel AST, existing piping and removed 1265 L of furnace oil and water on April 26, 2016

For the purposes of the remediation activities, chemical test results were compared against Table 3 standards for Residential/Parkland/Institutional (R/P/I) land uses in a non-potable groundwater condition as outlined in "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act"

For the purposes of the remediation, the MOE Table 3 standards for Residential/Parkland/ Institutional (RPI) land uses in a non-potable groundwater condition were used for comparison.

Chemical verification analyses included benzene, toluene, ethylbenzene, and xylene (BTEX) compounds and petroleum hydrocarbon compounds (PHC, fractions F1 to F4). Verification samples were obtained from the walls and floors of the excavations during the remediation operation.

3.0 SCOPE OF THE INVESTIGATION

The Phase Two ESA was carried out address the APECs identified in the Phase One ESA.

A summary of information on the PCAs, their locations and associated APECs identified in the Phase One ESA are shown on **Figure 2** and are presented in **Table 1**.

The boreholes/monitoring wells proposed for the Phase Two ESA corresponding to each of the APECs are also presented in **Table 1** which provides the rationale for the work proposed.

The investigation locations are shown on **Figure 3**.

Table 1: Areas of Potential Environmental Concern (APECs)

Area of Potential Environmental Concern[1]	Location of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity[2]	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern[3]	Media Potentially Impacted (Ground Water, Soil and/or Sediment)[4]
APEC 1	East central portion of Property ***PCA-A***	**28.** Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Metals, PHCs, VOC, BTEX	Soil Groundwater
APEC 2A	South portion of Property ***PCA-B***	**28.** Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Metals, PHCs, VOC, BTEX	Soil Groundwater
APEC 2B	South portion of Property ***PCA-D***	**28.** Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Metals, PHCs, VOC, BTEX	Soil Groundwater
APEC 3	Central/east portion of Property ***PCA-C***	**30**. Importation of Fill Material of Unknown Quality	On-Site	Metals, PHCs, VOC, BTEX, PAHs	Soil
APEC 4a	Northeast portion of Property ***PCA-D***	**28.** Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Metals, PHCs, VOC, BTEX, PAHs	Soil Groundwater
APEC 4b	Northeast portion of Property ***PCA-H***	**10.** Commercial Autobody Shop	Off-Site	Metals, PHCs, VOC, BTEX, PAHs	Soil Groundwater
APEC-5a	Northwest portion of Property ***PCA-F***	**46**: Rail yards, tracks and spurs	On-Site	Metals, PHCs, PAHs	Soil
APEC 5b	North portion of Property ***PCA-G***	**49.** Salvage yard including automobile wrecking	Off-Site	Metals, PHCs, VOC, BTEX	Soil Groundwater

Notes:
1 - Area of Potential Environmental Concern (APEC) means the area on, in or under the Phase Two Property where one or more contaminants are potentially present, as determined through the phase two environmental site assessment, including through,
(a) Identification of past or present uses on, in or under the phase two property, and
(b) Identification of potentially contaminating activity.
2 - Potentially contaminating activity (PCA) means a use or activity set out in Column A of Table 2 of Schedule D that is occurring in a Phase Two Study Area.
3 - Identify all contaminants of potential concern using the Method Groups as identified in the "Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011.
4 - Media Potentially Impacted refers to soil, groundwater, surface water or sediment.
Metals - metals including hydrides (As, Sb, Se, Hg)
PHCs – petroleum hydrocarbons fractions F1-F4
BTEX – benzene, toluene, ethylbenzene and xylenes
PAHs – polyaromatic hydrocarbons

4.0 METHODOLOGY

The field work for this Phase Two ESA was carried out between August 13th and September 5th, 2019.

The field work was implemented in accordance with the Sampling and Analysis Plan (SAP). The SAP was prepared based on the APEC identified on the Site and the corresponding PCAs, CPCs, and other potentially contaminating issues. Landtek proposed boreholes/monitoring wells on the Site to obtain soil samples, including near the water table and the installation of monitoring wells to obtain groundwater samples.

The analytical program presents information on the sampling locations, media sampled, sample depths and analytical parameters for which samples were analysed.

The rationale for the sampling and analysis is presented in **Section 3.0**.

Landtek retained experienced contractors for the drilling activities. Landtek field staff, were briefed prior to commencement of the field work by the Project Manager and the Project QP_{ESA}. Field staff were responsible for supervising field activities, logging the soils during the drilling activities, monitoring the depth of drilling and installation of monitoring wells, soil and groundwater sampling, and sorting and dispatch of samples under chain of custody documentation to the contract laboratory.

4.1 Drilling

As indicated in **Section 3.0**, Landtek used borehole drilling and groundwater monitoring well installations to conduct characterisation of the soil and groundwater at the Site. The details of borehole drilling and installation of groundwater monitoring wells in the boreholes are discussed in the sections below.

4.1.2 Borehole Drilling and Monitoring

Seven (7) boreholes (BH(MW)1, BH(MW)2, BH(MW)3, BH(MW)4, BH5, BH6 and BH7) were drilled on the Site in August of 2019; four (4) boreholes were installed as groundwater monitoring wells (BH(MW)1, BH(MW)2, BH(MW)3, and BH(MW)4).

Borehole locations are shown on **Figure 3**.

The boreholes were advanced using a track mounted CME 75 drill rig and final borehole depths of between 7.6 m (borehole BH(MW)7) and 9.1 m (boreholes BH(MW)5 and BH(MW)6) below existing pavement surface were achieved and were established based on the subsurface conditions and likelihood of groundwater being encountered.

The soil was logged by qualified Landtek personnel using the Unified Soil Classification System (USCS) Standard Practices for Description and Identification of Soils, Visual Manual Procedure (ASTM D2488-09a), noting stratigraphy, subsurface conditions, and any physical evidence of soil quality impacts. Borehole logs are presented in **Appendix C.**

4.2 Soil Sampling

Each borehole was logged, and information recorded including: drilling date, depth, headspace vapour concentrations, soil descriptions and measured depth to groundwater, (if encountered). Borehole soil samples were collected at discrete intervals using standard split spoon samples. Soil sampling locations were selected based on observations and field-screening (e.g., vapour readings, unique soil characteristics or visible staining).

Each soil sample taken was split into two (2) portions; one (1) portion was placed into laboratory-supplied sample jars for potential laboratory submission, and the other portion was placed in a sealable plastic bag for field-screening vapour measurement. PHC F1 and VOC samples were collected using a Terracore syringe pre-calibrated to deliver approximately 5 grams of wet weight soil and placed in laboratory-prepared methanol vials. All other soil samples, including those to be analysed for the remaining organic and metal parameters, were collected in laboratory-supplied containers.

Samples were stored on ice until delivery to ALS Environmental following standard chain-of-custody protocols. The soil samples selected for analysis were analyzed for selected COCs. The parameters included the measurement of pH which is required for the selection of the appropriate Site Condition Standards.

Borehole/monitoring well logs (**Appendix C**) provide a geologic description of overburden samples and the depths at which they were collected during the investigation.

4.3 Field Screening Measurements

Field-screening vapour measurements were conducted using an RKI Eagle 2 portable instrument fitted with two (2) sensors: one (1) for detection of hydrocarbons/combustibles and the other a photoionization detector (PID) for detection of volatile organic compounds. The instrument was supplied by Landtek and was calibrated prior to use with hexane and isobutylene span gases.

Each soil sample taken for screening was placed in a sealable plastic bag for field-screening vapour measurement. Prior to taking the field-screening vapour readings, the soil within the sealed plastic bags was agitated and allowed to equilibrate for a minimum of 30 minutes at 15°C or greater. The vapour measurements were collected by inserting the collection tube of the Eagle 2 into the plastic bag. The peak headspace readings were recorded and are shown on the borehole logs provided in **Appendix C**.

The frequency of field screening measurements during the drilling investigation was approximately 0.6 m (~2 ft) intervals while the frequency of field screening during test pitting occurred at each change of stratigraphic units.

4.4 Groundwater: Monitoring Well Installation

Four (4) groundwater monitoring wells (BH(MW)1, BH(MW)2, BH(MW)3, and BH(MW)4) were installed on the Site, to a maximum drilling depth of approximately 7.6 m bgs.

The monitoring wells were constructed using polyvinyl chloride (“PVC”) well screens (3m lengths) and PVC riser pipe finished at grade. The well screens were installed in an attempt to straddle the apparent water table (if encountered). The elevations of the ground surface and the top of the

groundwater monitoring wells were determined via an elevation survey (as discussed in **Section 4.7**). All wells were monument with flush mounted protective steel caps/casings.

Monitoring wells were installed in accordance with O. Reg. 903, as amended, for the purposes of assessing groundwater quality at the Site. Monitoring wells were constructed using 51 mm inside diameter (ID) Schedule 40 polyvinyl chloride (PVC) pipe. The well screens were installed to attempt to straddle the apparent water table (if encountered). All sections were machined with fine threaded flush joints to avoid the use of PVC glue and primer for connections as these bonding materials have the potential of introducing traces of organic contaminants.

The screened sections of PVC pipe were manufactured with No. 10 (0.25 mm) machined slotting. Solid lengths of PVC pipe were used above the screened interval (i.e., riser pipe). Cleaned silica sand (10/20 size) was placed around the screen to a minimum level of 0.10 m above the top of the screen. Bentonite (hydrated with tap water) was used to backfill the borehole above the sand to create a well seal. Monitoring wells were designed to be installed with screens completed in discrete lithology units to investigate potential groundwater impacts within these units. Groundwater monitoring wells were finished with locking J-Plug caps and completed using flushmount protective casings.

Monitoring well locations are shown on **Figure 3**. Monitoring well construction details are presented in the borehole logs presented in **Appendix C**.

4.5 Groundwater Sampling

4.5.1 Monitoring Well Development

Prior to sampling, monitoring wells were developed using a foot-valve inertial pump technique to minimize sediment in the well. Well development was considered complete when a minimum of three (3) well volumes had been purged or when the well was purged to dryness at least three (3) times after a minimum 90% water level recovery.

4.5.2 Water Level Measurements

The depth to groundwater and total well depths were measured using a clean and calibrated electronic interface probe. The relative elevations were calculated by subtracting the measured groundwater depth from the surveyed top of the casing elevation.

To prevent cross-contamination, the interface probe was cleaned with a laboratory-grade phosphate-free detergent and distilled water solution, before each use and in between each well. All water level measurements were taken from the top of the well riser pipe.

4.5.3 Groundwater Sample Collection

Groundwater sampling was carried out on September 5th, 2019. Samples were obtained from all four (4) newly installed monitoring wells (BH(MW)1, BH(MW)2, BH(MW)3, and BH(MW)4). During the sampling, groundwater samples were collected using a low-flow peristaltic pump, with dedicated tubing installed in each of the monitoring wells. This method minimizes the velocity of the formation water entering the well screen, as the drawdown is kept to a minimum (i.e., less than 10 % of the initial water column height) by adjusting the pumping rate. Sample filtering was conducted by Landtek.

Samples were placed into laboratory-supplied containers and stored on ice in coolers for transport and delivery to ALS Environmental under a chain of custody protocol.

4.6 Analytical Testing

Laboratory analysis was carried out by ALS Environmental. The parameters for which samples were analysed were selected based on the SAP and field conditions encountered. The laboratory is accredited by the Canadian Association for Laboratory Accreditation (CALA). The methods used for analysis were consistent with those stipulated in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. The Analytical Program and laboratory certificates are provided in **Appendix C**.

4.7 Elevation Surveying

Elevations at the borehole locations were established by Landtek relative to site measurements using the top elevation of the asphalt pavement at the northeast location of the Site. The geodetic elevation of the benchmark is 85 meters above sea level (masl).

4.8 Quality Assurance and Quality Control (QA/QC) Measures

All field work was performed following Landtek's Standard Operating Procedures (SOPs), which were developed in accordance with O. Reg. 153/04, as amended and included the following:

- Appropriate measures to avoid cross contamination and carry out decontamination where necessary, collection of all samples in laboratory provided containers, and placement of containers in coolers containing ice;

- The SAP, field conditions, as documented on the borehole logs and results of field screening, were reviewed to confirm that the appropriate samples were selected for laboratory analysis and that samples were scheduled for analysis of the required chemical parameters;

- The samples listed on the chain-of-custody form were cross-checked with the samples being shipped to the contract laboratory. A further check was carried out to ensure that the relevant analytical parameters had been requested for analysis;

- All coolers contained ice packs along with the sample containers to maintain the minimum temperature required on arrival at the contract laboratory;

- QA/QC samples were collected as required by O. Reg. 153/04 and included the following:

    - Duplicate soil and groundwater samples collected at a frequency of a minimum of 10% i.e. one duplicate for every ten (10) samples submitted for laboratory analysis;

    - A field blank was dispatched to the contract laboratory with the groundwater samples.

- Duplicate soil samples were collected by splitting the sample collected into two equal volumes prior to placing them in a primary and duplicate sample container. Duplicate groundwater samples were collected by filling a duplicate sample container immediately

following the collection of the primary sample for each of the sample bottle types. The labelling on the duplicate samples were such that they were considered “blind” duplicates by the laboratory.

5.0 REVIEW AND EVALUATION

5.1 Geology

Geological and Hydrogeological information sources were reviewed to determine the nature of the subsurface strata on Site.

The Ontario Geology Survey has a web application, OGS Earth, which provides geoscience data, collected by the Mines and Minerals division, which can be viewed using user-friendly geographic information programs such as Google Earth. The Surficial Geology and Bedrock Geology applications were reviewed to determine the geologic characteristics mapped at the Site. A review of this data as well as MOE water well records indicate that the predominant Quaternary geology at the Site likely consists of sand and gravelly sand and gravel underling the Site.

The Bedrock geology at the Site likely consists of sandstone, shale, dolostone and/or siltstone of the Lockport Formation.

5.2 Groundwater: Elevations and Flow Direction

Based on the Site geology information presented in **Section 5.1**, the main hydrogeological unit that was investigated at the Phase Two Property was the shallow groundwater table, present within the overburden on the Site.

The measured groundwater elevations ranged from 75.81 meters above mean sea level (masl) masl to 81.28 masl, as summarized below in **Table 2**.

Table 2: Depth to Groundwater and Groundwater Elevation Summary

Location	Depth to Groundwater (meters bgs)	Relative Elevation of Groundwater (mASL)
BH(MW)1	4.32	79.79
BH(MW)2	8.26	75.81
BH(MW)3	2.95	81.28
BH(MW)4	6.50	77.85

The inferred groundwater flow direction is towards the north.

Shallow ground water direction may be influenced by trenches for municipal infrastructure, underground utilities, conduits, structures, variations in subsurface strata, and changes in local topography.

5.3 Soil: Field Screening

The field-screening vapour readings are presented in the borehole logs (**Appendix C**).

Results of field screening ranged from 0 ppm (non-detect) (various) to 85 ppm, measured at BH(MW)1.

6.4 Soil Quality

The results of the laboratory analysis of the soil samples analysed have been compared with the Table 3 SCS (residential, medium to fine textured soils) and are presented in **Table 3**. Laboratory certificates are presented in **Appendix B**.

The schedule of chemical testing and the summary of test results for soils are shown in **Table 3**. Samples were selected based on location and depth of potential areas of concern as well as olfactory or vapour reading indicators, where possible.

Table 3: Schedule of Chemical Analyses and Summary of Test Results for Soils

Sample	Depth (mbgs)	Analyses	Exceedances		
			Parameter	Sample Results	Table 3 SCS**
MW1-2	0.7 to 1.4	M&I	Lead SAR [1]	**200** µg/g **16.1**	120 µg/g 5
MW1-3	1.5 to 2.1	PAHs	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	**0.822** µg/g **0.755** µg/g **1.04** µg/g **0.124** µg/g **1.79** µg/g **0.521** µg/g	0.63 µg/g 0.3 µg/g 0.78 µg/g 0.1 µg/g 0.69 µg/g 0.48 µg/g
MW1-7	4.5 to 5.1	VOCs, and PHCs F1-F4/BTEX	--	**No exceedances**	--
MW2-1	0.0 to 0.6	PAHs	--	**No exceedances**	--
MW2-2	0.7 to 1.4	M&I	--	**No exceedances**	--
MW2-7	6.0 to 6.7	VOCs and PHCs F1-F4/BTEX	--	**No exceedances**	--
MW3-1	0.0 to 0.6	M&I	Lead	**129** µg/g	120 µg/g
MW3-3	1.5 to 2.1	Lead	--	**No exceedances**	--
MW3-5	6.0 to 6.7	VOCs, and PHCs F1-F4/BTEX	--	**No exceedances**	--
MW4-2	0.7 to 1.4	M&I	--	**No exceedances**	--
MW4-7	5.4 to 6.0	VOCs, and PHCs F1-F4/BTEX	--	**No exceedances**	--
MW4-700 (field duplicate of MW4-7)	5.4 to 6.0	VOCs, and PHCs F1-F4/BTEX	--	**No exceedances**	--
BH5-1	0.0 to 0.6	M&I	Conductivity[1]	**1.74** mS/cm	0.7 mS/cm

Sample	Depth (mbgs)	Analyses	Exceedances		
			Parameter	Sample Results	Table 3 SCS**
BH5-3	1.5 to 2.1	M&I	--	**No exceedances**	--
BH6-1	0.0 to 0.6	M&I	SAR[1] Boron (B), Hot Water Ext.	**18.6** **1.81**	5 1.5 ug/g
BH7-1	0.0 to 0.6	PAHs	Benzo(a)pyrene Dibenzo(ah)anthracene	**0.728** ug/g **0.151** ug/g	0.3 ug/g 0.1 ug/g
BH7-100 (field duplicate of BH7-1)	0.0 to 0.6	PAHs	--	**No exceedances**	--
BH7-2	0.7 to 1.4	M&I	--	**No exceedances**	--
BH7-200 (field duplicate of BH7-2)	0.7 to 1.4	M&I	--	**No exceedances**	--
BH7-3	1.5 to 2.1	PAHs	--	**No exceedances**	--

****** Sample results compared with *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act', April 2011. Table 3 Residential/Parkland/Institutional land use standards in medium to fine soils,*

1 *Exceedances of SAR and conductivity are likely related to the application of de-icing and salting substances on Barton and Wellington located immediately adjacent to the Site, to ensure that these roadways are kept free of snow and ice during the winter months. In accordance with Section 2 of Ontario Regulation 339 of the Revised Regulations of Ontario, 1990 (Classes of Contaminants – Exemptions), the Standards for SAR in this circumstance (i.e. application of substances for snow and ice melt) is deemed not to be an exceedance of the Reg. 153/04 Standards. All other reported SAR and conductivity concentrations were below the applicable O. Reg. 153/04 Table 3 SCS.*

M&I – Metals and Inorganics
PHC F1-F4 – Petroleum Hydrocarbons Fraction 1 to Fraction 4 (PHC F1-F4)
BTEX – Benzene, Toluene, Ethylbenzene, and Xylenes
PAHs – Polycyclic Aromatic Hydrocarbons
SAR – Sodium Absorption Ratio
VOCs – Volatile Organic Compounds

5.4 Groundwater Quality

The results of the groundwater analysis from the four (4) monitoring wells sampled (BH(MW)1, BH(MW)2, BH(MW)3, and BH(MW)4) were reported below the O. Reg. 153/04 Table 3 SCS (residential, medium to fine textured soils).

The schedule of chemical testing and the summary of test results for groundwater are shown in **Table 4**.

Table 4: Schedule of Chemical Analyses and Summary of Test Results for Groundwater

Sample	Sample Date	Analyses	Exceedances		
			Parameter	Sample Results	Table 3 SCS**
MW1	September 6th, 2019	M&I, PHCs F1-F4/BTEX, PAHs and VOCs	--	**No exceedances**	--
MW2	September 6th, 2019	M&I, PHCs F1-F4/BTEX, and VOCs	--	**No exceedances**	--
MW3	September 6th, 2019	M&I, PHCs F1-F4/BTEX, and VOCs	--	**No exceedances**	--
MW4	September 6th, 2019	M&I, PHCs F1-F4/BTEX, and VOCs	--	**No exceedances**	--
MW100 (field duplicate of MW1)	September 6th, 2019	M&I, PHCs F1-F4/BTEX, and VOCs	--	**No exceedances**	--

****** Sample results compared with *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act', April 2011. Table 3 Residential/Parkland/Institutional land use standards*

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

5.5 QA/QC Results

The following pairs of duplicate samples were submitted to the laboratory for analysis of selected COCs.

Duplicates: Three (3) soil and one (1) groundwater duplicate samples were analysed for a range of COCs.

- Primary soil sample MW4-7 and duplicate sample MW4-700;
- Primary soil sample BH7-1 and duplicate sample BH7-100;
- Primary soil sample BH7-2 and duplicate soil sample BH7-200; and,
- Primary groundwater sample MW1 and duplicate sample MW100.

The Relative Percent Differences (RPD) were calculated between the parent and duplicate samples using the following formula:

$$\left|\frac{C_o - C_s}{(C_o + C_s)/2}\right| \times 100$$

Where:

Co = concentration of the original/parent sample; and,
Cs = concentration of the duplicate sample.

Groundwater RPDs ranged from 0% to 20%, while soil RPDs ranged from 25% to 0%. Based on the absolute concentrations and the nature of the matrix, the RPD results between all the primary and duplicate samples analysed are considered to be acceptable.

The results of the trip blank (September 6th) analysed indicated that there was no interference from extraneous sources of contamination during handling and transport of the samples.

The reported recoveries in the matrix spike analysed along with the batch of groundwater samples were between 86.3 % and 129.4 % which is considered to be acceptable and demonstrates that there was a minimum loss of volatiles during the sampling, handling and transport of samples to the laboratory.

In addition to the field quality control samples, the analytical laboratory has its internal QA/QC programs to verify the acceptance of the data generated. The results of the laboratory QA/QC program are presented in the Laboratory Certificate of Analysis provided in **Appendix C**.

The overall QA/QC results are considered to be acceptable and support the reliability of the results of the field samples analysed.

6.0 RESULTS AND CONCLUSIONS

6.1 Soil Quality

The fill material tested on-Site exceeded the applicable O. Reg. 153/04 Table 3 SCS for R/P/I for various parameters up to depths of approximately 2.1 m below ground surface; the native soils tested on-Site were reported to be below the applicable O. Reg. 153/04 Table 3 SCS for R/P/I.

6.2 Groundwater Quality

The results of the groundwater analysis from the four (4) monitoring wells sampled were reported to be below the O. Reg. 153/04 Table 3 SCS.

6.3 Phase Two Property Certification

Based on the findings of the Phase Two ESA, soil did not meet the applicable O. Reg. 153/04 Table 3 SCS for R/P/I land use at the Site.

Based on the results of this Phase Two ESA, further work is required on the Site. An appropriate remediation strategy will need to be considered to confirm the suitability of the Site for its intended development and use.

Based on the results of this Phase Two ESA, an RSC cannot be filed with the MOE without further study and/or remediation.

Given the soil results demonstrate exceedances of the O. Reg. 153/04 Table 3 SCS for the COCs, Certification of the Phase Two Property is deemed not acceptable at this time by Landtek.

6.4 Signatures

We trust this report is satisfactory for your purposes. If you have any questions regarding our submission, please do not hesitate to contact this office.

Yours truly,

LANDTEK LIMITED

Katie McIsaac

Paul Blunt, P.Eng., QP_{ESA}

7.0 LIMITATIONS

This report was prepared for the exclusive use of the Client. It is intended to provide an assessment of the soil and groundwater conditions with respect to potential contamination prevailing at the time of the assessment. Any use of this document by any party other than the Client is at the sole risk of such user. Any reliance upon this report by any party other than the Client requires the prior written approval of Landtek Limited.

Landtek does not provide any warranty, expressed or implied, that this assessment has identified all potential contaminants at the Site or that the Site is free from any and all contamination from past or current practices other than noted, nor that all issues of environmental compliance have been addressed. The assessment of environmental conditions and potential hazards at the Site has been made using the historical information that supported the preparation of the Phase Two Environmental Site Assessment, on which the scope of this investigation was based, as well as the results of chemical analysis of soil and groundwater samples collected at the tested locations at the time of this investigation. The report must be considered in its entirety and no assurance is made regarding changes in conditions subsequent to the time of investigation.

The Site conditions have been inferred based on conditions observed at a limited number of sampling locations in accessible areas; however, it should be noted that conditions between and beyond sampling locations may vary. In addition, the assessment is dependent upon the accuracy of the analytical data generated through sample analysis and is limited to determining the presence of contaminants for which analysis have been conducted. Findings derived from this Phase Two Environmental Site Assessment are limited and Landtek Limited cannot state that areas of the Site, or neighbouring properties, or portion thereof, are unaffected by the contaminants of concern. The Client still bears risk that such contaminants may be present on, or may migrate to or off the property after the time of this investigation. Landtek Limited is not responsible for any follow-up action and /or costs.

In evaluating the Property, Landtek Limited has relied in good faith on information provided by individuals and companies noted in this report. We assume that the information provided is factual and accurate and Landtek Limited has not independently confirmed any such information.

8.0 REFERENCES

- Ontario Regulation 153/04, as amended by O. Reg. 511/09;
- Provincial Topographic Map – Ontario Base Mapping Data, Ontario Ministry of Natural Resources, 2010;
- Area of Natural and Scientific Interest Map, Ontario Ministry of Natural Resources, March 2017;
- The Surficial Geology of Southern Ontario Map, Ontario Geological Survey, 2010;
- Physiography of Southern Ontario Map, Ontario Geological Survey, 2007;
- *Bedrock Geology of Ontario, Southern Sheet*; Ontario Geological Survey, Map 2544, Scale 1: 1,000,000, 1991; and,
- *Quaternary Geology of Southern Ontario, Southern Sheet*, Map 2556, Scale 1:1,000,000, Ministry of Northern Development and Mines, Queen's Printer for Ontario, 1991.

Websites

http://maps.google.ca/maps
http://map.hamilton.ca/iMapper.aspx
https://library.mcmaster.ca/maps/airphotos/
https://www.ontario.ca/page/make-natural-heritage-area-map
http://www.giscoeapp.lrc.gov.on.ca/matm/Index.html?site=Make_A_Topographic_Map&viewer=MATM&locale=en-US

http://www.gisapplication.lrc.gov.on.ca/services/COSINE/Remote/095a080b_e87a_43a8_8579_dba14759aa7d.html?print=true

LIMITATIONS OF THE REPORT

This report was prepared for the sole use of the Client and their legal counsel and is intended to provide an evaluation of the current environmental conditions at the subject site. Any use that a third party makes of this report, or decisions made based on it, are the responsibility of the third party. Landtek Limited accepts no responsibility for damages of any type suffered by the third party as a result of actions or decisions made based on this report.

The conclusions and recommendations given in this report are based on information determined at the borehole locations. Subsurface conditions, ground water conditions and contaminant concentrations between and beyond the boreholes may be different from those encountered at the borehole locations, and conditions may become apparent during construction that could not be detected or anticipated at the time of the subsurface investigation. It is recommended practice that Landtek be retained during construction to confirm that the subsurface conditions throughout the site are consistent with the conditions encountered in the boreholes.

The conclusions and recommendations given in this report are based on information obtained from various sources noted, subsurface investigation, and a visual examination of the site. It is based on the conditions of the subject property at the time of the field investigation supplemented by a review of historical information to assess environmental conditions at the site reported. Landtek assumes that information provided by others is factual and accurate, and accepts no responsibility for any deficiency, misstatement, of inaccuracy in this report from information provided by others.

This assessment should not be considered a comprehensive audit that outlines all environmental liabilities or eliminates all risks of encountering environmental problems in some portions of the site. There is no warranty expressed or implied by this report concerning the status of the study site.

The report has been prepared in accordance with generally accepted environmental study and/or engineering practices. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.

The objective of this report was to assess the environmental conditions at the site, with respect to existing environmental regulations within the applicable jurisdiction. Compliance of past owners with applicable local, provincial and federal government laws and regulations was not included in our contract for services.

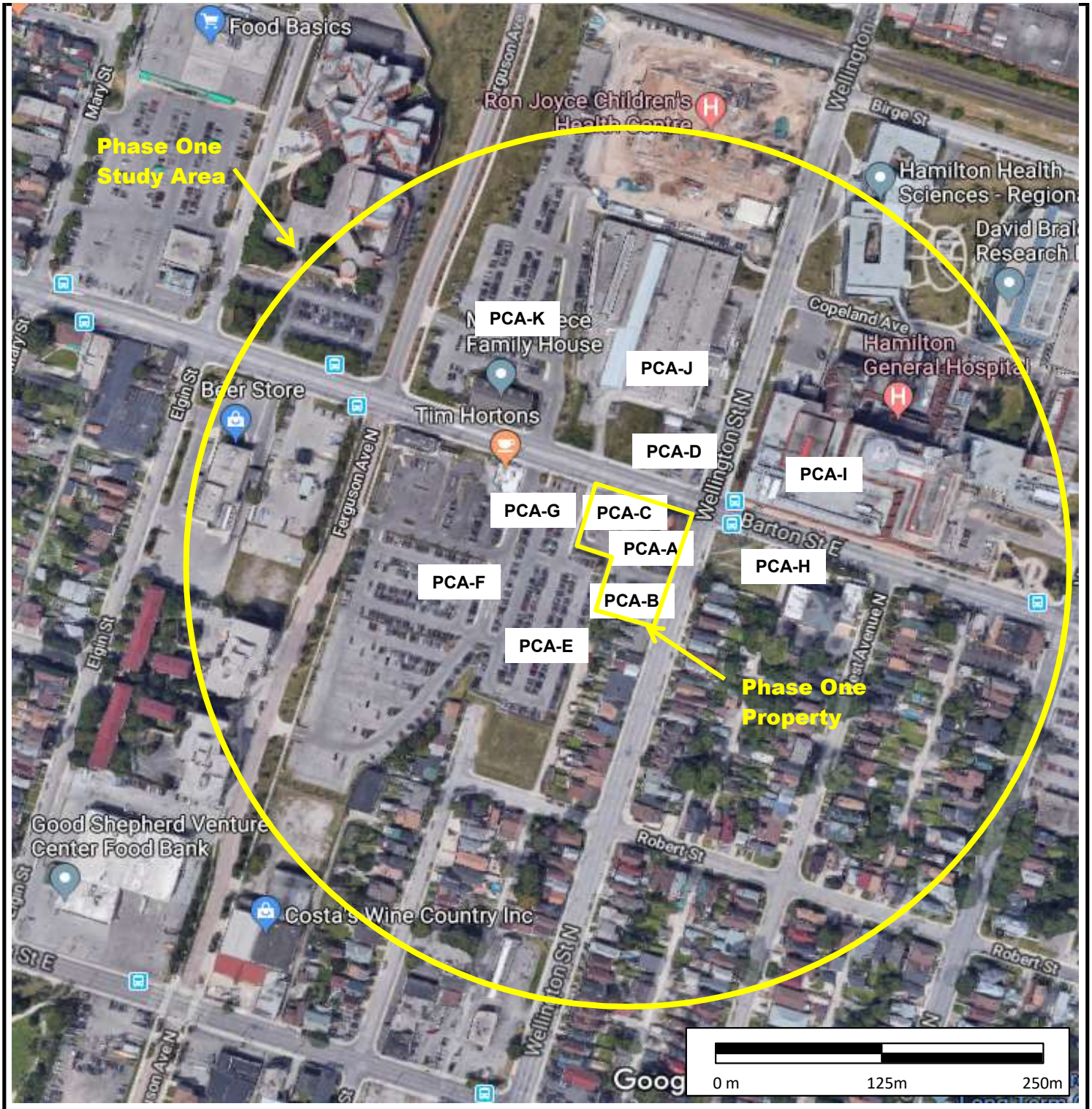
The site history performed herein relies on information supplied by others, such as local, provincial and federal agencies as other consultants. No attempt has been made to independently verify the accuracy of such information, unless specifically noted in our report.

Should the site conditions change, or additional background data become available after this report has been issued, Landtek Limited should be made aware of the information and be given an opportunity to reassess the findings if it relates to environmental concerns.

Qualifications

Investigative assessment work was conducted by Ms. Nicole Harper, H.B.Sc., who has over 10 years of related environmental assessment experience including completion of numerous Phase One and Two ESA's and Site Remediation activities.

Mr. Paul J Blunt, P.Eng. is a Senior Environmental Engineer with Landtek and has conducted and supervised Phase One ESAs for more than 20 years. Mr. Blunt obtained a B.Sc. in Chemical Engineering from University of Windsor in 1987 and is a licensed Professional Engineer in the Province of Ontario. Mr. Blunt has conducted and supervised Phase One Environmental Site Assessments over 1500 environmental site assessments on a variety of agricultural, residential, industrial, commercial and industrial properties. Mr. Blunt also has extensive experience in conducting Phase Two Environmental Site Assessments and is therefore familiar with how to assess potential concerns identified during the Phase One ESA. Mr. Blunt has conducted and supervised environmental projects throughout Canada, the United States and Australia.



LEGEND

Potentially Contaminating Activities (PCAs) as per O.Reg. 153/04

PCA-A Former residential fuel AST, On-Site PCA#28.
PCA-B Former residential fuel AST, On-Site PCA#28.
PCA-C Presence of fill of unknown quality imported, On-site PCA#30
PCA-D, Former service station fuel UST, off-site PCA#28.
PCA-E Former fuel UST, off-Site PCA#28.
PCA-F : Former railway siding, off-Site PCA#46
PCA-G : former salvage wrecking yard, off-Site PCA#49
PCA-H: Former autobodyshop operations off-Site PCA#10
PCA-I : Hamilton Hospital waste generator UST PCA#Other 1
PCA-J: Former Canadian Steel operation, soff-Site PCA#32
PCA-K: Former textile manufacturing operations off-Site PCA#54

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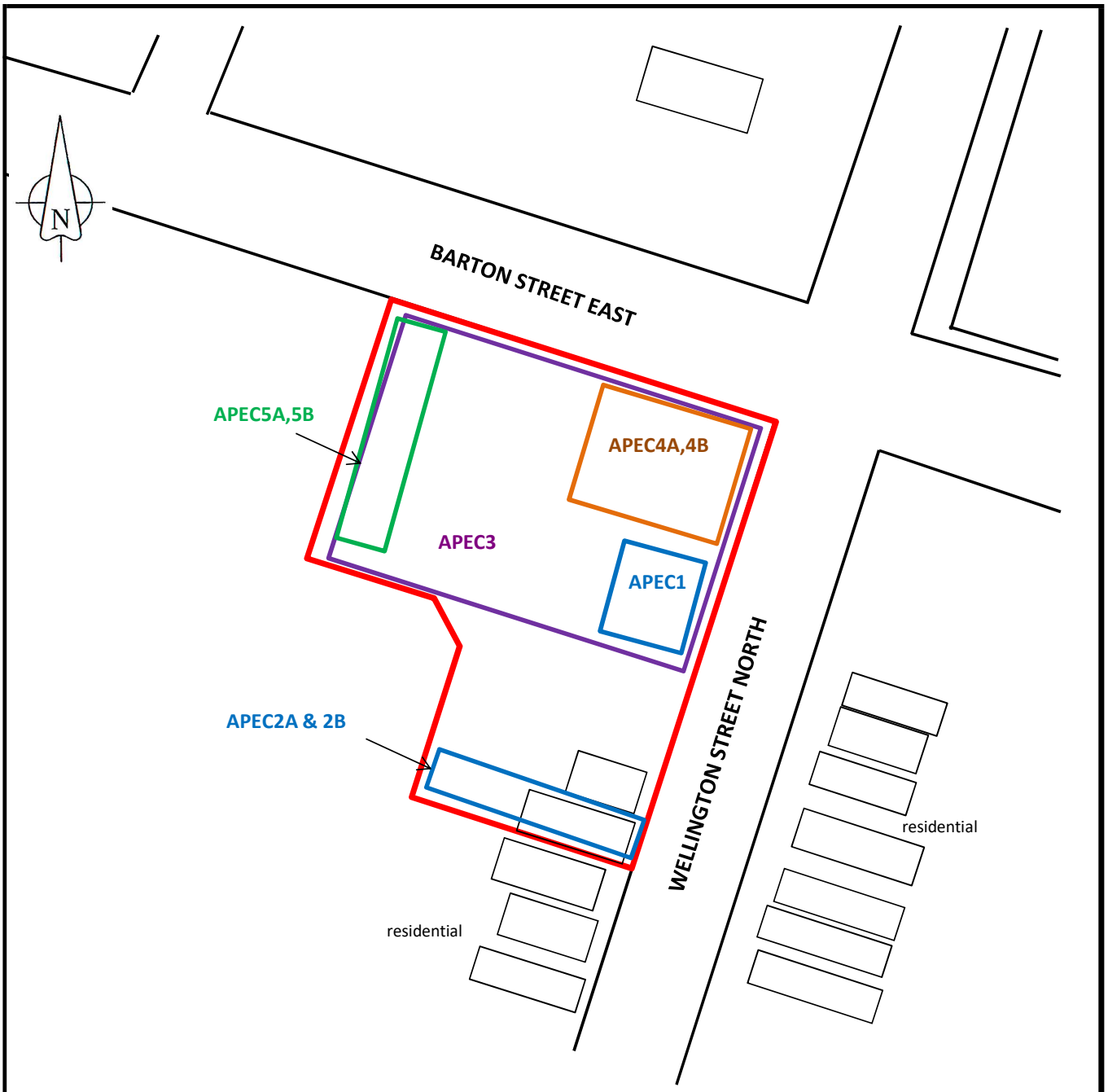
Scale:	NTS	Date: January 2019
Project:	Phase One ESA Barton E. & Weiilinton Hamilton, Ontario	
Title:	Figure 1 - Site Location Plan	
Project No.	18433	



Potentially Contaminating Activities (PCAs) as per O.Reg. 153/04 , Schedule D

APEC1:Gasoline and
APEC2A:Gasoline and Associated Products Storage
APEC2B:Gasoline and Associated Products Storage
APEC3: Importation of Fill Material of Unknown Quality
APEC4A:Gasoline and Associated Products Storage
APEC4B:Commercial Autobody Shop
APEC5A: Rail yards, tracks and spurs
APEC5B: Salvage yard, including automobile wrecking

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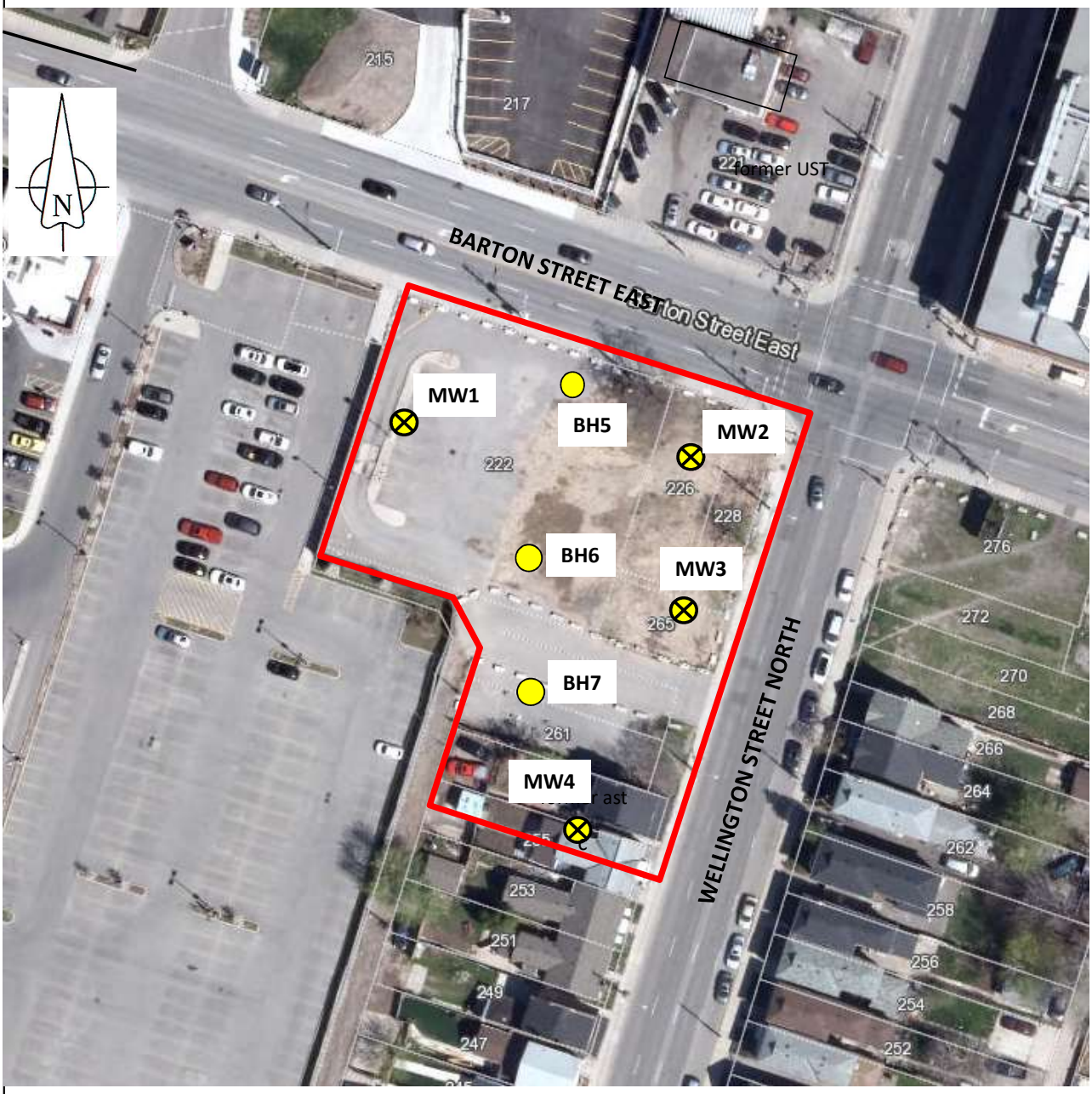
Scale:	NTS	Date: January 2019	
Project:	Phase One ESA Barton E. & Weiilinton Hamilton, Ontario		
Title:	Figure 2 - APEC		
Project No.	18433		



borehole

monitoring well

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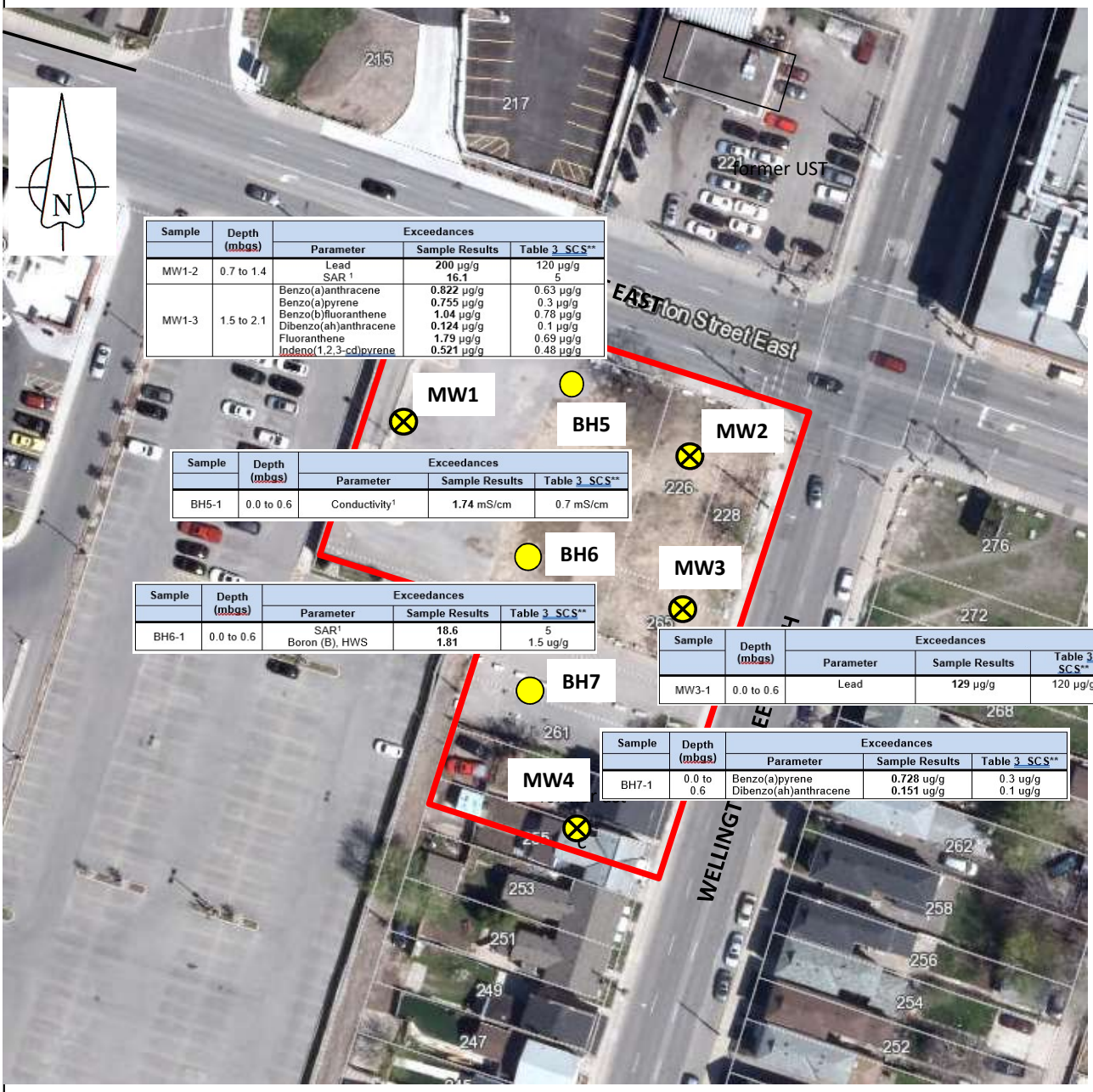
Scale:	NTS	Date: August 2019
Project:	Phase One ESA Barton E. & Weiilinton Hamilton, Ontario	
Title:	Figure 3 -Borehole and Monitoring Wells	
Project No.	19239	



Sample	Depth (mbgs)	Exceedances		
		Parameter	Sample Results	Table 3 SCS**
MW1-2	0.7 to 1.4	Lead SAR [1]	**200** µg/g **16.1**	120 µg/g 5
MW1-3	1.5 to 2.1	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene Fluoranthene Indeno(1,2,3-cd)pyrene	**0.822** µg/g **0.755** µg/g **1.04** µg/g **0.124** µg/g **1.79** µg/g **0.521** µg/g	0.63 µg/g 0.3 µg/g 0.78 µg/g 0.1 µg/g 0.69 µg/g 0.48 µg/g

Sample	Depth (mbgs)	Exceedances		
		Parameter	Sample Results	Table 3 SCS**
BH5-1	0.0 to 0.6	Conductivity[1]	**1.74** mS/cm	0.7 mS/cm

Sample	Depth (mbgs)	Exceedances		
		Parameter	Sample Results	Table 3 SCS**
BH6-1	0.0 to 0.6	SAR[1] Boron (B), HWS	**18.6** **1.81**	5 1.5 ug/g

Sample	Depth (mbgs)	Exceedances		
		Parameter	Sample Results	Table 3 SCS**
MW3-1	0.0 to 0.6	Lead	**129** µg/g	120 µg/g

Sample	Depth (mbgs)	Exceedances		
		Parameter	Sample Results	Table 3 SCS**
BH7-1	0.0 to 0.6	Benzo(a)pyrene Dibenzo(ah)anthracene	**0.728** ug/g **0.151** ug/g	0.3 ug/g 0.1 ug/g

borehole

monitoring well

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Scale:	NTS	Date: August 2019
Project:	Phase One ESA Barton E. & Weiilinton Hamilton, Ontario	
Title:	Figure 4 -Soil Exceedances	
Project No.	19239	

APPENDIX A

SAMPLING AND ANALYSIS PLAN

1.0 SAMPLING AND ANALYSIS PLAN

1.1 Introduction

The Sampling and Analysis Plan (SAAP) was developed in support of the Phase Two ESA. The Phase Two ESA will be conducted to provide characterization of the subsurface conditions at the Site such that a Record of Site Condition (RSC) may be filed for the Site. The SAAP presents the procedures and measures that will be undertaken during field investigative activities to characterize the Site conditions and meet the data quality objectives of the Phase Two ESA.

The SAAP presents the sampling program used for the Site, the recommended procedures and protocols for sampling and related field activities, the data quality objectives and the quality assurance/ quality control (QA/QC) measures that will be undertaken to provide for the collection of accurate, reproducible and representative data. These components are described in further detail in the following sections.

1.2 Field Sampling Program

The field sampling program was developed to provide the collection of samples of the surficial and subsurface soil materials for chemical analysis of one or more of the following parameters: metals, inorganics, volatile organic compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), and Petroleum Hydrocarbons Fractions F1-F4 (PHC F1-F4) + BTEX (benzene, toluene, ethylbenzene, and xylenes).

Vertical control of the boreholes and monitoring wells will be obtained through the completion of an elevation survey with reference to a local permanent and recoverable benchmark. Groundwater flow direction will be determined through groundwater level measurements and the relative groundwater elevations will be established in the Site elevation survey.

1.3 Field Sampling Methods

To meet the requirements of the field sampling program, the following field investigative methods will be undertaken:

- Boreholes
- Soil sampling
- Monitoring well installations
- Monitoring well development
- Residue management procedures
- Groundwater level measurements
- Elevation surveying
- Groundwater sampling

The field investigative methods will be performed as described below:

1.3.1 Boreholes

Seven (7) boreholes will be advanced at the Site to facilitate the collection of soil samples for chemical analysis and geologic characterization.

Prior to borehole drilling, utility clearances will be obtained from public and private locators, as required. If any uncertainty regarding the location of a buried utility at a borehole location is

encountered or if a location is within 1 m of a buried utility, the borehole will be initiated by daylighting or hand augering to a sufficient depth to ensure clearance of utilities. Boreholes will be advanced into the native overburden soils and the weathered shale bedrock by a borehole contractor under the full-time supervision of Landtek Limited staff.

1.3.2 Soil Sampling

Soil samples for geologic characterization and chemical analysis will be collected on a continuous basis in the overburden and weathered shale bedrock material. Geologic and sampling details of the recovered cores will be logged and the samples will be assessed for the potential presence of non-aqueous phase liquids. A portion of each soil core will be placed in a sealed plastic bag and allowed to reach ambient temperature prior to field screening with a combustible gas detector or photo-ionization detector (PID) that will be calibrated with an appropriate reference gas prior to use. The vapour measurements will be made by inserting the instrument's probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These readings will provide a real-time indication of the relative concentration of volatile organic vapours encountered in the subsurface during drilling. Samples for chemical analysis will be selected on the basis of visual, combustible gas and olfactory evidence of impacts and at specific intervals to define the lateral and vertical extent of known impacts.

Recommended volumes of soil samples selected for chemical analysis will be collected into pre-cleaned, laboratory supplied, analytical test group specific containers. The samples will be placed into clean insulated coolers, chilled with ice for storage and transport. The samples will be assigned unique identification numbers and the date, time, location and requested analysis for each sample will be documented in a bound field notebook. The samples will be submitted to the contractual laboratory within analytical test group holding times under Chain of Custody (COC) protocols. New disposable chemical resistant gloves will be used during the handling and sample collection for each soil core to prevent sample cross-contamination.

1.3.3 Monitoring Well Installation

A drilling contractor will be contracted to advance seven (7) boreholes, four (4) of which will be equipped with monitoring wells to facilitate the collection of groundwater samples. The monitoring wells will be installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03 and will be installed by a licensed well contractor.

The monitoring wells will be constructed using 50 mm diameter, Schedule 40, PVC riser pipe and number 10 slot size (0.25 mm) well screens. The base of the well screens will be sealed with PVC end caps. All well pipe connections will be factory machined, treaded flush couplings. The pipe components will be pre-wrapped in plastic, which will be removed prior to insertion in the borehole to minimize the potential for contamination. No lubricants or adhesives will be used in the construction of the monitoring wells. The annular space around the well screens will be backfilled with silica sand to an average height of 0.3 m above the top of the screen. Granular bentonite will be placed in the borehole annulus from the top of the sand pack to approximately 0.3 m below grade. The monitoring wells will be completed with steel monument protective casings and cemented into place.

1.3.4 Monitoring Well Development

The newly installed monitoring wells will be developed to remove fine sediment particles potentially lodged in the sand pack and well screen to enhance hydraulic communication with the surrounding formation waters. The monitoring wells will be developed using a Waterra foot valve pump and

sample tubing. Monitoring well development will be monitored by visual observations of turbidity, and by taking field measurements of pH, specific conductance and temperature for every standing well (i.e., wetted casing) volume removed. Standing water volumes will be determined by means of an electronic water level meter. Water quality parameter measurements will be recorded using a multi meter instrument. The instrument probes will be calibrated prior to use following the manufacturer's procedures using analytical grade reagents, or if obtained from a field equipment supplier, the calibration checked. Approximately three to five wetted well volumes will be removed; and, well development will continue until the purged water has chemically stabilized as indicated by visual observation and field parameter measurements.

Well development details will be documented on a well development log sheet or in a bound hard cover notebook. All development waters will be collected and stored in labelled, sealed containers.

1.3.5 Residue Management Procedures

The residue materials produced during the borehole drilling, soil sampling programs and monitoring well sampling programs comprised of soil cuttings from drilling activities, decontamination fluids from equipment cleaning, and waters from well development and purging will be placed in labelled, sealed drums for off-Site disposal.

1.3.6 Groundwater Level Measurements

Groundwater level measurements will be recorded for the installed monitoring wells to determine groundwater flow direction in the bedrock aquifer beneath the Site. Water levels will be measured with respect to the top of the casing by means of an electronic water level meter. The water levels will be recorded on water level log sheets or in a bound field notebook. The water level meter probe will be decontaminated between monitoring well locations.

1.3.7 Elevation Surveying

An elevation survey will be conducted to obtain vertical control of the newly installed monitoring well locations. The top of casing and ground surface elevation of each monitoring well location will be surveyed against a known geodetic or permanently recoverable benchmark. Elevations measured against a geodetic benchmark will be recorded as meters above sea level (masl). The benchmark is assigned an elevation of 215.0 meters above sea level (masl). The elevation survey will be accurate to within +- 0.3 cm.

1.3.8 Groundwater Sampling

Groundwater samples will be collected from the installed monitoring wells for chemical analysis. The monitoring wells will be purged first of three to five wetted well volumes of water to remove standing water and draw in fresh formation water. Wetted well volumes will be determined by measuring water levels with an electronic water level meter. Waterra foot valve pump and sample tubing or bailers will be used for well purging and sample collection. Wells, which are purged dry, are to recover to 75% of static levels before sampling.

Recommended groundwater sample volumes will be collected into pre-cleaned, laboratory-supplied vials or bottles with analytical test group specific preservatives, as required. The samples will be placed in an insulated cooler chilled with ice for storage and transport.

All groundwater samples will be assigned unique identification number, and the date, time, project number, company name, location and requested analyses for each sample will be documented in a

bound hard cover notebook. The samples will be submitted to the contractual laboratory within analytical test group holding times under COC protocols. New disposable chemical resistant gloves will be used for each sampling location to prevent sample cross-contamination.

1.4 Field Quality Assurance/Quality Control Program

The objective of the field quality assurance/quality control (QA/QC) program is to obtain soil and groundwater samples and other field measurements that provide data of acceptable quality that meets the objectives of the Phase Two ESA. The objectives of the QA/QC program will be achieved through the implementation of procedures for the collection of unbiased (uncontaminated) samples, sample documentation to provide a measure of sample reproducibility and accuracy. The field QA/QC measures will comprise:

- Decontamination Protocols
- Equipment Calibration
- Sample Preservation
- Sample Documentation
- Field Duplicates and Blanks

Details of the field QA/QC measures are provided below.

1.4.1 Decontamination Protocols

Decontamination protocols will be followed during field sampling where non-dedicated sampling equipment is used to prevent sample cross-contamination. For soil sampling, sampling equipment will be cleaned/decontaminated between sampling intervals. For the monitoring well installations, well components will not be permitted to come into contact with the ground surface prior to insertion into the boreholes. Electronic water level meters will be decontaminated between monitoring well locations during well development, purging, and rising head tests. All decontamination fluids will be collected and stored in clearly labelled, sealed containers.

1.4.2 Equipment Calibration

All equipment requiring calibration will be calibrated in the field according to the manufacturer's requirements using analytical grade reagents, or if the equipment is rented, by the supplier prior to conducting the sampling activities. All calibration data will be documented in a hard cover, bound workbook or on a calibration log sheet.

1.4.3 Sample Preservation

All samples will be preserved using appropriate analytical test group specific reagents, as required, and upon collection will be placed in cooled, insulated containers for storage and transport.

1.4.4 Sample Documentation

All samples will be assigned a unique identification number which is to be recorded along with the date, project number, company name, location and requested analysis in a bound field notebook or on a sampling worksheet. All samples will be handled and transported following chain-of-custody protocols.

1.4.5 Field Duplicate and Blanks

Where groundwater samples are to be analyzed for volatile organic compounds, one trip blank shall be submitted for laboratory analysis with each submission. Field duplicates will be submitted and analysed at a ratio of one duplicate sample for every ten samples submitted for laboratory analysis.

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSES
Including Laboratory QA/QC Data

Soil and Groundwater Results

LANDTEK LIMITED
ATTN: KATIE MCISAAC
205 NEBO ROAD
UNIT 3
HAMILTON ON L8W2E1

Date Received: 22-AUG-19
Report Date: 29-AUG-19 13:54 (MT)
Version: FINAL

Client Phone: 905-383-3733

Certificate of Analysis

Lab Work Order #: L2334304

Project P.O. #: NOT SUBMITTED
Job Reference: 19239
C of C Numbers: 17-617150
Legal Site Desc:

Ylynne Rosales
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ANALYTICAL REPORT

Summary of Guideline Exceedances

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Guideline						
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)						
L2334304-1	MW1	Volatile Organic Compounds	Trichloroethylene	1.63	1.6	ug/L
L2334304-3	MWW	Volatile Organic Compounds	Trichloroethylene	1.86	1.6	ug/L
L2334304-4	TRIP BLANK	Volatile Organic Compounds	Trichloroethylene	8.03	1.6	ug/L
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Fine)						
(No parameter exceedances)						

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Physical Tests - WATER

		Guide Limits				
Lab ID				L2334304-1	L2334304-2	L2334304-3
Sample Date				21-AUG-19	21-AUG-19	21-AUG-19
Sample ID				MW1	MW100	MWW
Analyte	**Unit**	**#1**	**#2**			
Conductivity	mS/cm	-	-	2.95	2.95	3.66
pH	pH units	-	-	7.38	7.62	7.72

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Anions and Nutrients - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	Sample Date	Sample ID
				L2334304-1	L2334304-2	L2334304-3
				21-AUG-19	21-AUG-19	21-AUG-19
				MW1	MW100	MWW
Chloride (Cl)	mg/L	2300	2300	459 DLHC	466 DLHC	897 DLHC

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Cyanides - WATER

		Guide Limits				
Lab ID				L2334304-1	L2334304-2	L2334304-3
Sample Date				21-AUG-19	21-AUG-19	21-AUG-19
Sample ID				MW1	MW100	MWW
Analyte	**Unit**	**#1**	**#2**			
Cyanide, Weak Acid Diss	ug/L	66	66	<2.0	<2.0	<2.0

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Dissolved Metals - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID L2334304-1 / Sample Date 21-AUG-19 / Sample ID MW1	Lab ID L2334304-2 / Sample Date 21-AUG-19 / Sample ID MW100	Lab ID L2334304-3 / Sample Date 21-AUG-19 / Sample ID MWW
Dissolved Mercury Filtration Location		-	-	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location		-	-	FIELD	FIELD	FIELD
Antimony (Sb)-Dissolved	ug/L	20000	20000	6.0 DLHC	6.3 DLHC	<1.0 DLHC
Arsenic (As)-Dissolved	ug/L	1900	1900	1.1 DLHC	1.0 DLHC	1.8 DLHC
Barium (Ba)-Dissolved	ug/L	29000	29000	163 DLHC	164 DLHC	114 DLHC
Beryllium (Be)-Dissolved	ug/L	67	67	<1.0 DLHC	<1.0 DLHC	<1.0 DLHC
Boron (B)-Dissolved	ug/L	45000	45000	300 DLHC	380 DLHC	980 DLHC
Cadmium (Cd)-Dissolved	ug/L	2.7	2.7	0.190 DLHC	0.208 DLHC	<0.050 DLHC
Chromium (Cr)-Dissolved	ug/L	810	810	<5.0 DLHC	<5.0 DLHC	<5.0 DLHC
Cobalt (Co)-Dissolved	ug/L	66	66	5.6 DLHC	5.3 DLHC	<1.0 DLHC
Copper (Cu)-Dissolved	ug/L	87	87	5.6 DLHC	5.8 DLHC	2.6 DLHC
Lead (Pb)-Dissolved	ug/L	25	25	2.60 DLHC	2.72 DLHC	<0.50 DLHC
Mercury (Hg)-Dissolved	ug/L	0.29	2.8	0.0057	0.0057	<0.0050
Molybdenum (Mo)-Dissolved	ug/L	9200	9200	2.87 DLHC	2.99 DLHC	14.2 DLHC
Nickel (Ni)-Dissolved	ug/L	490	490	9.4 DLHC	9.4 DLHC	<5.0 DLHC
Selenium (Se)-Dissolved	ug/L	63	63	2.22 DLHC	2.33 DLHC	<0.50 DLHC
Silver (Ag)-Dissolved	ug/L	1.5	1.5	<0.50 DLHC	<0.50 DLHC	<0.50 DLHC
Sodium (Na)-Dissolved	ug/L	2300000	2300000	222000 DLHC	219000 DLHC	486000 DLHC
Thallium (Tl)-Dissolved	ug/L	510	510	<0.10 DLHC	<0.10 DLHC	<0.10 DLHC
Uranium (U)-Dissolved	ug/L	420	420	1.50 DLHC	1.54 DLHC	0.92 DLHC
Vanadium (V)-Dissolved	ug/L	250	250	<5.0 DLHC	<5.0 DLHC	<5.0 DLHC
Zinc (Zn)-Dissolved	ug/L	1100	1100	90 DLHC	84 DLHC	<10 DLHC

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Speciated Metals - WATER

		Guide Limits				
		Lab ID		L2334304-1	L2334304-2	L2334304-3
		Sample Date		21-AUG-19	21-AUG-19	21-AUG-19
		Sample ID		MW1	MW100	MWW
Analyte	Unit	#1	#2			
Chromium, Hexavalent	ug/L	140	140	<0.50	<0.50	<0.50

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Volatile Organic Compounds - WATER

				Lab ID	L2334304-1	L2334304-2	L2334304-3	L2334304-4
				Sample Date	21-AUG-19	21-AUG-19	21-AUG-19	21-AUG-19
				Sample ID	MW1	MW100	MWW	TRIP BLANK
Analyte	Unit	Guide Limits #1	#2					
Acetone	ug/L	130000	130000	<30	<30	<30	<30
Benzene	ug/L	44	430	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	ug/L	85000	85000	<2.0	<2.0	<2.0	<2.0
Bromoform	ug/L	380	770	<5.0	<5.0	<5.0	<5.0
Bromomethane	ug/L	5.6	56	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	ug/L	0.79	8.4	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	ug/L	630	630	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane	ug/L	82000	82000	<2.0	<2.0	<2.0	<2.0
Chloroform	ug/L	2.4	22	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	ug/L	0.25	0.83	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	ug/L	4600	9600	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	ug/L	9600	9600	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	ug/L	8	67	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	ug/L	4400	4400	<2.0	<2.0	<2.0	<2.0
1,1-Dichloroethane	ug/L	320	3100	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane	ug/L	1.6	12	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/L	1.6	17	<0.50	<0.50	<0.50	<0.50
cis-1,2-Dichloroethylene	ug/L	1.6	17	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	ug/L	1.6	17	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	ug/L	610	5500	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	ug/L	16	140	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloropropene	ug/L	-	-	<0.30	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	ug/L	-	-	<0.30	<0.30	<0.30	<0.30
1,3-Dichloropropene (cis & trans)	ug/L	5.2	45	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	ug/L	2300	2300	<0.50	<0.50	<0.50	<0.50
n-Hexane	ug/L	51	520	<0.50	<0.50	<0.50	<0.50
Methyl Ethyl Ketone	ug/L	470000	1500000	<20	<20	<20	<20
Methyl Isobutyl Ketone	ug/L	140000	580000	<20	<20	<20	<20
MTBE	ug/L	190	1400	<2.0	<2.0	<2.0	<2.0
Styrene	ug/L	1300	9100	<0.50	<0.50	<0.50	<0.50

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Volatile Organic Compounds - WATER

				Lab ID	L2334304-1	L2334304-2	L2334304-3	L2334304-4
				Sample Date	21-AUG-19	21-AUG-19	21-AUG-19	21-AUG-19
				Sample ID	MW1	MW100	MWW	TRIP BLANK
		Guide Limits						
Analyte	Unit	#1	#2					
1,1,1,2-Tetrachloroethane	ug/L	3.3	28	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	ug/L	3.2	15	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	ug/L	1.6	17	<0.50	<0.50	<0.50	<0.50
Toluene	ug/L	18000	18000	<0.50	<0.50	<0.50	<0.50
1,1,1-Trichloroethane	ug/L	640	6700	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/L	4.7	30	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	ug/L	1.6	17	1.63	0.91	1.86	8.03
Trichlorofluoromethane	ug/L	2500	2500	<5.0	<5.0	<5.0	<5.0
Vinyl chloride	ug/L	0.5	1.7	<0.50	<0.50	<0.50	<0.50
o-Xylene	ug/L	-	-	<0.30	<0.30	<0.30	<0.30
m+p-Xylenes	ug/L	-	-	<0.40	<0.40	<0.40	<0.40
Xylenes (Total)	ug/L	4200	4200	<0.50	<0.50	<0.50	<0.50
Surrogate: 4-Bromofluorobenzene	%	-	-	93.5	93.9	94.1	93.7
Surrogate: 1,4-Difluorobenzene	%	-	-	96.0	96.0	96.1	95.8

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Hydrocarbons - WATER

		Guide Limits				
Lab ID				L2334304-1	L2334304-2	L2334304-3
Sample Date				21-AUG-19	21-AUG-19	21-AUG-19
Sample ID				MW1	MW100	MWW
Analyte	**Unit**	**#1**	**#2**			
F1 (C6-C10)	ug/L	750	750	<25	<25	<25
F1-BTEX	ug/L	750	750	<25	<25	<25
F2 (C10-C16)	ug/L	150	150	<100	<100 OWP	<100
F2-Naphth	ug/L	-	-	<100	<100	<100
F3 (C16-C34)	ug/L	500	500	<250	<250 OWP	<250
F3-PAH	ug/L	-	-	<250	<250	<250
F4 (C34-C50)	ug/L	500	500	<250	<250 OWP	<250
Total Hydrocarbons (C6-C50)	ug/L	-	-	<370	<370	<370
Chrom. to baseline at nC50		-	-	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	93.7	85.6	86.5
Surrogate: 3,4-Dichlorotoluene	%	-	-	76.1	77.3	88.0

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Polycyclic Aromatic Hydrocarbons - WATER

		Guide Limits				
Lab ID				L2334304-1	L2334304-2	L2334304-3
Sample Date				21-AUG-19	21-AUG-19	21-AUG-19
Sample ID				MW1	MW100	MWW
Analyte	**Unit**	**#1**	**#2**			
Acenaphthene	ug/L	600	1700	<0.020	0.029	<0.020
Acenaphthylene	ug/L	1.8	1.8	<0.020	<0.020	<0.020
Anthracene	ug/L	2.4	2.4	0.057	0.085	<0.020
Benzo(a)anthracene	ug/L	4.7	4.7	0.238	0.304	<0.020
Benzo(a)pyrene	ug/L	0.81	0.81	0.219	0.263	<0.010
Benzo(b)fluoranthene	ug/L	0.75	0.75	0.288	0.337	<0.020
Benzo(g,h,i)perylene	ug/L	0.2	0.2	0.127	0.154	<0.020
Benzo(k)fluoranthene	ug/L	0.4	0.4	0.094	0.123	<0.020
Chrysene	ug/L	1	1	0.232	0.304	<0.020
Dibenzo(ah)anthracene	ug/L	0.52	0.52	0.037	0.045	<0.020
Fluoranthene	ug/L	130	130	0.477	0.627	0.049
Fluorene	ug/L	400	400	<0.020	0.028	<0.020
Indeno(1,2,3-cd)pyrene	ug/L	0.2	0.2	0.139	0.171	<0.020
1+2-Methylnaphthalenes	ug/L	1800	1800	<0.028	<0.028	<0.028
1-Methylnaphthalene	ug/L	1800	1800	<0.020	<0.020	<0.020
2-Methylnaphthalene	ug/L	1800	1800	<0.020	<0.020	0.020
Naphthalene	ug/L	1400	6400	<0.050	<0.050	<0.050
Phenanthrene	ug/L	580	580	0.271	0.425	0.044
Pyrene	ug/L	68	68	0.430	0.555	0.027
Surrogate: d10-Acenaphthene	%	-	-	106.6	101.2	103.1
Surrogate: d12-Chrysene	%	-	-	114.3	113.1	106.1
Surrogate: d8-Naphthalene	%	-	-	106.8	103.9	115.8
Surrogate: d10-Phenanthrene	%	-	-	104.1	106.0	104.3

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
OWP	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

Reference Information

sediment.

DLHC Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Water	Cyanide (WAD)-O.Reg 153/04	APHA 4500CN I-Weak acid Dist Colorimet

Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-R511-WT	Water	Hex Chrom-O.Reg 153/04 (July 2011)	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-R511-WT	Water	Conductivity-O.Reg 153/04 (July 2011)	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HG-D-UG/L-CVAA-WT	Water	Diss. Mercury in Water by CVAAS (ug/L)	EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8

The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Water	PAH-Calculated Parameters	SW846 8270
PAH-511-WT	Water	PAH-O. Reg 153/04 (July 2011)	SW846 3510/8270

Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

17-617150

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2334304 Report Date: 29-AUG-19

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	**Water**							
Batch R4768586								
WG3141478-4 DUP		**L2334047-1**						
Chloride (Cl)		151	153		mg/L	0.8	20	23-AUG-19
WG3141478-2 LCS								
Chloride (Cl)			102.0		%		90-110	23-AUG-19
WG3141478-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
WG3141478-5 MS		**L2334047-1**						
Chloride (Cl)			N/A	MS-B	%		-	23-AUG-19
CN-WAD-R511-WT	**Water**							
Batch R4768602								
WG3141842-3 DUP		**L2334304-2**						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	23-AUG-19
WG3141842-2 LCS								
Cyanide, Weak Acid Diss			109.0		%		80-120	23-AUG-19
WG3141842-1 MB								
Cyanide, Weak Acid Diss			<2.0		ug/L		2	23-AUG-19
WG3141842-4 MS		**L2334304-2**						
Cyanide, Weak Acid Diss			103.8		%		75-125	23-AUG-19
CR-CR6-IC-R511-WT	**Water**							
Batch R4768380								
WG3143055-4 DUP		**WG3143055-3**						
Chromium, Hexavalent		<0.50	<0.50	RPD-NA	ug/L	N/A	20	23-AUG-19
WG3143055-2 LCS								
Chromium, Hexavalent			97.7		%		80-120	23-AUG-19
WG3143055-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	23-AUG-19
WG3143055-5 MS		**WG3143055-3**						
Chromium, Hexavalent			95.8		%		70-130	23-AUG-19
EC-R511-WT	**Water**							
Batch R4767975								
WG3141874-4 DUP		**WG3141874-3**						
Conductivity		0.0731	0.0724		mS/cm	1.0	10	23-AUG-19
WG3141874-2 LCS								
Conductivity			101.5		%		90-110	23-AUG-19
WG3141874-1 MB								
Conductivity			<0.0030		mS/cm		0.003	23-AUG-19
F1-HS-511-WT	**Water**							

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Water**							
Batch R4774139								
WG3136450-4 DUP		**WG3136450-3**						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	29-AUG-19
WG3136450-1 LCS								
F1 (C6-C10)			90.1		%		80-120	28-AUG-19
WG3136450-2 MB								
F1 (C6-C10)			<25		ug/L		25	28-AUG-19
Surrogate: 3,4-Dichlorotoluene			84.6		%		60-140	28-AUG-19
WG3136450-5 MS		**WG3136450-3**						
F1 (C6-C10)			96.6		%		60-140	29-AUG-19
F2-F4-511-WT	**Water**							
Batch R4768762								
WG3141025-2 LCS								
F2 (C10-C16)			96.7		%		70-130	23-AUG-19
F3 (C16-C34)			106.9		%		70-130	23-AUG-19
F4 (C34-C50)			96.9		%		70-130	23-AUG-19
WG3141025-1 MB								
F2 (C10-C16)			<100		ug/L		100	23-AUG-19
F3 (C16-C34)			<250		ug/L		250	23-AUG-19
F4 (C34-C50)			<250		ug/L		250	23-AUG-19
Surrogate: 2-Bromobenzotrifluoride			95.6		%		60-140	23-AUG-19
HG-D-UG/L-CVAA-WT	**Water**							
Batch R4767964								
WG3141336-4 DUP		**WG3141336-3**						
Mercury (Hg)-Dissolved		<0.0050	<0.0050	RPD-NA	ug/L	N/A	20	24-AUG-19
WG3141336-2 LCS								
Mercury (Hg)-Dissolved			87.9		%		80-120	24-AUG-19
WG3141336-1 MB								
Mercury (Hg)-Dissolved			<0.0050		ug/L		0.005	24-AUG-19
WG3141336-6 MS		**WG3141336-5**						
Mercury (Hg)-Dissolved			86.5		%		70-130	24-AUG-19
MET-D-UG/L-MS-WT	**Water**							
Batch R4768018								
WG3142140-4 DUP		**WG3142140-3**						
Antimony (Sb)-Dissolved		0.17	0.16		ug/L	1.8	20	23-AUG-19
Arsenic (As)-Dissolved		0.86	0.88		ug/L	3.1	20	23-AUG-19
Barium (Ba)-Dissolved		22.4	22.7		ug/L	1.3	20	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4768018								
WG3142140-4 DUP		**WG3142140-3**						
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	23-AUG-19
Boron (B)-Dissolved		26	27		ug/L	4.6	20	23-AUG-19
Cadmium (Cd)-Dissolved		<0.0050	<0.0050	RPD-NA	ug/L	N/A	20	23-AUG-19
Chromium (Cr)-Dissolved		1.64	1.67		ug/L	1.7	20	23-AUG-19
Cobalt (Co)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	23-AUG-19
Copper (Cu)-Dissolved		1.98	1.99		ug/L	0.6	20	23-AUG-19
Lead (Pb)-Dissolved		0.065	0.062		ug/L	4.6	20	23-AUG-19
Molybdenum (Mo)-Dissolved		1.24	1.23		ug/L	0.8	20	23-AUG-19
Nickel (Ni)-Dissolved		<0.50	0.50	RPD-NA	ug/L	N/A	20	23-AUG-19
Selenium (Se)-Dissolved		0.171	0.183		ug/L	6.7	20	23-AUG-19
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	23-AUG-19
Sodium (Na)-Dissolved		15200	15500		ug/L	2.2	20	23-AUG-19
Thallium (Tl)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	23-AUG-19
Uranium (U)-Dissolved		0.342	0.340		ug/L	0.7	20	23-AUG-19
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	23-AUG-19
Zinc (Zn)-Dissolved		2.0	1.9		ug/L	9.8	20	23-AUG-19
WG3142140-2 LCS								
Antimony (Sb)-Dissolved			97.2		%		80-120	23-AUG-19
Arsenic (As)-Dissolved			96.2		%		80-120	23-AUG-19
Barium (Ba)-Dissolved			98.7		%		80-120	23-AUG-19
Beryllium (Be)-Dissolved			96.9		%		80-120	23-AUG-19
Boron (B)-Dissolved			93.0		%		80-120	23-AUG-19
Cadmium (Cd)-Dissolved			96.4		%		80-120	23-AUG-19
Chromium (Cr)-Dissolved			98.8		%		80-120	23-AUG-19
Cobalt (Co)-Dissolved			97.5		%		80-120	23-AUG-19
Copper (Cu)-Dissolved			97.1		%		80-120	23-AUG-19
Lead (Pb)-Dissolved			99.3		%		80-120	23-AUG-19
Molybdenum (Mo)-Dissolved			99.4		%		80-120	23-AUG-19
Nickel (Ni)-Dissolved			96.6		%		80-120	23-AUG-19
Selenium (Se)-Dissolved			96.1		%		80-120	23-AUG-19
Silver (Ag)-Dissolved			97.3		%		80-120	23-AUG-19
Sodium (Na)-Dissolved			99.2		%		80-120	23-AUG-19
Thallium (Tl)-Dissolved			97.6		%		80-120	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4768018								
WG3142140-2 LCS								
Uranium (U)-Dissolved			102.0		%		80-120	23-AUG-19
Vanadium (V)-Dissolved			99.8		%		80-120	23-AUG-19
Zinc (Zn)-Dissolved			95.2		%		80-120	23-AUG-19
WG3142140-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Boron (B)-Dissolved			<10		ug/L		10	23-AUG-19
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	23-AUG-19
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	23-AUG-19
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	23-AUG-19
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	23-AUG-19
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	23-AUG-19
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	23-AUG-19
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	23-AUG-19
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	23-AUG-19
Sodium (Na)-Dissolved			<50		ug/L		50	23-AUG-19
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	23-AUG-19
Uranium (U)-Dissolved			<0.010		ug/L		0.01	23-AUG-19
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	23-AUG-19
Zinc (Zn)-Dissolved			<1.0		ug/L		1	23-AUG-19
WG3142140-5 MS		**WG3142140-6**						
Antimony (Sb)-Dissolved			99.0		%		70-130	23-AUG-19
Arsenic (As)-Dissolved			102.0		%		70-130	23-AUG-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	23-AUG-19
Beryllium (Be)-Dissolved			104.4		%		70-130	23-AUG-19
Boron (B)-Dissolved			95.5		%		70-130	23-AUG-19
Cadmium (Cd)-Dissolved			100.1		%		70-130	23-AUG-19
Chromium (Cr)-Dissolved			97.4		%		70-130	23-AUG-19
Cobalt (Co)-Dissolved			96.8		%		70-130	23-AUG-19
Copper (Cu)-Dissolved			93.9		%		70-130	23-AUG-19
Lead (Pb)-Dissolved			96.5		%		70-130	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4768018								
WG3142140-5 MS		**WG3142140-6**						
Molybdenum (Mo)-Dissolved			101.6		%		70-130	23-AUG-19
Nickel (Ni)-Dissolved			93.2		%		70-130	23-AUG-19
Selenium (Se)-Dissolved			111.7		%		70-130	23-AUG-19
Silver (Ag)-Dissolved			97.8		%		70-130	23-AUG-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-AUG-19
Thallium (Tl)-Dissolved			95.4		%		70-130	23-AUG-19
Uranium (U)-Dissolved			N/A	MS-B	%		-	23-AUG-19
Vanadium (V)-Dissolved			99.7		%		70-130	23-AUG-19
Zinc (Zn)-Dissolved			97.2		%		70-130	23-AUG-19
PAH-511-WT	**Water**							
Batch R4769795								
WG3141025-2 LCS								
1-Methylnaphthalene			110.3		%		50-140	27-AUG-19
2-Methylnaphthalene			100.9		%		50-140	27-AUG-19
Acenaphthene			111.6		%		50-140	27-AUG-19
Acenaphthylene			115.8		%		50-140	27-AUG-19
Anthracene			100.5		%		50-140	27-AUG-19
Benzo(a)anthracene			133.2		%		50-140	27-AUG-19
Benzo(a)pyrene			113.6		%		50-140	27-AUG-19
Benzo(b)fluoranthene			123.4		%		50-140	27-AUG-19
Benzo(g,h,i)perylene			121.7		%		50-140	27-AUG-19
Benzo(k)fluoranthene			121.9		%		50-140	27-AUG-19
Chrysene			136.6		%		50-140	27-AUG-19
Dibenzo(ah)anthracene			120.0		%		50-140	27-AUG-19
Fluoranthene			123.4		%		50-140	27-AUG-19
Fluorene			109.5		%		50-140	27-AUG-19
Indeno(1,2,3-cd)pyrene			130.0		%		50-140	27-AUG-19
Naphthalene			106.7		%		50-140	27-AUG-19
Phenanthrene			120.4		%		50-140	27-AUG-19
Pyrene			126.8		%		50-140	27-AUG-19
WG3141025-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	27-AUG-19
2-Methylnaphthalene			<0.020		ug/L		0.02	27-AUG-19
Acenaphthene			<0.020		ug/L		0.02	27-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4769795								
WG3141025-1 MB								
Acenaphthylene			<0.020		ug/L		0.02	27-AUG-19
Anthracene			<0.020		ug/L		0.02	27-AUG-19
Benzo(a)anthracene			<0.020		ug/L		0.02	27-AUG-19
Benzo(a)pyrene			<0.010		ug/L		0.01	27-AUG-19
Benzo(b)fluoranthene			<0.020		ug/L		0.02	27-AUG-19
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	27-AUG-19
Benzo(k)fluoranthene			<0.020		ug/L		0.02	27-AUG-19
Chrysene			<0.020		ug/L		0.02	27-AUG-19
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	27-AUG-19
Fluoranthene			<0.020		ug/L		0.02	27-AUG-19
Fluorene			<0.020		ug/L		0.02	27-AUG-19
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	27-AUG-19
Naphthalene			<0.050		ug/L		0.05	27-AUG-19
Phenanthrene			<0.020		ug/L		0.02	27-AUG-19
Pyrene			<0.020		ug/L		0.02	27-AUG-19
Surrogate: d8-Naphthalene			116.9		%		60-140	27-AUG-19
Surrogate: d10-Phenanthrene			117.9		%		60-140	27-AUG-19
Surrogate: d12-Chrysene			122.3		%		60-140	27-AUG-19
Surrogate: d10-Acenaphthene			115.1		%		60-140	27-AUG-19
PH-WT	**Water**							
Batch R4767975								
WG3141874-4 DUP		**WG3141874-3**						
pH		7.02	6.94	J	pH units	0.08	0.2	23-AUG-19
WG3141874-2 LCS								
pH			7.00		pH units		6.9-7.1	23-AUG-19
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-4 DUP		**WG3136450-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-4 DUP		**WG3136450-3**						
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	29-AUG-19
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	29-AUG-19
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	29-AUG-19
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	29-AUG-19
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	29-AUG-19
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	29-AUG-19
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	29-AUG-19
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	29-AUG-19
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	29-AUG-19
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	29-AUG-19
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	29-AUG-19
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	29-AUG-19
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Trichlorofluoromethane		<5.0	<5.0		ug/L			29-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-4 DUP		**WG3136450-3**						
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
WG3136450-1 LCS								
1,1,1,2-Tetrachloroethane			106.7		%		70-130	28-AUG-19
1,1,2,2-Tetrachloroethane			108.1		%		70-130	28-AUG-19
1,1,1-Trichloroethane			105.0		%		70-130	28-AUG-19
1,1,2-Trichloroethane			112.0		%		70-130	28-AUG-19
1,1-Dichloroethane			107.3		%		70-130	28-AUG-19
1,1-Dichloroethylene			104.8		%		70-130	28-AUG-19
1,2-Dibromoethane			112.7		%		70-130	28-AUG-19
1,2-Dichlorobenzene			109.1		%		70-130	28-AUG-19
1,2-Dichloroethane			109.0		%		70-130	28-AUG-19
1,2-Dichloropropane			109.3		%		70-130	28-AUG-19
1,3-Dichlorobenzene			104.6		%		70-130	28-AUG-19
1,4-Dichlorobenzene			104.4		%		70-130	28-AUG-19
Acetone			116.3		%		60-140	28-AUG-19
Benzene			109.1		%		70-130	28-AUG-19
Bromodichloromethane			107.1		%		70-130	28-AUG-19
Bromoform			110.0		%		70-130	28-AUG-19
Bromomethane			98.2		%		60-140	28-AUG-19
Carbon tetrachloride			104.7		%		70-130	28-AUG-19
Chlorobenzene			107.4		%		70-130	28-AUG-19
Chloroform			102.2		%		70-130	28-AUG-19
cis-1,2-Dichloroethylene			104.0		%		70-130	28-AUG-19
cis-1,3-Dichloropropene			108.5		%		70-130	28-AUG-19
Dibromochloromethane			106.6		%		70-130	28-AUG-19
Dichlorodifluoromethane			115.4		%		50-140	28-AUG-19
Ethylbenzene			105.1		%		70-130	28-AUG-19
n-Hexane			98.7		%		70-130	28-AUG-19
m+p-Xylenes			104.2		%		70-130	28-AUG-19
Methyl Ethyl Ketone			101.4		%		60-140	28-AUG-19
Methyl Isobutyl Ketone			102.1		%		60-140	28-AUG-19
Methylene Chloride			106.1		%		70-130	28-AUG-19
MTBE			106.7		%		70-130	28-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-1 LCS								
o-Xylene			108.4		%		70-130	28-AUG-19
Styrene			108.5		%		70-130	28-AUG-19
Tetrachloroethylene			103.7		%		70-130	28-AUG-19
Toluene			106.5		%		70-130	28-AUG-19
trans-1,2-Dichloroethylene			103.4		%		70-130	28-AUG-19
trans-1,3-Dichloropropene			105.8		%		70-130	28-AUG-19
Trichloroethylene			104.2		%		70-130	28-AUG-19
Trichlorofluoromethane			108.0		%		60-140	28-AUG-19
Vinyl chloride			123.0		%		60-140	28-AUG-19
WG3136450-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1,1-Trichloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1,2-Trichloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1-Dichloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1-Dichloroethylene			<0.50		ug/L		0.5	28-AUG-19
1,2-Dibromoethane			<0.20		ug/L		0.2	28-AUG-19
1,2-Dichlorobenzene			<0.50		ug/L		0.5	28-AUG-19
1,2-Dichloroethane			<0.50		ug/L		0.5	28-AUG-19
1,2-Dichloropropane			<0.50		ug/L		0.5	28-AUG-19
1,3-Dichlorobenzene			<0.50		ug/L		0.5	28-AUG-19
1,4-Dichlorobenzene			<0.50		ug/L		0.5	28-AUG-19
Acetone			<30		ug/L		30	28-AUG-19
Benzene			<0.50		ug/L		0.5	28-AUG-19
Bromodichloromethane			<2.0		ug/L		2	28-AUG-19
Bromoform			<5.0		ug/L		5	28-AUG-19
Bromomethane			<0.50		ug/L		0.5	28-AUG-19
Carbon tetrachloride			<0.20		ug/L		0.2	28-AUG-19
Chlorobenzene			<0.50		ug/L		0.5	28-AUG-19
Chloroform			<1.0		ug/L		1	28-AUG-19
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	28-AUG-19
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	28-AUG-19
Dibromochloromethane			<2.0		ug/L		2	28-AUG-19
Dichlorodifluoromethane			<2.0		ug/L		2	28-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-2 MB								
Ethylbenzene			<0.50		ug/L		0.5	28-AUG-19
n-Hexane			<0.50		ug/L		0.5	28-AUG-19
m+p-Xylenes			<0.40		ug/L		0.4	28-AUG-19
Methyl Ethyl Ketone			<20		ug/L		20	28-AUG-19
Methyl Isobutyl Ketone			<20		ug/L		20	28-AUG-19
Methylene Chloride			<5.0		ug/L		5	28-AUG-19
MTBE			<2.0		ug/L		2	28-AUG-19
o-Xylene			<0.30		ug/L		0.3	28-AUG-19
Styrene			<0.50		ug/L		0.5	28-AUG-19
Tetrachloroethylene			<0.50		ug/L		0.5	28-AUG-19
Toluene			<0.50		ug/L		0.5	28-AUG-19
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	28-AUG-19
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	28-AUG-19
Trichloroethylene			<0.50		ug/L		0.5	28-AUG-19
Trichlorofluoromethane			<5.0		ug/L		5	28-AUG-19
Vinyl chloride			<0.50		ug/L		0.5	28-AUG-19
Surrogate: 1,4-Difluorobenzene			96.0		%		70-130	28-AUG-19
Surrogate: 4-Bromofluorobenzene			95.5		%		70-130	28-AUG-19
WG3136450-5 MS		**WG3136450-3**						
1,1,1,2-Tetrachloroethane			105.2		%		50-140	29-AUG-19
1,1,2,2-Tetrachloroethane			100.7		%		50-140	29-AUG-19
1,1,1-Trichloroethane			107.8		%		50-140	29-AUG-19
1,1,2-Trichloroethane			103.5		%		50-140	29-AUG-19
1,1-Dichloroethane			106.6		%		50-140	29-AUG-19
1,1-Dichloroethylene			108.6		%		50-140	29-AUG-19
1,2-Dibromoethane			101.2		%		50-140	29-AUG-19
1,2-Dichlorobenzene			109.1		%		50-140	29-AUG-19
1,2-Dichloroethane			100.5		%		50-140	29-AUG-19
1,2-Dichloropropane			106.5		%		50-140	29-AUG-19
1,3-Dichlorobenzene			107.7		%		50-140	29-AUG-19
1,4-Dichlorobenzene			107.0		%		50-140	29-AUG-19
Acetone			99.1		%		50-140	29-AUG-19
Benzene			108.9		%		50-140	29-AUG-19
Bromodichloromethane			103.5		%		50-140	29-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-5 MS		**WG3136450-3**						
Bromoform			101.2		%		50-140	29-AUG-19
Bromomethane			94.9		%		50-140	29-AUG-19
Carbon tetrachloride			108.1		%		50-140	29-AUG-19
Chlorobenzene			107.8		%		50-140	29-AUG-19
Chloroform			100.5		%		50-140	29-AUG-19
cis-1,2-Dichloroethylene			101.9		%		50-140	29-AUG-19
cis-1,3-Dichloropropene			107.2		%		50-140	29-AUG-19
Dibromochloromethane			99.95		%		50-140	29-AUG-19
Dichlorodifluoromethane			112.6		%		50-140	29-AUG-19
Ethylbenzene			108.6		%		50-140	29-AUG-19
n-Hexane			103.1		%		50-140	29-AUG-19
m+p-Xylenes			108.7		%		50-140	29-AUG-19
Methyl Ethyl Ketone			81.6		%		50-140	29-AUG-19
Methyl Isobutyl Ketone			89.9		%		50-140	29-AUG-19
Methylene Chloride			100.1		%		50-140	29-AUG-19
MTBE			107.0		%		50-140	29-AUG-19
o-Xylene			110.9		%		50-140	29-AUG-19
Styrene			108.5		%		50-140	29-AUG-19
Tetrachloroethylene			109.1		%		50-140	29-AUG-19
Toluene			109.1		%		50-140	29-AUG-19
trans-1,2-Dichloroethylene			106.9		%		50-140	29-AUG-19
trans-1,3-Dichloropropene			104.2		%		50-140	29-AUG-19
Trichloroethylene			106.3		%		50-140	29-AUG-19
Trichlorofluoromethane			112.1		%		50-140	29-AUG-19
Vinyl chloride			124.9		%		50-140	29-AUG-19

Quality Control Report

Workorder: L2334304 Report Date: 29-AUG-19

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

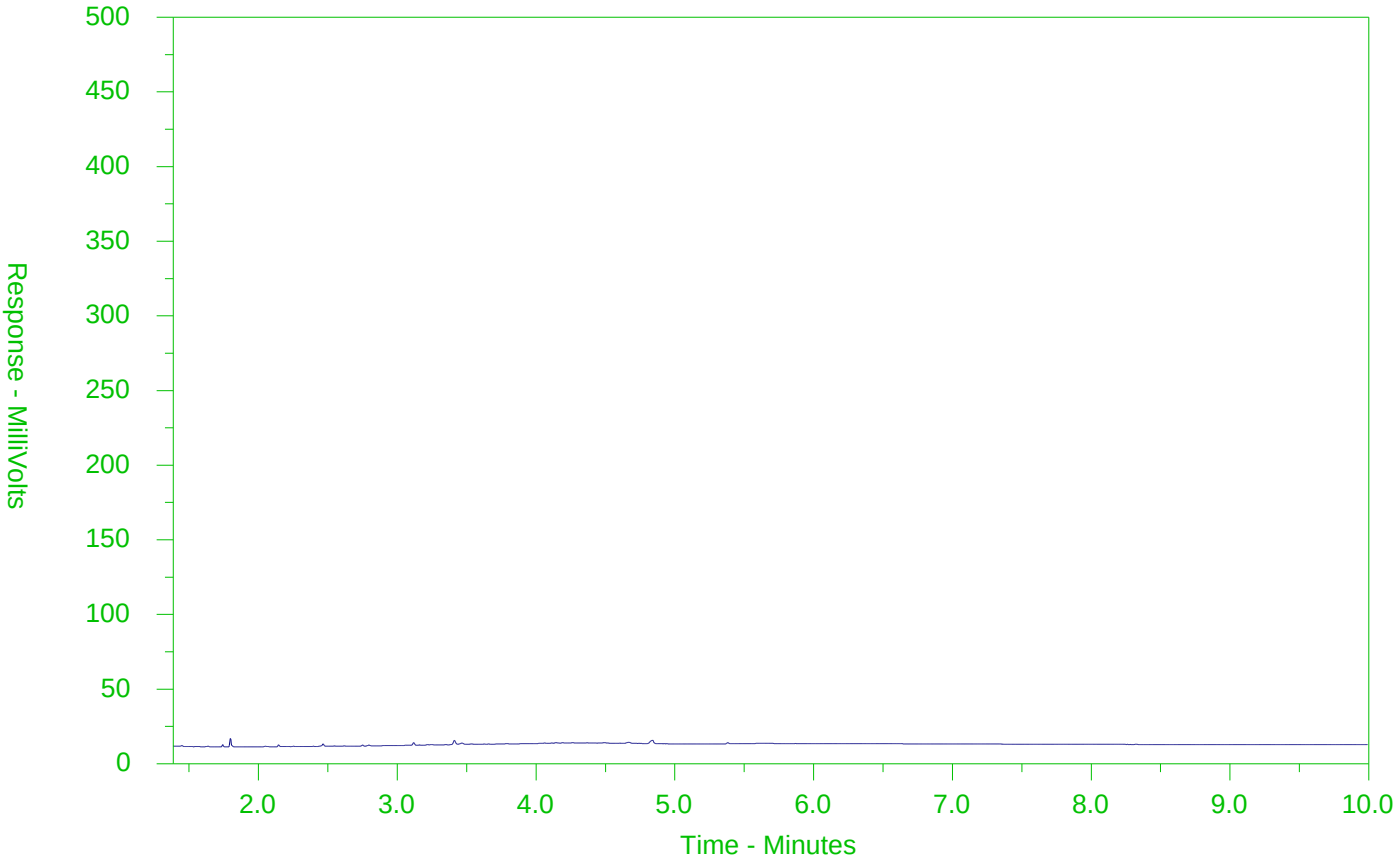
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2334304-1
Client Sample ID: MW1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

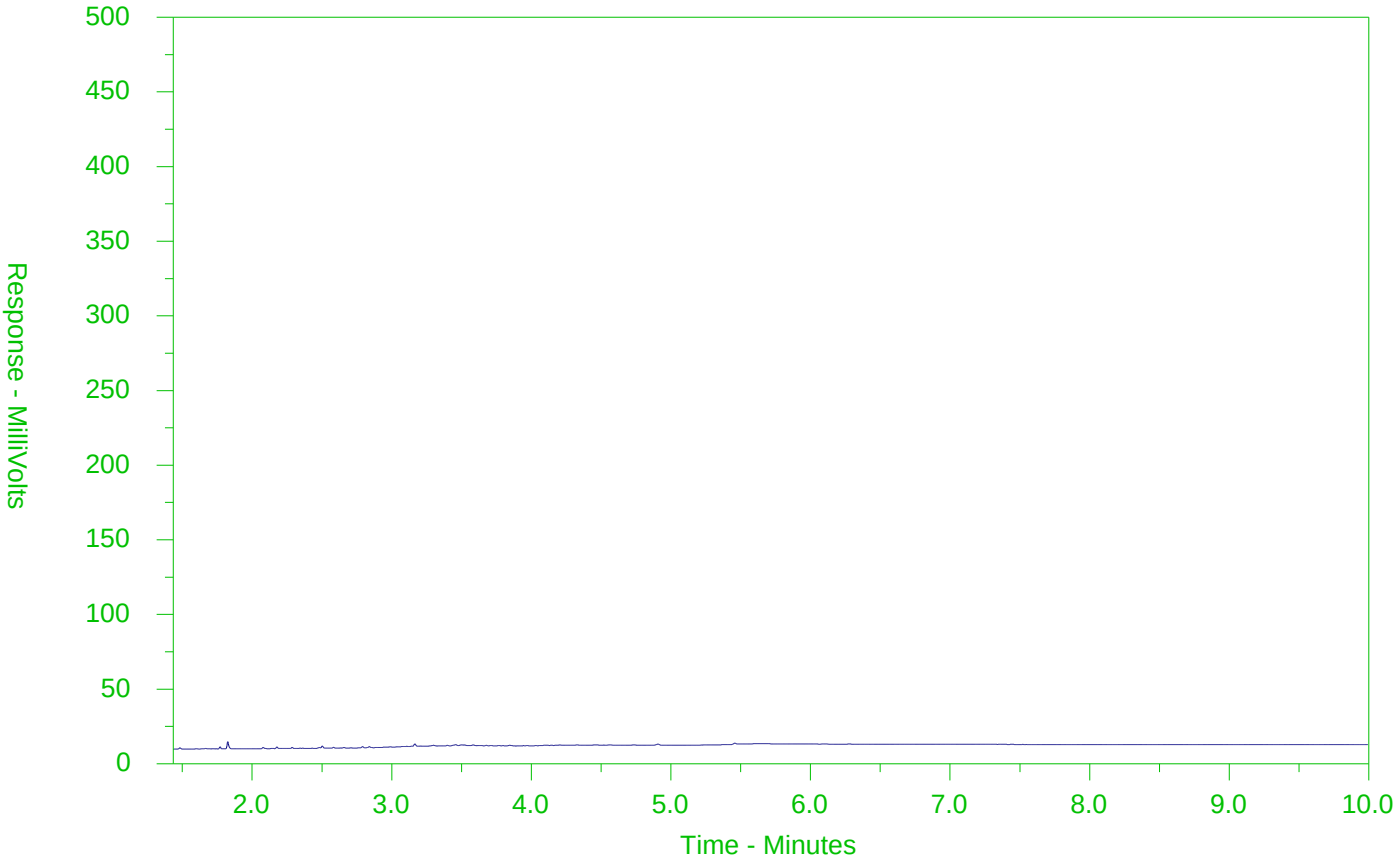
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2334304-2
Client Sample ID: MW100



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

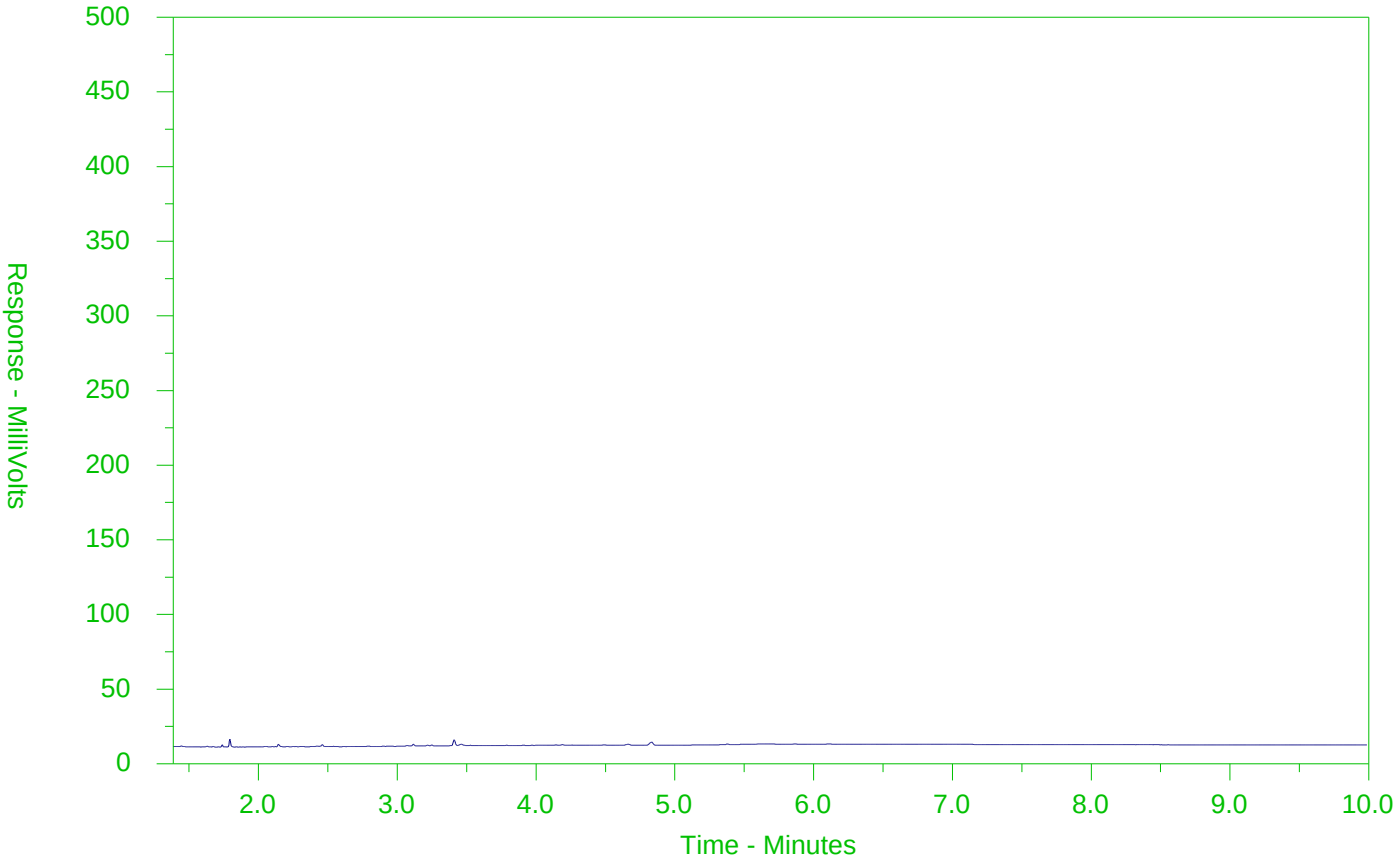
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2334304-3
Client Sample ID: MWW



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2334304-COFC

COC Number: 17 - 617150

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Landtek Limited
Contact:	Katie
Phone:	905 383 3733
	Company address below will appear on the final report
Street:	Nebo Rd.
City/Province:	Hamilton
Postal Code:	
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [ ] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: [X] PDF [X] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report [X] YES [ ] NO
[X] Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax
Email 2 Katie@landteklimited.com
Email 3

Invoice Distribution

Select Invoice Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax
Email 2 Kathy@landteklimited.com
[redacted]

Project Information

ALS Account # / Quote #:			
Job #:	19239	AFE/Cost Center:	PO#
PO / AFE:		Major/Minor Code:	Routing Code:
LSD:		Requisitioner:	
ALS Lab Work Order # (lab use only):	L2334304	Location:	
		ALS Contact:	Sampler: KM

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] | 3 day [P3-25%] [ ] | 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E-100%] [ ] | Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	PHC/VOC	F/P	M+I	PAH	VOC/BTEX	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	MW1	21/08/19	AM	GW	X		X	X				9
	MW100	↓	↓	GW	X		X	X				9
	MW3	↓	↓	GW	X		X	X				9
	Trip blank			W					X			2

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [X] NO

Are samples for human consumption/ use? [ ] YES [X] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Table 3

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] | SIF Observations Yes [ ] No [ ]
Ice Packs [X] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]
Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				9.3			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katie McBurney	Date: 2019/22/08	Time: 900	Received by:	Date:	Time:	Received by: KH	Date: 22-8-19	Time: 15:55

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JULY 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

VOC 423

LANDTEK LIMITED
ATTN: KATIE MCISAAC
205 NEBO ROAD
UNIT 3
HAMILTON ON L8W2E1

Date Received: 22-AUG-19
Report Date: 29-AUG-19 13:54 (MT)
Version: FINAL

Client Phone: 905-383-3733

Certificate of Analysis

Lab Work Order #: L2334304

Project P.O. #: NOT SUBMITTED
Job Reference: 19239
C of C Numbers: 17-617150
Legal Site Desc:

Ylynne Rosales
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ANALYTICAL REPORT

Summary of Guideline Exceedances

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Guideline						
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)						
L2334304-1	MW1	Volatile Organic Compounds	Trichloroethylene	1.63	1.6	ug/L
L2334304-3	MWW	Volatile Organic Compounds	Trichloroethylene	1.86	1.6	ug/L
L2334304-4	TRIP BLANK	Volatile Organic Compounds	Trichloroethylene	8.03	1.6	ug/L
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Fine)						
(No parameter exceedances)						

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Physical Tests - WATER

		Guide Limits				
Lab ID				L2334304-1	L2334304-2	L2334304-3
Sample Date				21-AUG-19	21-AUG-19	21-AUG-19
Sample ID				MW1	MW100	MWW
Analyte	**Unit**	**#1**	**#2**			
Conductivity	mS/cm	-	-	2.95	2.95	3.66
pH	pH units	-	-	7.38	7.62	7.72

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Anions and Nutrients - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	Sample Date	Sample ID
				L2334304-1	L2334304-2	L2334304-3
				21-AUG-19	21-AUG-19	21-AUG-19
				MW1	MW100	MWW
Chloride (Cl)	mg/L	2300	2300	459 DLHC	466 DLHC	897 DLHC

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Cyanides - WATER

		Guide Limits				
Lab ID				L2334304-1	L2334304-2	L2334304-3
Sample Date				21-AUG-19	21-AUG-19	21-AUG-19
Sample ID				MW1	MW100	MWW
Analyte	**Unit**	**#1**	**#2**			
Cyanide, Weak Acid Diss	ug/L	66	66	<2.0	<2.0	<2.0

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Dissolved Metals - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID L2334304-1 / Sample Date 21-AUG-19 / Sample ID MW1	Lab ID L2334304-2 / Sample Date 21-AUG-19 / Sample ID MW100	Lab ID L2334304-3 / Sample Date 21-AUG-19 / Sample ID MWW
Dissolved Mercury Filtration Location		-	-	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location		-	-	FIELD	FIELD	FIELD
Antimony (Sb)-Dissolved	ug/L	20000	20000	6.0 DLHC	6.3 DLHC	<1.0 DLHC
Arsenic (As)-Dissolved	ug/L	1900	1900	1.1 DLHC	1.0 DLHC	1.8 DLHC
Barium (Ba)-Dissolved	ug/L	29000	29000	163 DLHC	164 DLHC	114 DLHC
Beryllium (Be)-Dissolved	ug/L	67	67	<1.0 DLHC	<1.0 DLHC	<1.0 DLHC
Boron (B)-Dissolved	ug/L	45000	45000	300 DLHC	380 DLHC	980 DLHC
Cadmium (Cd)-Dissolved	ug/L	2.7	2.7	0.190 DLHC	0.208 DLHC	<0.050 DLHC
Chromium (Cr)-Dissolved	ug/L	810	810	<5.0 DLHC	<5.0 DLHC	<5.0 DLHC
Cobalt (Co)-Dissolved	ug/L	66	66	5.6 DLHC	5.3 DLHC	<1.0 DLHC
Copper (Cu)-Dissolved	ug/L	87	87	5.6 DLHC	5.8 DLHC	2.6 DLHC
Lead (Pb)-Dissolved	ug/L	25	25	2.60 DLHC	2.72 DLHC	<0.50 DLHC
Mercury (Hg)-Dissolved	ug/L	0.29	2.8	0.0057	0.0057	<0.0050
Molybdenum (Mo)-Dissolved	ug/L	9200	9200	2.87 DLHC	2.99 DLHC	14.2 DLHC
Nickel (Ni)-Dissolved	ug/L	490	490	9.4 DLHC	9.4 DLHC	<5.0 DLHC
Selenium (Se)-Dissolved	ug/L	63	63	2.22 DLHC	2.33 DLHC	<0.50 DLHC
Silver (Ag)-Dissolved	ug/L	1.5	1.5	<0.50 DLHC	<0.50 DLHC	<0.50 DLHC
Sodium (Na)-Dissolved	ug/L	2300000	2300000	222000 DLHC	219000 DLHC	486000 DLHC
Thallium (Tl)-Dissolved	ug/L	510	510	<0.10 DLHC	<0.10 DLHC	<0.10 DLHC
Uranium (U)-Dissolved	ug/L	420	420	1.50 DLHC	1.54 DLHC	0.92 DLHC
Vanadium (V)-Dissolved	ug/L	250	250	<5.0 DLHC	<5.0 DLHC	<5.0 DLHC
Zinc (Zn)-Dissolved	ug/L	1100	1100	90 DLHC	84 DLHC	<10 DLHC

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Speciated Metals - WATER

		Guide Limits				
		Lab ID		L2334304-1	L2334304-2	L2334304-3
		Sample Date		21-AUG-19	21-AUG-19	21-AUG-19
		Sample ID		MW1	MW100	MWW
Analyte	Unit	#1	#2			
Chromium, Hexavalent	ug/L	140	140	<0.50	<0.50	<0.50

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Volatile Organic Compounds - WATER

				Lab ID	L2334304-1	L2334304-2	L2334304-3	L2334304-4
				Sample Date	21-AUG-19	21-AUG-19	21-AUG-19	21-AUG-19
				Sample ID	MW1	MW100	MWW	TRIP BLANK
Analyte	Unit	Guide Limits #1	#2					
Acetone	ug/L	130000	130000	<30	<30	<30	<30
Benzene	ug/L	44	430	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	ug/L	85000	85000	<2.0	<2.0	<2.0	<2.0
Bromoform	ug/L	380	770	<5.0	<5.0	<5.0	<5.0
Bromomethane	ug/L	5.6	56	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	ug/L	0.79	8.4	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	ug/L	630	630	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane	ug/L	82000	82000	<2.0	<2.0	<2.0	<2.0
Chloroform	ug/L	2.4	22	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	ug/L	0.25	0.83	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	ug/L	4600	9600	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	ug/L	9600	9600	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	ug/L	8	67	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	ug/L	4400	4400	<2.0	<2.0	<2.0	<2.0
1,1-Dichloroethane	ug/L	320	3100	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane	ug/L	1.6	12	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/L	1.6	17	<0.50	<0.50	<0.50	<0.50
cis-1,2-Dichloroethylene	ug/L	1.6	17	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	ug/L	1.6	17	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	ug/L	610	5500	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	ug/L	16	140	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloropropene	ug/L	-	-	<0.30	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	ug/L	-	-	<0.30	<0.30	<0.30	<0.30
1,3-Dichloropropene (cis & trans)	ug/L	5.2	45	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	ug/L	2300	2300	<0.50	<0.50	<0.50	<0.50
n-Hexane	ug/L	51	520	<0.50	<0.50	<0.50	<0.50
Methyl Ethyl Ketone	ug/L	470000	1500000	<20	<20	<20	<20
Methyl Isobutyl Ketone	ug/L	140000	580000	<20	<20	<20	<20
MTBE	ug/L	190	1400	<2.0	<2.0	<2.0	<2.0
Styrene	ug/L	1300	9100	<0.50	<0.50	<0.50	<0.50

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Volatile Organic Compounds - WATER

				Lab ID	L2334304-1	L2334304-2	L2334304-3	L2334304-4
				Sample Date	21-AUG-19	21-AUG-19	21-AUG-19	21-AUG-19
				Sample ID	MW1	MW100	MWW	TRIP BLANK
		Guide Limits						
Analyte	Unit	#1	#2					
1,1,1,2-Tetrachloroethane	ug/L	3.3	28	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	ug/L	3.2	15	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	ug/L	1.6	17	<0.50	<0.50	<0.50	<0.50
Toluene	ug/L	18000	18000	<0.50	<0.50	<0.50	<0.50
1,1,1-Trichloroethane	ug/L	640	6700	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/L	4.7	30	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	ug/L	1.6	17	1.63	0.91	1.86	8.03
Trichlorofluoromethane	ug/L	2500	2500	<5.0	<5.0	<5.0	<5.0
Vinyl chloride	ug/L	0.5	1.7	<0.50	<0.50	<0.50	<0.50
o-Xylene	ug/L	-	-	<0.30	<0.30	<0.30	<0.30
m+p-Xylenes	ug/L	-	-	<0.40	<0.40	<0.40	<0.40
Xylenes (Total)	ug/L	4200	4200	<0.50	<0.50	<0.50	<0.50
Surrogate: 4-Bromofluorobenzene	%	-	-	93.5	93.9	94.1	93.7
Surrogate: 1,4-Difluorobenzene	%	-	-	96.0	96.0	96.1	95.8

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Hydrocarbons - WATER

		Guide Limits				
Lab ID				L2334304-1	L2334304-2	L2334304-3
Sample Date				21-AUG-19	21-AUG-19	21-AUG-19
Sample ID				MW1	MW100	MWW
Analyte	**Unit**	**#1**	**#2**			
F1 (C6-C10)	ug/L	750	750	<25	<25	<25
F1-BTEX	ug/L	750	750	<25	<25	<25
F2 (C10-C16)	ug/L	150	150	<100	<100 OWP	<100
F2-Naphth	ug/L	-	-	<100	<100	<100
F3 (C16-C34)	ug/L	500	500	<250	<250 OWP	<250
F3-PAH	ug/L	-	-	<250	<250	<250
F4 (C34-C50)	ug/L	500	500	<250	<250 OWP	<250
Total Hydrocarbons (C6-C50)	ug/L	-	-	<370	<370	<370
Chrom. to baseline at nC50		-	-	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	93.7	85.6	86.5
Surrogate: 3,4-Dichlorotoluene	%	-	-	76.1	77.3	88.0

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Polycyclic Aromatic Hydrocarbons - WATER

		Guide Limits				
Lab ID				L2334304-1	L2334304-2	L2334304-3
Sample Date				21-AUG-19	21-AUG-19	21-AUG-19
Sample ID				MW1	MW100	MWW
Analyte	**Unit**	**#1**	**#2**			
Acenaphthene	ug/L	600	1700	<0.020	0.029	<0.020
Acenaphthylene	ug/L	1.8	1.8	<0.020	<0.020	<0.020
Anthracene	ug/L	2.4	2.4	0.057	0.085	<0.020
Benzo(a)anthracene	ug/L	4.7	4.7	0.238	0.304	<0.020
Benzo(a)pyrene	ug/L	0.81	0.81	0.219	0.263	<0.010
Benzo(b)fluoranthene	ug/L	0.75	0.75	0.288	0.337	<0.020
Benzo(g,h,i)perylene	ug/L	0.2	0.2	0.127	0.154	<0.020
Benzo(k)fluoranthene	ug/L	0.4	0.4	0.094	0.123	<0.020
Chrysene	ug/L	1	1	0.232	0.304	<0.020
Dibenzo(ah)anthracene	ug/L	0.52	0.52	0.037	0.045	<0.020
Fluoranthene	ug/L	130	130	0.477	0.627	0.049
Fluorene	ug/L	400	400	<0.020	0.028	<0.020
Indeno(1,2,3-cd)pyrene	ug/L	0.2	0.2	0.139	0.171	<0.020
1+2-Methylnaphthalenes	ug/L	1800	1800	<0.028	<0.028	<0.028
1-Methylnaphthalene	ug/L	1800	1800	<0.020	<0.020	<0.020
2-Methylnaphthalene	ug/L	1800	1800	<0.020	<0.020	0.020
Naphthalene	ug/L	1400	6400	<0.050	<0.050	<0.050
Phenanthrene	ug/L	580	580	0.271	0.425	0.044
Pyrene	ug/L	68	68	0.430	0.555	0.027
Surrogate: d10-Acenaphthene	%	-	-	106.6	101.2	103.1
Surrogate: d12-Chrysene	%	-	-	114.3	113.1	106.1
Surrogate: d8-Naphthalene	%	-	-	106.8	103.9	115.8
Surrogate: d10-Phenanthrene	%	-	-	104.1	106.0	104.3

Guide Limit #1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)
Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
OWP	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

Reference Information

sediment.

DLHC Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Water	Cyanide (WAD)-O.Reg 153/04	APHA 4500CN I-Weak acid Dist Colorimet

Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-R511-WT	Water	Hex Chrom-O.Reg 153/04 (July 2011)	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-R511-WT	Water	Conductivity-O.Reg 153/04 (July 2011)	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HG-D-UG/L-CVAA-WT	Water	Diss. Mercury in Water by CVAAS (ug/L)	EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8

The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Water	PAH-Calculated Parameters	SW846 8270
PAH-511-WT	Water	PAH-O. Reg 153/04 (July 2011)	SW846 3510/8270

Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

17-617150

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2334304 Report Date: 29-AUG-19

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	**Water**							
Batch R4768586								
WG3141478-4 DUP		**L2334047-1**						
Chloride (Cl)		151	153		mg/L	0.8	20	23-AUG-19
WG3141478-2 LCS								
Chloride (Cl)			102.0		%		90-110	23-AUG-19
WG3141478-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
WG3141478-5 MS		**L2334047-1**						
Chloride (Cl)			N/A	MS-B	%		-	23-AUG-19
CN-WAD-R511-WT	**Water**							
Batch R4768602								
WG3141842-3 DUP		**L2334304-2**						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	23-AUG-19
WG3141842-2 LCS								
Cyanide, Weak Acid Diss			109.0		%		80-120	23-AUG-19
WG3141842-1 MB								
Cyanide, Weak Acid Diss			<2.0		ug/L		2	23-AUG-19
WG3141842-4 MS		**L2334304-2**						
Cyanide, Weak Acid Diss			103.8		%		75-125	23-AUG-19
CR-CR6-IC-R511-WT	**Water**							
Batch R4768380								
WG3143055-4 DUP		**WG3143055-3**						
Chromium, Hexavalent		<0.50	<0.50	RPD-NA	ug/L	N/A	20	23-AUG-19
WG3143055-2 LCS								
Chromium, Hexavalent			97.7		%		80-120	23-AUG-19
WG3143055-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	23-AUG-19
WG3143055-5 MS		**WG3143055-3**						
Chromium, Hexavalent			95.8		%		70-130	23-AUG-19
EC-R511-WT	**Water**							
Batch R4767975								
WG3141874-4 DUP		**WG3141874-3**						
Conductivity		0.0731	0.0724		mS/cm	1.0	10	23-AUG-19
WG3141874-2 LCS								
Conductivity			101.5		%		90-110	23-AUG-19
WG3141874-1 MB								
Conductivity			<0.0030		mS/cm		0.003	23-AUG-19
F1-HS-511-WT	**Water**							

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Water**							
Batch R4774139								
WG3136450-4 DUP		**WG3136450-3**						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	29-AUG-19
WG3136450-1 LCS								
F1 (C6-C10)			90.1		%		80-120	28-AUG-19
WG3136450-2 MB								
F1 (C6-C10)			<25		ug/L		25	28-AUG-19
Surrogate: 3,4-Dichlorotoluene			84.6		%		60-140	28-AUG-19
WG3136450-5 MS		**WG3136450-3**						
F1 (C6-C10)			96.6		%		60-140	29-AUG-19
F2-F4-511-WT	**Water**							
Batch R4768762								
WG3141025-2 LCS								
F2 (C10-C16)			96.7		%		70-130	23-AUG-19
F3 (C16-C34)			106.9		%		70-130	23-AUG-19
F4 (C34-C50)			96.9		%		70-130	23-AUG-19
WG3141025-1 MB								
F2 (C10-C16)			<100		ug/L		100	23-AUG-19
F3 (C16-C34)			<250		ug/L		250	23-AUG-19
F4 (C34-C50)			<250		ug/L		250	23-AUG-19
Surrogate: 2-Bromobenzotrifluoride			95.6		%		60-140	23-AUG-19
HG-D-UG/L-CVAA-WT	**Water**							
Batch R4767964								
WG3141336-4 DUP		**WG3141336-3**						
Mercury (Hg)-Dissolved		<0.0050	<0.0050	RPD-NA	ug/L	N/A	20	24-AUG-19
WG3141336-2 LCS								
Mercury (Hg)-Dissolved			87.9		%		80-120	24-AUG-19
WG3141336-1 MB								
Mercury (Hg)-Dissolved			<0.0050		ug/L		0.005	24-AUG-19
WG3141336-6 MS		**WG3141336-5**						
Mercury (Hg)-Dissolved			86.5		%		70-130	24-AUG-19
MET-D-UG/L-MS-WT	**Water**							
Batch R4768018								
WG3142140-4 DUP		**WG3142140-3**						
Antimony (Sb)-Dissolved		0.17	0.16		ug/L	1.8	20	23-AUG-19
Arsenic (As)-Dissolved		0.86	0.88		ug/L	3.1	20	23-AUG-19
Barium (Ba)-Dissolved		22.4	22.7		ug/L	1.3	20	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4768018								
WG3142140-4 DUP		**WG3142140-3**						
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	23-AUG-19
Boron (B)-Dissolved		26	27		ug/L	4.6	20	23-AUG-19
Cadmium (Cd)-Dissolved		<0.0050	<0.0050	RPD-NA	ug/L	N/A	20	23-AUG-19
Chromium (Cr)-Dissolved		1.64	1.67		ug/L	1.7	20	23-AUG-19
Cobalt (Co)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	23-AUG-19
Copper (Cu)-Dissolved		1.98	1.99		ug/L	0.6	20	23-AUG-19
Lead (Pb)-Dissolved		0.065	0.062		ug/L	4.6	20	23-AUG-19
Molybdenum (Mo)-Dissolved		1.24	1.23		ug/L	0.8	20	23-AUG-19
Nickel (Ni)-Dissolved		<0.50	0.50	RPD-NA	ug/L	N/A	20	23-AUG-19
Selenium (Se)-Dissolved		0.171	0.183		ug/L	6.7	20	23-AUG-19
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	23-AUG-19
Sodium (Na)-Dissolved		15200	15500		ug/L	2.2	20	23-AUG-19
Thallium (Tl)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	23-AUG-19
Uranium (U)-Dissolved		0.342	0.340		ug/L	0.7	20	23-AUG-19
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	23-AUG-19
Zinc (Zn)-Dissolved		2.0	1.9		ug/L	9.8	20	23-AUG-19
WG3142140-2 LCS								
Antimony (Sb)-Dissolved			97.2		%		80-120	23-AUG-19
Arsenic (As)-Dissolved			96.2		%		80-120	23-AUG-19
Barium (Ba)-Dissolved			98.7		%		80-120	23-AUG-19
Beryllium (Be)-Dissolved			96.9		%		80-120	23-AUG-19
Boron (B)-Dissolved			93.0		%		80-120	23-AUG-19
Cadmium (Cd)-Dissolved			96.4		%		80-120	23-AUG-19
Chromium (Cr)-Dissolved			98.8		%		80-120	23-AUG-19
Cobalt (Co)-Dissolved			97.5		%		80-120	23-AUG-19
Copper (Cu)-Dissolved			97.1		%		80-120	23-AUG-19
Lead (Pb)-Dissolved			99.3		%		80-120	23-AUG-19
Molybdenum (Mo)-Dissolved			99.4		%		80-120	23-AUG-19
Nickel (Ni)-Dissolved			96.6		%		80-120	23-AUG-19
Selenium (Se)-Dissolved			96.1		%		80-120	23-AUG-19
Silver (Ag)-Dissolved			97.3		%		80-120	23-AUG-19
Sodium (Na)-Dissolved			99.2		%		80-120	23-AUG-19
Thallium (Tl)-Dissolved			97.6		%		80-120	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4768018								
WG3142140-2 LCS								
Uranium (U)-Dissolved			102.0		%		80-120	23-AUG-19
Vanadium (V)-Dissolved			99.8		%		80-120	23-AUG-19
Zinc (Zn)-Dissolved			95.2		%		80-120	23-AUG-19
WG3142140-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Boron (B)-Dissolved			<10		ug/L		10	23-AUG-19
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	23-AUG-19
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	23-AUG-19
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	23-AUG-19
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	23-AUG-19
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	23-AUG-19
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	23-AUG-19
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	23-AUG-19
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	23-AUG-19
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	23-AUG-19
Sodium (Na)-Dissolved			<50		ug/L		50	23-AUG-19
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	23-AUG-19
Uranium (U)-Dissolved			<0.010		ug/L		0.01	23-AUG-19
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	23-AUG-19
Zinc (Zn)-Dissolved			<1.0		ug/L		1	23-AUG-19
WG3142140-5 MS		**WG3142140-6**						
Antimony (Sb)-Dissolved			99.0		%		70-130	23-AUG-19
Arsenic (As)-Dissolved			102.0		%		70-130	23-AUG-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	23-AUG-19
Beryllium (Be)-Dissolved			104.4		%		70-130	23-AUG-19
Boron (B)-Dissolved			95.5		%		70-130	23-AUG-19
Cadmium (Cd)-Dissolved			100.1		%		70-130	23-AUG-19
Chromium (Cr)-Dissolved			97.4		%		70-130	23-AUG-19
Cobalt (Co)-Dissolved			96.8		%		70-130	23-AUG-19
Copper (Cu)-Dissolved			93.9		%		70-130	23-AUG-19
Lead (Pb)-Dissolved			96.5		%		70-130	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4768018								
WG3142140-5 MS		**WG3142140-6**						
Molybdenum (Mo)-Dissolved			101.6		%		70-130	23-AUG-19
Nickel (Ni)-Dissolved			93.2		%		70-130	23-AUG-19
Selenium (Se)-Dissolved			111.7		%		70-130	23-AUG-19
Silver (Ag)-Dissolved			97.8		%		70-130	23-AUG-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-AUG-19
Thallium (Tl)-Dissolved			95.4		%		70-130	23-AUG-19
Uranium (U)-Dissolved			N/A	MS-B	%		-	23-AUG-19
Vanadium (V)-Dissolved			99.7		%		70-130	23-AUG-19
Zinc (Zn)-Dissolved			97.2		%		70-130	23-AUG-19
PAH-511-WT	**Water**							
Batch R4769795								
WG3141025-2 LCS								
1-Methylnaphthalene			110.3		%		50-140	27-AUG-19
2-Methylnaphthalene			100.9		%		50-140	27-AUG-19
Acenaphthene			111.6		%		50-140	27-AUG-19
Acenaphthylene			115.8		%		50-140	27-AUG-19
Anthracene			100.5		%		50-140	27-AUG-19
Benzo(a)anthracene			133.2		%		50-140	27-AUG-19
Benzo(a)pyrene			113.6		%		50-140	27-AUG-19
Benzo(b)fluoranthene			123.4		%		50-140	27-AUG-19
Benzo(g,h,i)perylene			121.7		%		50-140	27-AUG-19
Benzo(k)fluoranthene			121.9		%		50-140	27-AUG-19
Chrysene			136.6		%		50-140	27-AUG-19
Dibenzo(ah)anthracene			120.0		%		50-140	27-AUG-19
Fluoranthene			123.4		%		50-140	27-AUG-19
Fluorene			109.5		%		50-140	27-AUG-19
Indeno(1,2,3-cd)pyrene			130.0		%		50-140	27-AUG-19
Naphthalene			106.7		%		50-140	27-AUG-19
Phenanthrene			120.4		%		50-140	27-AUG-19
Pyrene			126.8		%		50-140	27-AUG-19
WG3141025-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	27-AUG-19
2-Methylnaphthalene			<0.020		ug/L		0.02	27-AUG-19
Acenaphthene			<0.020		ug/L		0.02	27-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4769795								
WG3141025-1 MB								
Acenaphthylene			<0.020		ug/L		0.02	27-AUG-19
Anthracene			<0.020		ug/L		0.02	27-AUG-19
Benzo(a)anthracene			<0.020		ug/L		0.02	27-AUG-19
Benzo(a)pyrene			<0.010		ug/L		0.01	27-AUG-19
Benzo(b)fluoranthene			<0.020		ug/L		0.02	27-AUG-19
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	27-AUG-19
Benzo(k)fluoranthene			<0.020		ug/L		0.02	27-AUG-19
Chrysene			<0.020		ug/L		0.02	27-AUG-19
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	27-AUG-19
Fluoranthene			<0.020		ug/L		0.02	27-AUG-19
Fluorene			<0.020		ug/L		0.02	27-AUG-19
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	27-AUG-19
Naphthalene			<0.050		ug/L		0.05	27-AUG-19
Phenanthrene			<0.020		ug/L		0.02	27-AUG-19
Pyrene			<0.020		ug/L		0.02	27-AUG-19
Surrogate: d8-Naphthalene			116.9		%		60-140	27-AUG-19
Surrogate: d10-Phenanthrene			117.9		%		60-140	27-AUG-19
Surrogate: d12-Chrysene			122.3		%		60-140	27-AUG-19
Surrogate: d10-Acenaphthene			115.1		%		60-140	27-AUG-19
PH-WT	**Water**							
Batch R4767975								
WG3141874-4 DUP		**WG3141874-3**						
pH		7.02	6.94	J	pH units	0.08	0.2	23-AUG-19
WG3141874-2 LCS								
pH			7.00		pH units		6.9-7.1	23-AUG-19
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-4 DUP		**WG3136450-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-4 DUP		**WG3136450-3**						
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	29-AUG-19
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	29-AUG-19
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	29-AUG-19
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	29-AUG-19
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	29-AUG-19
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	29-AUG-19
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	29-AUG-19
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	29-AUG-19
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	29-AUG-19
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	29-AUG-19
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	29-AUG-19
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	29-AUG-19
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
Trichlorofluoromethane		<5.0	<5.0		ug/L			29-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-4 DUP		**WG3136450-3**						
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	29-AUG-19
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-AUG-19
WG3136450-1 LCS								
1,1,1,2-Tetrachloroethane			106.7		%		70-130	28-AUG-19
1,1,2,2-Tetrachloroethane			108.1		%		70-130	28-AUG-19
1,1,1-Trichloroethane			105.0		%		70-130	28-AUG-19
1,1,2-Trichloroethane			112.0		%		70-130	28-AUG-19
1,1-Dichloroethane			107.3		%		70-130	28-AUG-19
1,1-Dichloroethylene			104.8		%		70-130	28-AUG-19
1,2-Dibromoethane			112.7		%		70-130	28-AUG-19
1,2-Dichlorobenzene			109.1		%		70-130	28-AUG-19
1,2-Dichloroethane			109.0		%		70-130	28-AUG-19
1,2-Dichloropropane			109.3		%		70-130	28-AUG-19
1,3-Dichlorobenzene			104.6		%		70-130	28-AUG-19
1,4-Dichlorobenzene			104.4		%		70-130	28-AUG-19
Acetone			116.3		%		60-140	28-AUG-19
Benzene			109.1		%		70-130	28-AUG-19
Bromodichloromethane			107.1		%		70-130	28-AUG-19
Bromoform			110.0		%		70-130	28-AUG-19
Bromomethane			98.2		%		60-140	28-AUG-19
Carbon tetrachloride			104.7		%		70-130	28-AUG-19
Chlorobenzene			107.4		%		70-130	28-AUG-19
Chloroform			102.2		%		70-130	28-AUG-19
cis-1,2-Dichloroethylene			104.0		%		70-130	28-AUG-19
cis-1,3-Dichloropropene			108.5		%		70-130	28-AUG-19
Dibromochloromethane			106.6		%		70-130	28-AUG-19
Dichlorodifluoromethane			115.4		%		50-140	28-AUG-19
Ethylbenzene			105.1		%		70-130	28-AUG-19
n-Hexane			98.7		%		70-130	28-AUG-19
m+p-Xylenes			104.2		%		70-130	28-AUG-19
Methyl Ethyl Ketone			101.4		%		60-140	28-AUG-19
Methyl Isobutyl Ketone			102.1		%		60-140	28-AUG-19
Methylene Chloride			106.1		%		70-130	28-AUG-19
MTBE			106.7		%		70-130	28-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-1 LCS								
o-Xylene			108.4		%		70-130	28-AUG-19
Styrene			108.5		%		70-130	28-AUG-19
Tetrachloroethylene			103.7		%		70-130	28-AUG-19
Toluene			106.5		%		70-130	28-AUG-19
trans-1,2-Dichloroethylene			103.4		%		70-130	28-AUG-19
trans-1,3-Dichloropropene			105.8		%		70-130	28-AUG-19
Trichloroethylene			104.2		%		70-130	28-AUG-19
Trichlorofluoromethane			108.0		%		60-140	28-AUG-19
Vinyl chloride			123.0		%		60-140	28-AUG-19
WG3136450-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1,1-Trichloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1,2-Trichloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1-Dichloroethane			<0.50		ug/L		0.5	28-AUG-19
1,1-Dichloroethylene			<0.50		ug/L		0.5	28-AUG-19
1,2-Dibromoethane			<0.20		ug/L		0.2	28-AUG-19
1,2-Dichlorobenzene			<0.50		ug/L		0.5	28-AUG-19
1,2-Dichloroethane			<0.50		ug/L		0.5	28-AUG-19
1,2-Dichloropropane			<0.50		ug/L		0.5	28-AUG-19
1,3-Dichlorobenzene			<0.50		ug/L		0.5	28-AUG-19
1,4-Dichlorobenzene			<0.50		ug/L		0.5	28-AUG-19
Acetone			<30		ug/L		30	28-AUG-19
Benzene			<0.50		ug/L		0.5	28-AUG-19
Bromodichloromethane			<2.0		ug/L		2	28-AUG-19
Bromoform			<5.0		ug/L		5	28-AUG-19
Bromomethane			<0.50		ug/L		0.5	28-AUG-19
Carbon tetrachloride			<0.20		ug/L		0.2	28-AUG-19
Chlorobenzene			<0.50		ug/L		0.5	28-AUG-19
Chloroform			<1.0		ug/L		1	28-AUG-19
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	28-AUG-19
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	28-AUG-19
Dibromochloromethane			<2.0		ug/L		2	28-AUG-19
Dichlorodifluoromethane			<2.0		ug/L		2	28-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-2 MB								
Ethylbenzene			<0.50		ug/L		0.5	28-AUG-19
n-Hexane			<0.50		ug/L		0.5	28-AUG-19
m+p-Xylenes			<0.40		ug/L		0.4	28-AUG-19
Methyl Ethyl Ketone			<20		ug/L		20	28-AUG-19
Methyl Isobutyl Ketone			<20		ug/L		20	28-AUG-19
Methylene Chloride			<5.0		ug/L		5	28-AUG-19
MTBE			<2.0		ug/L		2	28-AUG-19
o-Xylene			<0.30		ug/L		0.3	28-AUG-19
Styrene			<0.50		ug/L		0.5	28-AUG-19
Tetrachloroethylene			<0.50		ug/L		0.5	28-AUG-19
Toluene			<0.50		ug/L		0.5	28-AUG-19
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	28-AUG-19
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	28-AUG-19
Trichloroethylene			<0.50		ug/L		0.5	28-AUG-19
Trichlorofluoromethane			<5.0		ug/L		5	28-AUG-19
Vinyl chloride			<0.50		ug/L		0.5	28-AUG-19
Surrogate: 1,4-Difluorobenzene			96.0		%		70-130	28-AUG-19
Surrogate: 4-Bromofluorobenzene			95.5		%		70-130	28-AUG-19
WG3136450-5 MS		**WG3136450-3**						
1,1,1,2-Tetrachloroethane			105.2		%		50-140	29-AUG-19
1,1,2,2-Tetrachloroethane			100.7		%		50-140	29-AUG-19
1,1,1-Trichloroethane			107.8		%		50-140	29-AUG-19
1,1,2-Trichloroethane			103.5		%		50-140	29-AUG-19
1,1-Dichloroethane			106.6		%		50-140	29-AUG-19
1,1-Dichloroethylene			108.6		%		50-140	29-AUG-19
1,2-Dibromoethane			101.2		%		50-140	29-AUG-19
1,2-Dichlorobenzene			109.1		%		50-140	29-AUG-19
1,2-Dichloroethane			100.5		%		50-140	29-AUG-19
1,2-Dichloropropane			106.5		%		50-140	29-AUG-19
1,3-Dichlorobenzene			107.7		%		50-140	29-AUG-19
1,4-Dichlorobenzene			107.0		%		50-140	29-AUG-19
Acetone			99.1		%		50-140	29-AUG-19
Benzene			108.9		%		50-140	29-AUG-19
Bromodichloromethane			103.5		%		50-140	29-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4774139								
WG3136450-5 MS		**WG3136450-3**						
Bromoform			101.2		%		50-140	29-AUG-19
Bromomethane			94.9		%		50-140	29-AUG-19
Carbon tetrachloride			108.1		%		50-140	29-AUG-19
Chlorobenzene			107.8		%		50-140	29-AUG-19
Chloroform			100.5		%		50-140	29-AUG-19
cis-1,2-Dichloroethylene			101.9		%		50-140	29-AUG-19
cis-1,3-Dichloropropene			107.2		%		50-140	29-AUG-19
Dibromochloromethane			99.95		%		50-140	29-AUG-19
Dichlorodifluoromethane			112.6		%		50-140	29-AUG-19
Ethylbenzene			108.6		%		50-140	29-AUG-19
n-Hexane			103.1		%		50-140	29-AUG-19
m+p-Xylenes			108.7		%		50-140	29-AUG-19
Methyl Ethyl Ketone			81.6		%		50-140	29-AUG-19
Methyl Isobutyl Ketone			89.9		%		50-140	29-AUG-19
Methylene Chloride			100.1		%		50-140	29-AUG-19
MTBE			107.0		%		50-140	29-AUG-19
o-Xylene			110.9		%		50-140	29-AUG-19
Styrene			108.5		%		50-140	29-AUG-19
Tetrachloroethylene			109.1		%		50-140	29-AUG-19
Toluene			109.1		%		50-140	29-AUG-19
trans-1,2-Dichloroethylene			106.9		%		50-140	29-AUG-19
trans-1,3-Dichloropropene			104.2		%		50-140	29-AUG-19
Trichloroethylene			106.3		%		50-140	29-AUG-19
Trichlorofluoromethane			112.1		%		50-140	29-AUG-19
Vinyl chloride			124.9		%		50-140	29-AUG-19

Quality Control Report

Workorder: L2334304 Report Date: 29-AUG-19

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

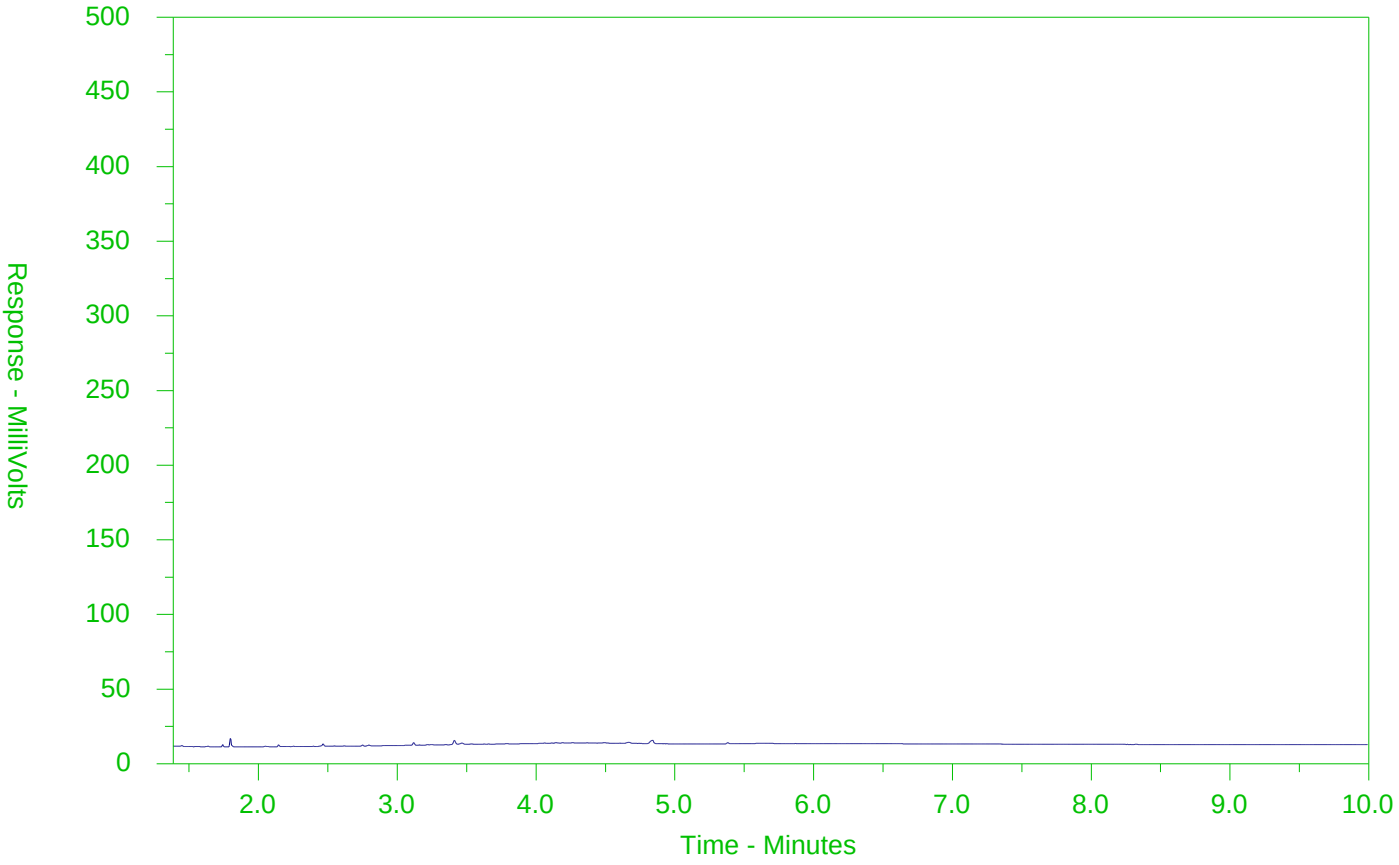
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2334304-1
Client Sample ID: MW1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

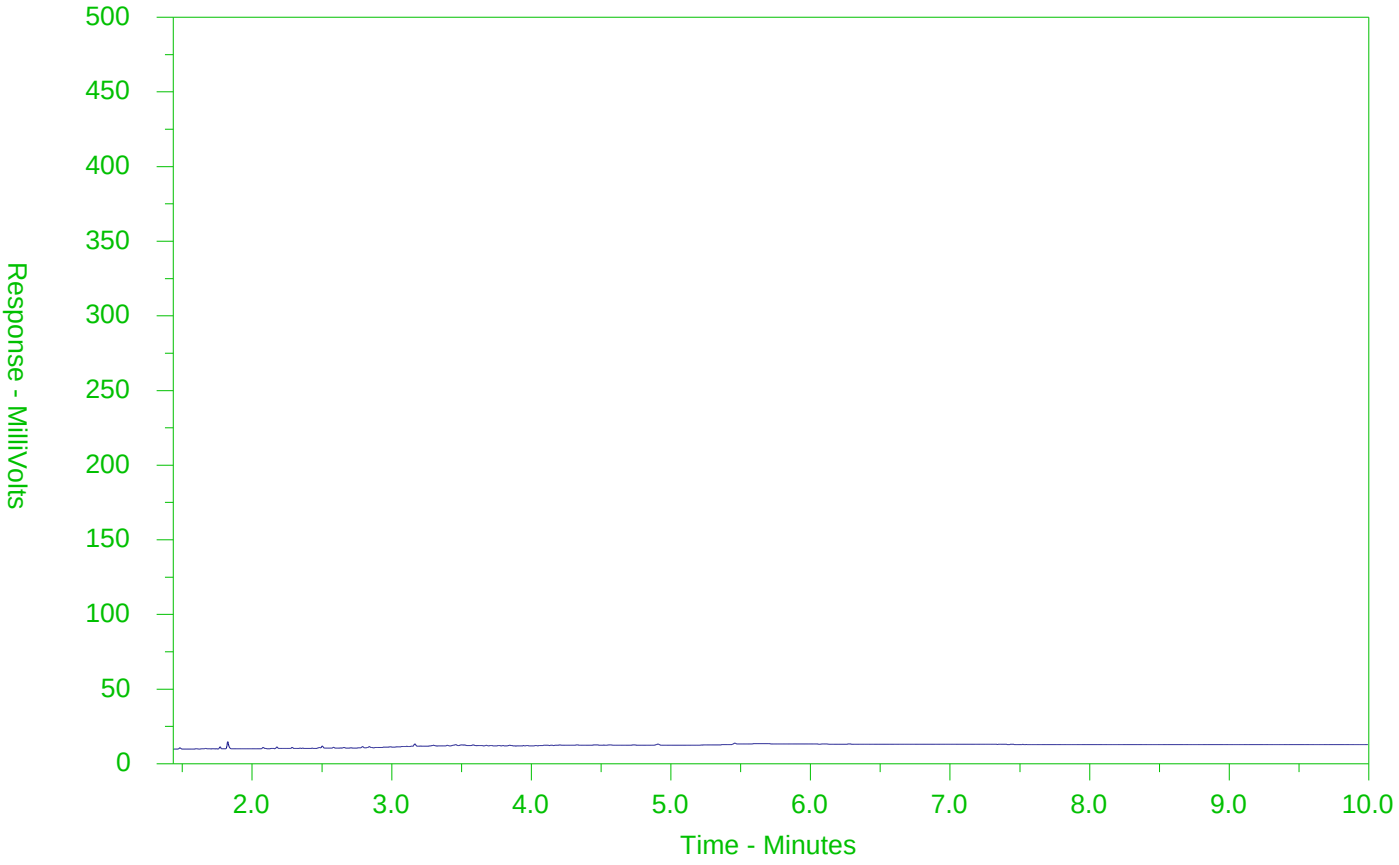
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2334304-2
Client Sample ID: MW100



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

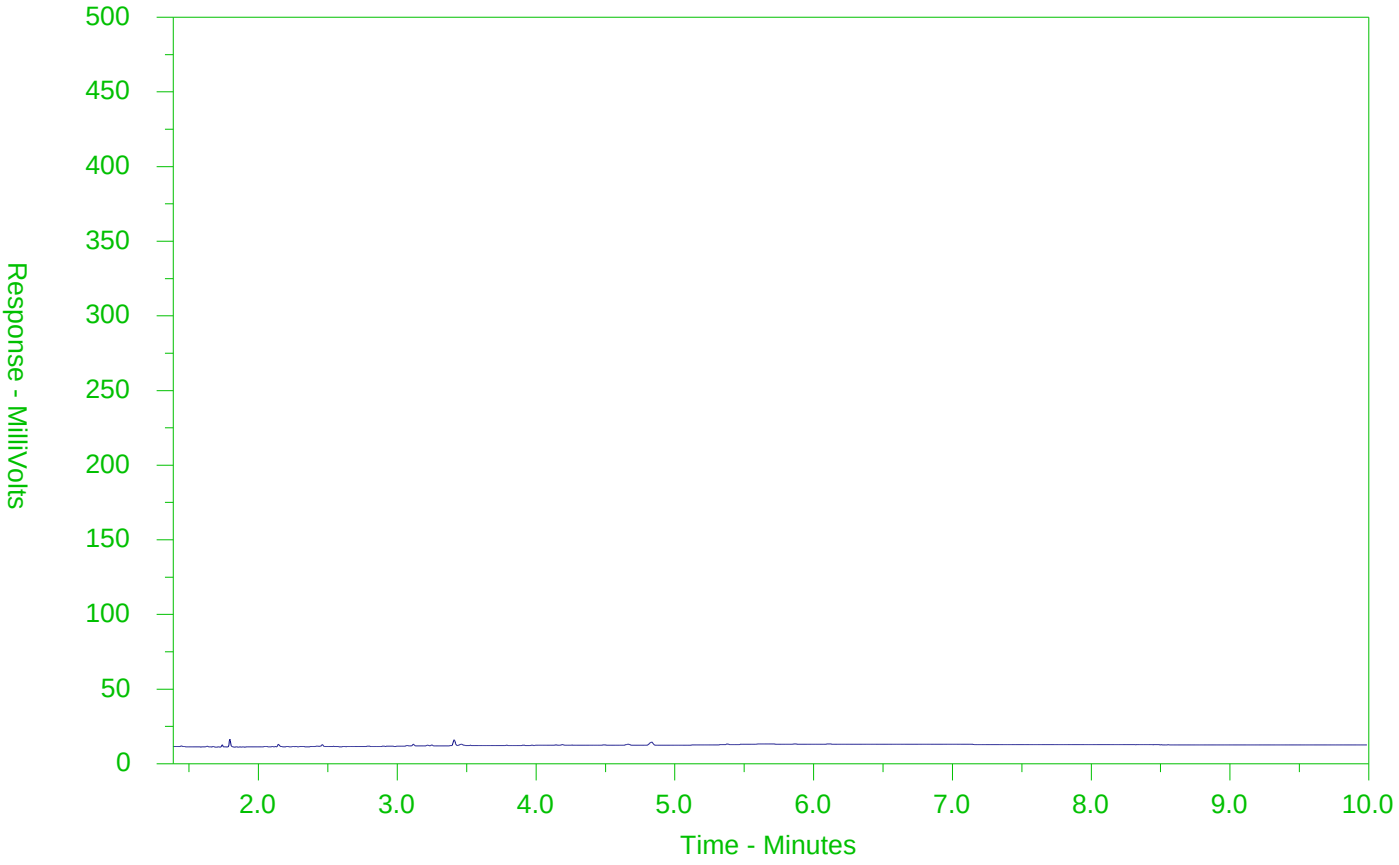
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2334304-3
Client Sample ID: MWW



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2334304-COFC

COC Number: 17 - 617150

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Landtek Limited
Contact:	Katie
Phone:	905 383 3733
	Company address below will appear on the final report
Street:	Nebo Rd.
City/Province:	Hamilton
Postal Code:	
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [ ] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: [X] PDF [X] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report [X] YES [ ] NO
[X] Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax
Email 2 Katie@landteklimited.com
Email 3

Invoice Distribution

Select Invoice Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax
Email 2 Kathy@landteklimited.com
[redacted]

Project Information

ALS Account # / Quote #:			
Job #:	19239	AFE/Cost Center:	PO#
PO / AFE:		Major/Minor Code:	Routing Code:
LSD:		Requisitioner:	
ALS Lab Work Order # (lab use only):	L2334304	Location:	
		ALS Contact:	Sampler: KM

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] | 3 day [P3-25%] [ ] | 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E-100%] [ ] | Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	PHC/VOC	F/P	M+I	PAH	VOC/BTEX	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	MW1	21/08/19	AM	GW	X		X	X				9
	MW100	↓	↓	GW	X		X	X				9
	MW3	↓	↓	GW	X		X	X				9
	Trip blank			W					X			2

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [X] NO

Are samples for human consumption/ use? [ ] YES [X] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Table 3

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] | SIF Observations Yes [ ] No [ ]
Ice Packs [X] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]
Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				9.3			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katie McBurney	Date: 2019/22/08	Time: 900	Received by:	Date:	Time:	Received by: KH	Date: 22-8-19	Time: 15:55

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JULY 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

VOC 423

LANDTEK LIMITED
ATTN: KATIE MCISAAC
205 NEBO ROAD
UNIT 3
HAMILTON ON L8W2E1

Date Received: 09-SEP-19
Report Date: 17-SEP-19 07:32 (MT)
Version: FINAL

Client Phone: 905-383-3733

Certificate of Analysis

Lab Work Order #: L2343803

Project P.O. #: 19239
Job Reference: 19239
C of C Numbers: 17-823169
Legal Site Desc:

Aaron Payne
Account Manager

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ANALYTICAL REPORT

Summary of Guideline Exceedances

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Guideline						
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Soil-Ind/Com/Commu. Property Use (Coarse)						
(No parameter exceedances)						
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Soil-Ind/Com/Commu. Property Use (Fine)						
(No parameter exceedances)						

ANALYTICAL REPORT

Physical Tests - SOIL

			Lab ID	L2343803-2	L2343803-3
			Sample Date	13-AUG-19	14-AUG-19
			Sample ID	BH5-3	BH7-3
Analyte	**Unit**	**Guide Limits #1**	**#2**		
Conductivity	mS/cm	1.4	1.4	0.515	
% Moisture	%	-	-	13.8	18.0
pH	pH units	-	-	7.98	

Guide Limit #1: T3-Soil-Ind/Com/Commu. Property Use (Coarse)
Guide Limit #2: T3-Soil-Ind/Com/Commu. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Cyanides - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2343803-2 Sample Date: 13-AUG-19 Sample ID: BH5-3
Cyanide, Weak Acid Diss	ug/g	0.051	0.051	<0.050

Guide Limit #1: T3-Soil-Ind/Com/Commu. Property Use (Coarse)
Guide Limit #2: T3-Soil-Ind/Com/Commu. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Saturated Paste Extractables - SOIL

		Guide Limits		Lab ID	
				Sample Date	
				Sample ID	
Analyte	Unit	#1	#2		
SAR	SAR	12	12	L2343803-2	1.04
Calcium (Ca)	mg/L	-	-	13-AUG-19	49.2
Magnesium (Mg)	mg/L	-	-	BH5-3	14.4
Sodium (Na)	mg/L	-	-		32.3

Guide Limit #1: T3-Soil-Ind/Com/Commu. Property Use (Coarse)
Guide Limit #2: T3-Soil-Ind/Com/Commu. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Metals - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2343803-1 Sample Date: 13-AUG-19 Sample ID: MW3-3	Lab ID: L2343803-2 Sample Date: 13-AUG-19 Sample ID: BH5-3
Antimony (Sb)	ug/g	40	50		<1.0
Arsenic (As)	ug/g	18	18		3.0
Barium (Ba)	ug/g	670	670		176
Beryllium (Be)	ug/g	8	10		0.67
Boron (B)	ug/g	120	120		11.9
Boron (B), Hot Water Ext.	ug/g	2	2		0.19
Cadmium (Cd)	ug/g	1.9	1.9		<0.50
Chromium (Cr)	ug/g	160	160		25.1
Cobalt (Co)	ug/g	80	100		10.7
Copper (Cu)	ug/g	230	300		21.4
Lead (Pb)	ug/g	120	120	11.8	12.7
Mercury (Hg)	ug/g	3.9	20		0.0205
Molybdenum (Mo)	ug/g	40	40		<1.0
Nickel (Ni)	ug/g	270	340		24.9
Selenium (Se)	ug/g	5.5	5.5		<1.0
Silver (Ag)	ug/g	40	50		<0.20
Thallium (Tl)	ug/g	3.3	3.3		<0.50
Uranium (U)	ug/g	33	33		<1.0
Vanadium (V)	ug/g	86	86		33.4
Zinc (Zn)	ug/g	340	340		52.2

Guide Limit #1: T3-Soil-Ind/Com/Commu. Property Use (Coarse)
Guide Limit #2: T3-Soil-Ind/Com/Commu. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

ANALYTICAL REPORT

Speciated Metals - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2343803-2 Sample Date: 13-AUG-19 Sample ID: BH5-3
Chromium, Hexavalent	ug/g	8	10	<0.20

Guide Limit #1: T3-Soil-Ind/Com/Commu. Property Use (Coarse)
Guide Limit #2: T3-Soil-Ind/Com/Commu. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Polycyclic Aromatic Hydrocarbons - SOIL

			Lab ID	L2343803-3
			Sample Date	14-AUG-19
			Sample ID	BH7-3
		Guide Limits		
Analyte	Unit	#1	#2	
Acenaphthene	ug/g	96	96	<0.050
Acenaphthylene	ug/g	0.15	0.17	<0.050
Anthracene	ug/g	0.67	0.74	<0.050
Benzo(a)anthracene	ug/g	0.96	0.96	<0.050
Benzo(a)pyrene	ug/g	0.3	0.3	<0.050
Benzo(b)fluoranthene	ug/g	0.96	0.96	<0.050
Benzo(g,h,i)perylene	ug/g	9.6	9.6	<0.050
Benzo(k)fluoranthene	ug/g	0.96	0.96	<0.050
Chrysene	ug/g	9.6	9.6	<0.050
Dibenzo(ah)anthracene	ug/g	0.1	0.1	<0.050
Fluoranthene	ug/g	9.6	9.6	<0.050
Fluorene	ug/g	62	69	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	0.76	0.95	<0.050
1+2-Methylnaphthalenes	ug/g	76	85	<0.042
1-Methylnaphthalene	ug/g	76	85	<0.030
2-Methylnaphthalene	ug/g	76	85	<0.030
Naphthalene	ug/g	9.6	28	<0.013
Phenanthrene	ug/g	12	16	<0.046
Pyrene	ug/g	96	96	<0.050
Surrogate: 2-Fluorobiphenyl	%	-	-	93.7
Surrogate: p-Terphenyl d14	%	-	-	84.4

Guide Limit #1: T3-Soil-Ind/Com/Commu. Property Use (Coarse)
Guide Limit #2: T3-Soil-Ind/Com/Commu. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

HG-200.2-CVAA-WT	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-WT	Soil	pH	MOEE E3137A

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	SW846 6010C

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

17-823169

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R4804628								
WG3160356-4 DUP		**L2343246-3**						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	30	13-SEP-19
WG3160356-2 IRM		**WT SAR3**						
Boron (B), Hot Water Ext.			101.0		%		70-130	13-SEP-19
WG3160356-3 LCS								
Boron (B), Hot Water Ext.			92.0		%		70-130	13-SEP-19
WG3160356-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	13-SEP-19
CN-WAD-R511-WT	**Soil**							
Batch R4805089								
WG3159214-3 DUP		**L2343570-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	13-SEP-19
WG3159214-2 LCS								
Cyanide, Weak Acid Diss			99.9		%		80-120	13-SEP-19
WG3159214-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	13-SEP-19
WG3159214-4 MS		**L2343570-1**						
Cyanide, Weak Acid Diss			104.8		%		70-130	13-SEP-19
CR-CR6-IC-WT	**Soil**							
Batch R4800706								
WG3158103-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			92.1		%		70-130	12-SEP-19
WG3158103-3 DUP		**L2343616-5**						
Chromium, Hexavalent		<0.20	0.25	RPD-NA	ug/g	N/A	35	12-SEP-19
WG3158103-2 LCS								
Chromium, Hexavalent			91.9		%		80-120	12-SEP-19
WG3158103-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	12-SEP-19
EC-WT	**Soil**							
Batch R4806406								
WG3160362-4 DUP		**WG3160362-3**						
Conductivity		0.881	0.889		mS/cm	0.9	20	13-SEP-19
WG3160362-2 IRM		**WT SAR3**						
Conductivity			101.9		%		70-130	13-SEP-19
WG3160742-1 LCS								
Conductivity			100.0		%		90-110	13-SEP-19
WG3160362-1 MB								

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT	**Soil**							
Batch R4806406								
WG3160362-1 MB								
Conductivity			<0.0040		mS/cm		0.004	13-SEP-19
HG-200.2-CVAA-WT	**Soil**							
Batch R4805330								
WG3160328-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			102.8		%		70-130	13-SEP-19
WG3160328-6 DUP		**WG3160328-5**						
Mercury (Hg)		0.0055	0.0067		ug/g	19	40	13-SEP-19
WG3160328-3 LCS								
Mercury (Hg)			108.5		%		80-120	13-SEP-19
WG3160328-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	13-SEP-19
MET-200.2-CCMS-WT	**Soil**							
Batch R4806164								
WG3160328-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			97.2		%		70-130	13-SEP-19
Arsenic (As)			94.6		%		70-130	13-SEP-19
Barium (Ba)			91.7		%		70-130	13-SEP-19
Beryllium (Be)			89.4		%		70-130	13-SEP-19
Boron (B)			2.6		mg/kg		0-8.2	13-SEP-19
Cadmium (Cd)			91.4		%		70-130	13-SEP-19
Chromium (Cr)			96.3		%		70-130	13-SEP-19
Cobalt (Co)			92.8		%		70-130	13-SEP-19
Copper (Cu)			94.1		%		70-130	13-SEP-19
Lead (Pb)			95.7		%		70-130	13-SEP-19
Molybdenum (Mo)			99.5		%		70-130	13-SEP-19
Nickel (Ni)			93.7		%		70-130	13-SEP-19
Selenium (Se)			0.26		mg/kg		0.11-0.51	13-SEP-19
Silver (Ag)			0.22		mg/kg		0.13-0.33	13-SEP-19
Thallium (Tl)			0.120		mg/kg		0.077-0.18	13-SEP-19
Uranium (U)			92.8		%		70-130	13-SEP-19
Vanadium (V)			96.0		%		70-130	13-SEP-19
Zinc (Zn)			94.8		%		70-130	13-SEP-19
WG3160328-6 DUP		**WG3160328-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	13-SEP-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4806164								
WG3160328-6 DUP		**WG3160328-5**						
Arsenic (As)		2.46	3.02		ug/g	20	30	13-SEP-19
Barium (Ba)		44.0	55.2		ug/g	23	40	13-SEP-19
Beryllium (Be)		0.34	0.43		ug/g	24	30	13-SEP-19
Boron (B)		8.3	8.8		ug/g	5.7	30	13-SEP-19
Cadmium (Cd)		0.077	0.089		ug/g	14	30	13-SEP-19
Chromium (Cr)		11.2	13.1		ug/g	15	30	13-SEP-19
Cobalt (Co)		4.83	5.88		ug/g	20	30	13-SEP-19
Copper (Cu)		9.74	11.8		ug/g	19	30	13-SEP-19
Lead (Pb)		6.89	7.54		ug/g	8.9	40	13-SEP-19
Molybdenum (Mo)		0.21	0.22		ug/g	4.6	40	13-SEP-19
Nickel (Ni)		9.57	11.4		ug/g	17	30	13-SEP-19
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	13-SEP-19
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	13-SEP-19
Thallium (Tl)		0.079	0.088		ug/g	11	30	13-SEP-19
Uranium (U)		0.398	0.427		ug/g	7.1	30	13-SEP-19
Vanadium (V)		20.8	23.5		ug/g	12	30	13-SEP-19
Zinc (Zn)		39.0	47.0		ug/g	19	30	13-SEP-19
WG3160328-4 LCS								
Antimony (Sb)			109.8		%		80-120	13-SEP-19
Arsenic (As)			107.5		%		80-120	13-SEP-19
Barium (Ba)			107.2		%		80-120	13-SEP-19
Beryllium (Be)			100.1		%		80-120	13-SEP-19
Boron (B)			95.4		%		80-120	13-SEP-19
Cadmium (Cd)			105.0		%		80-120	13-SEP-19
Chromium (Cr)			107.1		%		80-120	13-SEP-19
Cobalt (Co)			104.2		%		80-120	13-SEP-19
Copper (Cu)			103.0		%		80-120	13-SEP-19
Lead (Pb)			107.1		%		80-120	13-SEP-19
Molybdenum (Mo)			110.1		%		80-120	13-SEP-19
Nickel (Ni)			103.5		%		80-120	13-SEP-19
Selenium (Se)			106.7		%		80-120	13-SEP-19
Silver (Ag)			106.4		%		80-120	13-SEP-19
Thallium (Tl)			101.3		%		80-120	13-SEP-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4806164								
WG3160328-4 LCS								
Uranium (U)			103.5		%		80-120	13-SEP-19
Vanadium (V)			107.9		%		80-120	13-SEP-19
Zinc (Zn)			102.8		%		80-120	13-SEP-19
WG3160328-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	13-SEP-19
Arsenic (As)			<0.10		mg/kg		0.1	13-SEP-19
Barium (Ba)			<0.50		mg/kg		0.5	13-SEP-19
Beryllium (Be)			<0.10		mg/kg		0.1	13-SEP-19
Boron (B)			<5.0		mg/kg		5	13-SEP-19
Cadmium (Cd)			<0.020		mg/kg		0.02	13-SEP-19
Chromium (Cr)			<0.50		mg/kg		0.5	13-SEP-19
Cobalt (Co)			<0.10		mg/kg		0.1	13-SEP-19
Copper (Cu)			<0.50		mg/kg		0.5	13-SEP-19
Lead (Pb)			<0.50		mg/kg		0.5	13-SEP-19
Molybdenum (Mo)			<0.10		mg/kg		0.1	13-SEP-19
Nickel (Ni)			<0.50		mg/kg		0.5	13-SEP-19
Selenium (Se)			<0.20		mg/kg		0.2	13-SEP-19
Silver (Ag)			<0.10		mg/kg		0.1	13-SEP-19
Thallium (Tl)			<0.050		mg/kg		0.05	13-SEP-19
Uranium (U)			<0.050		mg/kg		0.05	13-SEP-19
Vanadium (V)			<0.20		mg/kg		0.2	13-SEP-19
Zinc (Zn)			<2.0		mg/kg		2	13-SEP-19
Batch R4810236								
WG3161063-2 CRM		**WT-CANMET-TILL1**						
Lead (Pb)			91.2		%		70-130	16-SEP-19
WG3161063-6 DUP		**WG3161063-5**						
Lead (Pb)		5.22	5.09		ug/g	2.4	40	16-SEP-19
WG3161063-4 LCS								
Lead (Pb)			97.0		%		80-120	16-SEP-19
WG3161063-1 MB								
Lead (Pb)			<0.50		mg/kg		0.5	16-SEP-19
MOISTURE-WT	**Soil**							

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	**Soil**							
Batch R4795732								
WG3157109-3 DUP		**L2343386-1**						
% Moisture		14.1	14.5		%	2.7	20	10-SEP-19
WG3157109-2 LCS								
% Moisture			99.0		%		90-110	10-SEP-19
WG3157109-1 MB								
% Moisture			<0.10		%		0.1	10-SEP-19
PAH-511-WT	**Soil**							
Batch R4812228								
WG3158518-3 DUP		**WG3158518-5**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	16-SEP-19
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	16-SEP-19
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
Naphthalene		<0.013	<0.013	RPD-NA	ug/g	N/A	40	16-SEP-19
Phenanthrene		<0.046	<0.046	RPD-NA	ug/g	N/A	40	16-SEP-19
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	16-SEP-19
WG3158518-2 LCS								
1-Methylnaphthalene			98.2		%		50-140	16-SEP-19
2-Methylnaphthalene			93.3		%		50-140	16-SEP-19
Acenaphthene			97.6		%		50-140	16-SEP-19
Acenaphthylene			94.7		%		50-140	16-SEP-19
Anthracene			96.0		%		50-140	16-SEP-19
Benzo(a)anthracene			95.7		%		50-140	16-SEP-19
Benzo(a)pyrene			96.0		%		50-140	16-SEP-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4812228								
WG3158518-2 LCS								
Benzo(b)fluoranthene			108.5		%		50-140	16-SEP-19
Benzo(g,h,i)perylene			94.5		%		50-140	16-SEP-19
Benzo(k)fluoranthene			96.1		%		50-140	16-SEP-19
Chrysene			113.9		%		50-140	16-SEP-19
Dibenzo(ah)anthracene			92.6		%		50-140	16-SEP-19
Fluoranthene			97.4		%		50-140	16-SEP-19
Fluorene			95.8		%		50-140	16-SEP-19
Indeno(1,2,3-cd)pyrene			86.3		%		50-140	16-SEP-19
Naphthalene			97.5		%		50-140	16-SEP-19
Phenanthrene			100.5		%		50-140	16-SEP-19
Pyrene			96.7		%		50-140	16-SEP-19
WG3158518-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	16-SEP-19
2-Methylnaphthalene			<0.030		ug/g		0.03	16-SEP-19
Acenaphthene			<0.050		ug/g		0.05	16-SEP-19
Acenaphthylene			<0.050		ug/g		0.05	16-SEP-19
Anthracene			<0.050		ug/g		0.05	16-SEP-19
Benzo(a)anthracene			<0.050		ug/g		0.05	16-SEP-19
Benzo(a)pyrene			<0.050		ug/g		0.05	16-SEP-19
Benzo(b)fluoranthene			<0.050		ug/g		0.05	16-SEP-19
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	16-SEP-19
Benzo(k)fluoranthene			<0.050		ug/g		0.05	16-SEP-19
Chrysene			<0.050		ug/g		0.05	16-SEP-19
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	16-SEP-19
Fluoranthene			<0.050		ug/g		0.05	16-SEP-19
Fluorene			<0.050		ug/g		0.05	16-SEP-19
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	16-SEP-19
Naphthalene			<0.013		ug/g		0.013	16-SEP-19
Phenanthrene			<0.046		ug/g		0.046	16-SEP-19
Pyrene			<0.050		ug/g		0.05	16-SEP-19
Surrogate: 2-Fluorobiphenyl			90.9		%		50-140	16-SEP-19
Surrogate: p-Terphenyl d14			79.6		%		50-140	16-SEP-19
WG3158518-4 MS		**WG3158518-5**						
1-Methylnaphthalene			87.2		%		50-140	16-SEP-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4812228								
WG3158518-4 MS		**WG3158518-5**						
2-Methylnaphthalene			82.8		%		50-140	16-SEP-19
Acenaphthene			87.0		%		50-140	16-SEP-19
Acenaphthylene			84.5		%		50-140	16-SEP-19
Anthracene			84.3		%		50-140	16-SEP-19
Benzo(a)anthracene			84.1		%		50-140	16-SEP-19
Benzo(a)pyrene			84.1		%		50-140	16-SEP-19
Benzo(b)fluoranthene			87.4		%		50-140	16-SEP-19
Benzo(g,h,i)perylene			82.2		%		50-140	16-SEP-19
Benzo(k)fluoranthene			91.0		%		50-140	16-SEP-19
Chrysene			99.5		%		50-140	16-SEP-19
Dibenzo(ah)anthracene			81.9		%		50-140	16-SEP-19
Fluoranthene			85.2		%		50-140	16-SEP-19
Fluorene			84.6		%		50-140	16-SEP-19
Indeno(1,2,3-cd)pyrene			78.0		%		50-140	16-SEP-19
Naphthalene			86.1		%		50-140	16-SEP-19
Phenanthrene			87.7		%		50-140	16-SEP-19
Pyrene			84.4		%		50-140	16-SEP-19
PH-WT	**Soil**							
Batch R4802031								
WG3158072-1 DUP		**L2343803-2**						
pH		7.98	7.97	J	pH units	0.01	0.3	12-SEP-19
WG3159485-1 LCS								
pH			6.96		pH units		6.9-7.1	12-SEP-19
SAR-R511-WT	**Soil**							
Batch R4804748								
WG3160362-4 DUP		**WG3160362-3**						
Calcium (Ca)		101	104		mg/L	2.9	30	13-SEP-19
Sodium (Na)		38.4	38.4		mg/L	0.0	30	13-SEP-19
Magnesium (Mg)		26.5	27.4		mg/L	3.3	30	13-SEP-19
WG3160362-2 IRM		**WT SAR3**						
Calcium (Ca)			101.6		%		70-130	13-SEP-19
Sodium (Na)			109.4		%		70-130	13-SEP-19
Magnesium (Mg)			109.7		%		70-130	13-SEP-19
WG3160362-5 LCS								

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R4804748								
WG3160362-5 LCS								
Calcium (Ca)			103.7		%		70-130	13-SEP-19
Sodium (Na)			102.0		%		70-130	13-SEP-19
Magnesium (Mg)			102.2		%		70-130	13-SEP-19
WG3160362-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	13-SEP-19
Sodium (Na)			<0.50		mg/L		0.5	13-SEP-19
Magnesium (Mg)			<0.50		mg/L		0.5	13-SEP-19

Quality Control Report

Workorder: L2343803 Report Date: 17-SEP-19

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2343803 Report Date: 17-SEP-19

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
% Moisture							
	2	13-AUG-19	10-SEP-19 09:05	14	28	days	EHTR
	3	14-AUG-19	10-SEP-19 09:06	14	27	days	EHTR
Conductivity (EC)							
	2	13-AUG-19	13-SEP-19 03:00	30	31	days	EHT
Cyanides							
Cyanide (WAD)-O.Reg 153/04 (July 2011)							
	2	13-AUG-19	12-SEP-19 08:00	14	30	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2343803 were received on 09-SEP-19 16:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2343803-COFC

: Number: 17 - 823169

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Landtek	Select Report Format: ~~PDF~~ EXCEL | EDD (DIGITAL)	Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Katie	Quality Control (QC) Report with Report ~~YES~~ | NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐ — EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
Phone: 905 3833733		☒ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: | EMAIL | MAIL | FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	Nebo	Email 1 or Fax	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Hamilton	Email 2 Katie@landteklimited.com	
Postal Code:		Email 3	

Invoice To		Invoice Distribution
	Same as Report To ~~YES~~ ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ~~YES~~ ☐ NO	Email 1 or Fax
Company:		Email 2 Kathy@landteklimited.com
Contact:		

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	19239	Major/Minor Code:	Routing Code:
PO / AFE:	19239	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2343803

ALS Contact: Alyne Sampler: KM

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Analysis Request: Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below — Lead	6 reg Mel	PAH's	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	MW3-3	13/08/19	PM	SOIL	1	X				
	BH5-3	13/08/19	↓	↓	1		X			
	BH7-3	14/08/19	↓	↓	1			X		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☒ NO	Table 3 | res | fine
Are samples for human consumption/ use? ☐ YES ☒ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☒ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				7.2			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Katie Mayne / VC	2019/09/09	9am					Sept 9/19	9:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

APPENDIX C

BOREHOLE LOGS

LANDTEK LIMITED
ATTN: KATIE MCISAAC
205 NEBO ROAD
UNIT 3
HAMILTON ON L8W2E1

Date Received: 16-AUG-19
Report Date: 06-SEP-19 10:39 (MT)
Version: FINAL REV. 2

Client Phone: 905-383-3733

Certificate of Analysis

Lab Work Order #: L2330521

Project P.O. #: NOT SUBMITTED
Job Reference: 19239
C of C Numbers: 17-625150, 17-625151
Legal Site Desc:

Ylynne Rosales
Account Manager

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Summary of Guideline Exceedances

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Guideline						
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Soil-Res/Park/Inst. Property Use (Coarse)						
L2330521-1	MW1-2	Saturated Paste Extractables	SAR	16.1	5	SAR
		Metals	Lead (Pb)	200	120	ug/g
L2330521-2	MW1-3	Polycyclic Aromatic Hydrocarbons	Benzo(a)anthracene	0.822	0.5	ug/g
			Benzo(a)pyrene	0.755	0.3	ug/g
			Benzo(b)fluoranthene	1.04	0.78	ug/g
			Dibenzo(ah)anthracene	0.124	0.1	ug/g
			Fluoranthene	1.79	0.69	ug/g
			Indeno(1,2,3-cd)pyrene	0.521	0.38	ug/g
L2330521-3	MW1-7	Volatile Organic Compounds	Trichloroethylene	0.070	0.061	ug/g
L2330521-7	MW3-1	Metals	Lead (Pb)	129	120	ug/g
L2330521-10	MW4-7	Volatile Organic Compounds	Trichloroethylene	0.167	0.061	ug/g
L2330521-12	BH5-1	Physical Tests	Conductivity	1.74	0.7	mS/cm
L2330521-13	BH6-1	Saturated Paste Extractables	SAR	18.6	5	SAR
		Metals	Boron (B), Hot Water Ext.	1.81	1.5	ug/g
L2330521-14	BH7-1	Polycyclic Aromatic Hydrocarbons	Benzo(a)pyrene	0.728	0.3	ug/g
			Dibenzo(ah)anthracene	0.151	0.1	ug/g
			Indeno(1,2,3-cd)pyrene	0.659	0.38	ug/g
L2330521-16	BH7-2	Physical Tests	Conductivity	0.840	0.7	mS/cm
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Soil-Res/Park/Inst. Property Use (Fine)						
L2330521-1	MW1-2	Saturated Paste Extractables	SAR	16.1	5	SAR
		Metals	Lead (Pb)	200	120	ug/g
L2330521-2	MW1-3	Polycyclic Aromatic Hydrocarbons	Benzo(a)anthracene	0.822	0.63	ug/g
			Benzo(a)pyrene	0.755	0.3	ug/g
			Benzo(b)fluoranthene	1.04	0.78	ug/g
			Dibenzo(ah)anthracene	0.124	0.1	ug/g
			Fluoranthene	1.79	0.69	ug/g
			Indeno(1,2,3-cd)pyrene	0.521	0.48	ug/g
L2330521-7	MW3-1	Metals	Lead (Pb)	129	120	ug/g
L2330521-12	BH5-1	Physical Tests	Conductivity	1.74	0.7	mS/cm
L2330521-13	BH6-1	Saturated Paste Extractables	SAR	18.6	5	SAR
		Metals	Boron (B), Hot Water Ext.	1.81	1.5	ug/g
L2330521-14	BH7-1	Polycyclic Aromatic Hydrocarbons	Benzo(a)pyrene	0.728	0.3	ug/g
			Dibenzo(ah)anthracene	0.151	0.1	ug/g

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Summary of Guideline Exceedances

ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Guideline						
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Soil-Res/Park/Inst. Property Use (Fine)						
L2330521-14	BH7-1	Polycyclic Aromatic Hydrocarbons	Indeno(1,2,3-cd)pyrene	0.659	0.48	ug/g
L2330521-16	BH7-2	Physical Tests	Conductivity	0.840	0.7	mS/cm

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Physical Tests - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2330521-1	L2330521-2	L2330521-3	L2330521-4	L2330521-5	L2330521-6	L2330521-7	L2330521-8	L2330521-9
				Sample Date	13-AUG-19	13-AUG-19	13-AUG-19	13-AUG-19	13-AUG-19	13-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19
				Sample ID	MW1-2	MW1-3	MW1-7	MW2-1	MW2-2	MW2-7	MW3-1	MW3-5	MW4-2
Conductivity	mS/cm	0.7	0.7		0.446				0.337		0.196		0.304
% Moisture	%	-	-		16.7	13.5	17.6	7.23	15.0	14.6	5.53	9.88	13.2
pH	pH units	-	-		7.63				7.71		7.41		7.58

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Physical Tests - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2330521-10	L2330521-11	L2330521-12	L2330521-13	L2330521-14	L2330521-15	L2330521-16	L2330521-17
				Sample Date	14-AUG-19	14-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19	14-AUG-19	14-AUG-19
				Sample ID	MW4-7	MW4-700	BH5-1	BH6-1	BH7-1	BH7-100	BH7-2	BH7-200
Conductivity	mS/cm	0.7	0.7				1.74	0.395			0.840	0.527
% Moisture	%	-	-		12.1	11.3	6.95	10.2	11.8	12.6	19.4	14.6
pH	pH units	-	-				7.27	8.14			7.81	7.79

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Cyanides - SOIL

		Guide Limits								
	Lab ID			L2330521-1	L2330521-5	L2330521-7	L2330521-9	L2330521-12	L2330521-13	L2330521-16	L2330521-17
	Sample Date			13-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19
	Sample ID			MW1-2	MW2-2	MW3-1	MW4-2	BH5-1	BH6-1	BH7-2	BH7-200
Analyte	Unit	#1	#2								
Cyanide, Weak Acid Diss	ug/g	0.051	0.051	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

Saturated Paste Extractables - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2330521-1	L2330521-5	L2330521-7	L2330521-9	L2330521-12	L2330521-13	L2330521-16	L2330521-17
				Sample Date	13-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19
				Sample ID	MW1-2	MW2-2	MW3-1	MW4-2	BH5-1	BH6-1	BH7-2	BH7-200
SAR	SAR	5	5		16.1 SAR:M	1.40	1.46	0.43	0.27	18.6 SAR:M	2.62	2.38
Calcium (Ca)	mg/L	-	-		2.88	27.7	13.0	38.8	376	1.69	57.5	26.7
Magnesium (Mg)	mg/L	-	-		<0.50	3.17	1.96	3.86	31.9	<0.50	18.6	11.7
Sodium (Na)	mg/L	-	-		99.1	29.2	21.4	10.5	20.5	87.9	89.5	58.6

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Metals - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2330521-1	L2330521-5	L2330521-7	L2330521-9	L2330521-12	L2330521-13	L2330521-16	L2330521-17
				Sample Date	13-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19
				Sample ID	MW1-2	MW2-2	MW3-1	MW4-2	BH5-1	BH6-1	BH7-2	BH7-200
Antimony (Sb)	ug/g	7.5	7.5		<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	18		4.6	3.6	5.8	3.8	3.6	5.6	4.5	5.3
Barium (Ba)	ug/g	390	390		52.9	19.4	51.2	35.5	38.7	159	69.4	48.0
Beryllium (Be)	ug/g	4	5		<0.50	<0.50	<0.50	<0.50	<0.50	1.46	1.10	0.76
Boron (B)	ug/g	120	120		7.1	5.0	5.7	5.3	9.2	24.6	10.3	9.8
Boron (B), Hot Water Ext.	ug/g	1.5	1.5		1.26	0.21	0.40	0.27	0.36	1.81	0.74	0.69
Cadmium (Cd)	ug/g	1.2	1.2		<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	160	160		12.9	11.9	15.9	13.6	13.7	18.8	16.2	16.1
Cobalt (Co)	ug/g	22	22		6.3	6.1	7.3	7.3	5.7	7.9	8.3	9.2
Copper (Cu)	ug/g	140	180		23.1	17.6	33.2	20.6	19.9	31.6	22.8	26.9
Lead (Pb)	ug/g	120	120		200	7.1	129	44.4	29.5	109	17.4	14.9
Mercury (Hg)	ug/g	0.27	1.8		0.149	0.0133	0.165	0.0661	0.0400	0.110	0.0375	0.0354
Molybdenum (Mo)	ug/g	6.9	6.9		<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0
Nickel (Ni)	ug/g	100	130		14.8	11.5	17.3	13.4	12.4	20.4	17.0	18.3
Selenium (Se)	ug/g	2.4	2.4		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	20	25		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	1		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	23	23		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	86		20.5	26.1	24.9	24.2	24.0	24.4	27.9	30.7
Zinc (Zn)	ug/g	340	340		143	28.9	167	66.0	212	118	48.6	43.4

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Speciated Metals - SOIL

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2330521-1	L2330521-5	L2330521-7	L2330521-9	L2330521-12	L2330521-13	L2330521-16	L2330521-17
				Sample Date	13-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19
				Sample ID	MW1-2	MW2-2	MW3-1	MW4-2	BH5-1	BH6-1	BH7-2	BH7-200
Chromium, Hexavalent	ug/g	8	10		0.24	0.32	0.82	0.51	0.39	<0.20	0.66	0.62

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Volatile Organic Compounds - SOIL

				Lab ID	L2330521-3	L2330521-6	L2330521-8	L2330521-10	L2330521-11
				Sample Date	13-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19
				Sample ID	MW1-7	MW2-7	MW3-5	MW4-7	MW4-700
		Guide Limits							
Analyte	Unit	#1	#2						
Acetone	ug/g	16	28		<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	ug/g	0.21	0.17		<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	ug/g	13	13		<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	ug/g	0.27	0.26		<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	ug/g	0.05	0.05		<0.050	<0.050	<0.050	<0.050	<0.050
Carbon tetrachloride	ug/g	0.05	0.12		<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	ug/g	2.4	2.7		<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	ug/g	9.4	9.4		<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	ug/g	0.05	0.18		<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dibromoethane	ug/g	0.05	0.05		<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	ug/g	3.4	4.3		<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	ug/g	4.8	6		<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	ug/g	0.083	0.097		<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	ug/g	16	25		<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	ug/g	3.5	11		<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	ug/g	0.05	0.05		<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	ug/g	0.05	0.05		<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	ug/g	3.4	30		<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	ug/g	0.084	0.75		<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	ug/g	0.1	0.96		<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	ug/g	0.05	0.085		<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	ug/g	-	-		<0.030	<0.030	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	ug/g	-	-		<0.030	<0.030	<0.030	<0.030	<0.030
1,3-Dichloropropene (cis & trans)	ug/g	0.05	0.083		<0.042	<0.042	<0.042	<0.042	<0.042
Ethylbenzene	ug/g	2	15		<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	ug/g	2.8	34		<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	ug/g	16	44		<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g	1.7	4.3		<0.50	<0.50	<0.50	<0.50	<0.50
MTBE	ug/g	0.75	1.4		<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	ug/g	0.7	2.2		<0.050	<0.050	<0.050	<0.050	<0.050

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Volatile Organic Compounds - SOIL

				Lab ID	L2330521-3	L2330521-6	L2330521-8	L2330521-10	L2330521-11
				Sample Date	13-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19
				Sample ID	MW1-7	MW2-7	MW3-5	MW4-7	MW4-700
		Guide Limits							
Analyte	Unit	#1	#2						
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	ug/g	0.28	2.3	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	ug/g	2.3	6	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	ug/g	0.38	3.4	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	ug/g	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	ug/g	0.061	0.52	0.070	<0.010	<0.010	0.167	0.011
Trichlorofluoromethane	ug/g	4	5.8	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl chloride	ug/g	0.02	0.022	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	ug/g	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	ug/g	3.1	25	<0.050	<0.050	<0.050	<0.050	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	-	85.7	88.2	88.2	91.5	88.9
Surrogate: 1,4-Difluorobenzene	%	-	-	93.5	97.7	102.8	109.5	104.7

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Hydrocarbons - SOIL

			Lab ID	L2330521-3	L2330521-6	L2330521-8	L2330521-10	L2330521-11
			Sample Date	13-AUG-19	13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19
			Sample ID	MW1-7	MW2-7	MW3-5	MW4-7	MW4-700
		Guide Limits						
Analyte	Unit	#1	#2					
F1 (C6-C10)	ug/g	55	65	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	ug/g	55	65	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	ug/g	98	150	<10	14	<10	<10	<10
F3 (C16-C34)	ug/g	300	1300	<50	64	<50	<50	58
F4 (C34-C50)	ug/g	2800	5600	<50	<50	<50	<50	<50
Total Hydrocarbons (C6-C50)	ug/g	-	-	<72	78	<72	<72	<72
Chrom. to baseline at nC50		-	-	YES	YES	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	88.3	87.9	87.9	85.3	87.7
Surrogate: 3,4-Dichlorotoluene	%	-	-	69.6	76.4	70.6	76.9	64.3

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Polycyclic Aromatic Hydrocarbons - SOIL

		Guide Limits					
Lab ID				L2330521-2	L2330521-4	L2330521-14	L2330521-15
Sample Date				13-AUG-19	13-AUG-19	14-AUG-19	14-AUG-19
Sample ID				MW1-3	MW2-1	BH7-1	BH7-100
Analyte	**Unit**	**#1**	**#2**				
Acenaphthene	ug/g	7.9	58	0.115	<0.050	0.177	<0.050
Acenaphthylene	ug/g	0.15	0.17	<0.050	<0.050	<0.050	<0.050
Anthracene	ug/g	0.67	0.74	0.230	<0.050	<0.050	<0.050
Benzo(a)anthracene	ug/g	0.5	0.63	0.822	0.076	0.274	<0.050
Benzo(a)pyrene	ug/g	0.3	0.3	0.755	0.079	0.728	<0.050
Benzo(b)fluoranthene	ug/g	0.78	0.78	1.04	0.116	0.700	<0.050
Benzo(g,h,i)perylene	ug/g	6.6	7.8	0.487	0.063	0.725	<0.050
Benzo(k)fluoranthene	ug/g	0.78	0.78	0.329	<0.050	0.215	<0.050
Chrysene	ug/g	7	7.8	0.825	0.089	0.278	<0.050
Dibenzo(ah)anthracene	ug/g	0.1	0.1	0.124	<0.050	0.151	<0.050
Fluoranthene	ug/g	0.69	0.69	1.79	0.141	0.191	<0.050
Fluorene	ug/g	62	69	0.108	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	0.38	0.48	0.521	0.058	0.659	<0.050
1+2-Methylnaphthalenes	ug/g	0.99	3.4	0.145	<0.042	<0.042	<0.042
1-Methylnaphthalene	ug/g	0.99	3.4	0.063	<0.030	<0.030	<0.030
2-Methylnaphthalene	ug/g	0.99	3.4	0.082	<0.030	<0.030	<0.030
Naphthalene	ug/g	0.6	0.75	0.162	<0.013	0.015	<0.013
Phenanthrene	ug/g	6.2	7.8	0.954	0.047	0.067	<0.046
Pyrene	ug/g	78	78	1.48	0.123	0.212	<0.050
Surrogate: 2-Fluorobiphenyl	%	-	-	103.5	103.8	105.6	106.2
Surrogate: p-Terphenyl d14	%	-	-	90.2	96.4	94.5	92.9

Guide Limit #1: T3-Soil-Res/Park/Inst. Property Use (Coarse)
Guide Limit #2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
SAR:M	Reported SAR represents a maximum value. Actual SAR may be lower if both Ca and Mg were detectable.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT Soil F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT Soil F2-F4-O.Reg 153/04 (July 2011) CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HG-200.2-CVAA-WT Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-200.2-CCMS-WT Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT Soil ABN-Calculated Parameters SW846 8270

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-WT	Soil	pH	MOEE E3137A

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	SW846 6010C

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

17-625150 17-625151

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2330521 Report Date: 06-SEP-19

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1

Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R4768783								
WG3142416-4 DUP		**L2330393-6**						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	30	26-AUG-19
WG3142416-2 IRM		**WT SAR3**						
Boron (B), Hot Water Ext.			111.6		%		70-130	26-AUG-19
WG3142416-3 LCS								
Boron (B), Hot Water Ext.			92.3		%		70-130	26-AUG-19
WG3142416-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	26-AUG-19
CN-WAD-R511-WT	**Soil**							
Batch R4763543								
WG3137913-3 DUP		**L2330182-2**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	21-AUG-19
WG3137913-2 LCS								
Cyanide, Weak Acid Diss			98.8		%		80-120	21-AUG-19
WG3137913-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	21-AUG-19
WG3137913-4 MS		**L2330182-2**						
Cyanide, Weak Acid Diss			102.9		%		70-130	21-AUG-19
CR-CR6-IC-WT	**Soil**							
Batch R4765750								
WG3140578-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			105.9		%		70-130	23-AUG-19
WG3140578-3 DUP		**L2330521-5**						
Chromium, Hexavalent		0.32	0.26		ug/g	18	35	23-AUG-19
WG3140578-2 LCS								
Chromium, Hexavalent			105.5		%		80-120	23-AUG-19
WG3140578-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	23-AUG-19
EC-WT	**Soil**							
Batch R4768655								
WG3142441-4 DUP		**WG3142441-3**						
Conductivity		0.558	0.557		mS/cm	0.2	20	26-AUG-19
WG3142441-2 IRM		**WT SAR3**						
Conductivity			106.8		%		70-130	26-AUG-19
WG3143167-1 LCS								
Conductivity			101.3		%		90-110	26-AUG-19
WG3142441-1 MB								

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT	**Soil**							
Batch R4768655								
WG3142441-1 MB								
Conductivity			<0.0040		mS/cm		0.004	26-AUG-19
F1-HS-511-WT	**Soil**							
Batch R4765451								
WG3139077-4 DUP		**WG3139077-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	23-AUG-19
WG3139077-2 LCS								
F1 (C6-C10)			103.1		%		80-120	23-AUG-19
WG3139077-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	23-AUG-19
Surrogate: 3,4-Dichlorotoluene			99.1		%		60-140	23-AUG-19
WG3139077-6 MS		**L2332039-6**						
F1 (C6-C10)			103.5		%		60-140	23-AUG-19
Batch R4767573								
WG3139734-4 DUP		**WG3139734-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	23-AUG-19
WG3139734-2 LCS								
F1 (C6-C10)			99.3		%		80-120	25-AUG-19
WG3139734-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	23-AUG-19
Surrogate: 3,4-Dichlorotoluene			88.7		%		60-140	23-AUG-19
WG3139734-6 MS		**L2330521-10**						
F1 (C6-C10)			77.5		%		60-140	23-AUG-19
F2-F4-511-WT	**Soil**							
Batch R4763032								
WG3137583-7 DUP		**WG3137583-6**						
F2 (C10-C16)		17	17		ug/g	0.9	30	23-AUG-19
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	23-AUG-19
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	23-AUG-19
WG3137583-2 LCS								
F2 (C10-C16)			112.3		%		80-120	21-AUG-19
F3 (C16-C34)			108.4		%		80-120	21-AUG-19
F4 (C34-C50)			110.3		%		80-120	21-AUG-19
WG3137583-1 MB								
F2 (C10-C16)			<10		ug/g		10	21-AUG-19
F3 (C16-C34)			<50		ug/g		50	21-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R4763032								
WG3137583-1 MB								
F4 (C34-C50)			<50		ug/g		50	21-AUG-19
Surrogate: 2-Bromobenzotrifluoride			96.3		%		60-140	21-AUG-19
WG3137583-8 MS		**WG3137583-6**						
F2 (C10-C16)			92.3		%		60-140	23-AUG-19
F3 (C16-C34)			90.9		%		60-140	23-AUG-19
F4 (C34-C50)			94.6		%		60-140	23-AUG-19
HG-200.2-CVAA-WT	**Soil**							
Batch R4768664								
WG3142349-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			95.8		%		70-130	26-AUG-19
WG3142349-6 DUP		**WG3142349-5**						
Mercury (Hg)		0.110	0.106		ug/g	3.1	40	26-AUG-19
WG3142349-3 LCS								
Mercury (Hg)			100.0		%		80-120	26-AUG-19
WG3142349-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	26-AUG-19
MET-200.2-CCMS-WT	**Soil**							
Batch R4769121								
WG3142349-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			100.3		%		70-130	26-AUG-19
Arsenic (As)			99.3		%		70-130	26-AUG-19
Barium (Ba)			105.2		%		70-130	26-AUG-19
Beryllium (Be)			98.7		%		70-130	26-AUG-19
Boron (B)			3.2		mg/kg		0-8.2	26-AUG-19
Cadmium (Cd)			100.9		%		70-130	26-AUG-19
Chromium (Cr)			102.1		%		70-130	26-AUG-19
Cobalt (Co)			101.3		%		70-130	26-AUG-19
Copper (Cu)			101.8		%		70-130	26-AUG-19
Lead (Pb)			97.3		%		70-130	26-AUG-19
Molybdenum (Mo)			102.9		%		70-130	26-AUG-19
Nickel (Ni)			102.8		%		70-130	26-AUG-19
Selenium (Se)			0.31		mg/kg		0.11-0.51	26-AUG-19
Silver (Ag)			0.23		mg/kg		0.13-0.33	26-AUG-19
Thallium (Tl)			0.125		mg/kg		0.077-0.18	26-AUG-19
Uranium (U)			100.3		%		70-130	26-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4769121								
WG3142349-2 CRM		**WT-CANMET-TILL1**						
Vanadium (V)			103.1		%		70-130	26-AUG-19
Zinc (Zn)			92.8		%		70-130	26-AUG-19
WG3142349-6 DUP		**WG3142349-5**						
Antimony (Sb)		0.57	0.57		ug/g	1.0	30	26-AUG-19
Arsenic (As)		5.62	5.68		ug/g	1.0	30	26-AUG-19
Barium (Ba)		172	173		ug/g	1.0	40	26-AUG-19
Beryllium (Be)		1.58	1.60		ug/g	1.0	30	26-AUG-19
Boron (B)		26.8	27.1		ug/g	1.0	30	26-AUG-19
Cadmium (Cd)		0.256	0.259		ug/g	1.0	30	26-AUG-19
Chromium (Cr)		20.2	20.4		ug/g	1.0	30	26-AUG-19
Cobalt (Co)		7.97	8.05		ug/g	1.0	30	26-AUG-19
Copper (Cu)		32.3	32.6		ug/g	1.0	30	26-AUG-19
Lead (Pb)		106	107		ug/g	1.0	40	26-AUG-19
Molybdenum (Mo)		1.16	1.17		ug/g	1.0	40	26-AUG-19
Nickel (Ni)		20.5	20.7		ug/g	1.0	30	26-AUG-19
Selenium (Se)		0.64	0.65		ug/g	1.0	30	26-AUG-19
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	26-AUG-19
Thallium (Tl)		0.097	0.098		ug/g	1.0	30	26-AUG-19
Uranium (U)		0.837	0.845		ug/g	1.0	30	26-AUG-19
Vanadium (V)		25.3	25.6		ug/g	1.0	30	26-AUG-19
Zinc (Zn)		120	121		ug/g	1.0	30	26-AUG-19
WG3142349-4 LCS								
Antimony (Sb)			105.6		%		80-120	26-AUG-19
Arsenic (As)			98.9		%		80-120	26-AUG-19
Barium (Ba)			107.3		%		80-120	26-AUG-19
Beryllium (Be)			100.1		%		80-120	26-AUG-19
Boron (B)			92.5		%		80-120	26-AUG-19
Cadmium (Cd)			99.99		%		80-120	26-AUG-19
Chromium (Cr)			98.6		%		80-120	26-AUG-19
Cobalt (Co)			98.7		%		80-120	26-AUG-19
Copper (Cu)			96.6		%		80-120	26-AUG-19
Lead (Pb)			96.9		%		80-120	26-AUG-19
Molybdenum (Mo)			105.6		%		80-120	26-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4769121								
WG3142349-4 LCS								
Nickel (Ni)			98.9		%		80-120	26-AUG-19
Selenium (Se)			98.1		%		80-120	26-AUG-19
Silver (Ag)			104.9		%		80-120	26-AUG-19
Thallium (Tl)			96.8		%		80-120	26-AUG-19
Uranium (U)			91.7		%		80-120	26-AUG-19
Vanadium (V)			101.7		%		80-120	26-AUG-19
Zinc (Zn)			89.9		%		80-120	26-AUG-19
WG3142349-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	26-AUG-19
Arsenic (As)			<0.10		mg/kg		0.1	26-AUG-19
Barium (Ba)			<0.50		mg/kg		0.5	26-AUG-19
Beryllium (Be)			<0.10		mg/kg		0.1	26-AUG-19
Boron (B)			<5.0		mg/kg		5	26-AUG-19
Cadmium (Cd)			<0.020		mg/kg		0.02	26-AUG-19
Chromium (Cr)			<0.50		mg/kg		0.5	26-AUG-19
Cobalt (Co)			<0.10		mg/kg		0.1	26-AUG-19
Copper (Cu)			<0.50		mg/kg		0.5	26-AUG-19
Lead (Pb)			<0.50		mg/kg		0.5	26-AUG-19
Molybdenum (Mo)			<0.10		mg/kg		0.1	26-AUG-19
Nickel (Ni)			<0.50		mg/kg		0.5	26-AUG-19
Selenium (Se)			<0.20		mg/kg		0.2	26-AUG-19
Silver (Ag)			<0.10		mg/kg		0.1	26-AUG-19
Thallium (Tl)			<0.050		mg/kg		0.05	26-AUG-19
Uranium (U)			<0.050		mg/kg		0.05	26-AUG-19
Vanadium (V)			<0.20		mg/kg		0.2	26-AUG-19
Zinc (Zn)			<2.0		mg/kg		2	26-AUG-19
MOISTURE-WT	**Soil**							
Batch R4761891								
WG3138092-3 DUP		**L2330521-5**						
% Moisture		15.0	15.1		%	0.8	20	21-AUG-19
WG3138092-2 LCS								
% Moisture			100.3		%		90-110	21-AUG-19
WG3138092-1 MB								
% Moisture			<0.10		%		0.1	21-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4763936								
WG3137367-3 DUP		**WG3137367-5**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	22-AUG-19
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	22-AUG-19
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
Naphthalene		<0.013	<0.013	RPD-NA	ug/g	N/A	40	22-AUG-19
Phenanthrene		<0.046	<0.046	RPD-NA	ug/g	N/A	40	22-AUG-19
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	22-AUG-19
WG3137367-2 LCS								
1-Methylnaphthalene			103.2		%		50-140	22-AUG-19
2-Methylnaphthalene			97.4		%		50-140	22-AUG-19
Acenaphthene			105.1		%		50-140	22-AUG-19
Acenaphthylene			110.8		%		50-140	22-AUG-19
Anthracene			104.0		%		50-140	22-AUG-19
Benzo(a)anthracene			105.6		%		50-140	22-AUG-19
Benzo(a)pyrene			102.1		%		50-140	22-AUG-19
Benzo(b)fluoranthene			102.7		%		50-140	22-AUG-19
Benzo(g,h,i)perylene			99.5		%		50-140	22-AUG-19
Benzo(k)fluoranthene			98.9		%		50-140	22-AUG-19
Chrysene			108.1		%		50-140	22-AUG-19
Dibenzo(ah)anthracene			99.8		%		50-140	22-AUG-19
Fluoranthene			101.0		%		50-140	22-AUG-19
Fluorene			103.0		%		50-140	22-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4763936								
WG3137367-2 LCS								
Indeno(1,2,3-cd)pyrene			103.0		%		50-140	22-AUG-19
Naphthalene			98.0		%		50-140	22-AUG-19
Phenanthrene			101.9		%		50-140	22-AUG-19
Pyrene			102.3		%		50-140	22-AUG-19
WG3137367-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	22-AUG-19
2-Methylnaphthalene			<0.030		ug/g		0.03	22-AUG-19
Acenaphthene			<0.050		ug/g		0.05	22-AUG-19
Acenaphthylene			<0.050		ug/g		0.05	22-AUG-19
Anthracene			<0.050		ug/g		0.05	22-AUG-19
Benzo(a)anthracene			<0.050		ug/g		0.05	22-AUG-19
Benzo(a)pyrene			<0.050		ug/g		0.05	22-AUG-19
Benzo(b)fluoranthene			<0.050		ug/g		0.05	22-AUG-19
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	22-AUG-19
Benzo(k)fluoranthene			<0.050		ug/g		0.05	22-AUG-19
Chrysene			<0.050		ug/g		0.05	22-AUG-19
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	22-AUG-19
Fluoranthene			<0.050		ug/g		0.05	22-AUG-19
Fluorene			<0.050		ug/g		0.05	22-AUG-19
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	22-AUG-19
Naphthalene			<0.013		ug/g		0.013	22-AUG-19
Phenanthrene			<0.046		ug/g		0.046	22-AUG-19
Pyrene			<0.050		ug/g		0.05	22-AUG-19
Surrogate: 2-Fluorobiphenyl			102.9		%		50-140	22-AUG-19
Surrogate: p-Terphenyl d14			90.5		%		50-140	22-AUG-19
WG3137367-4 MS		**WG3137367-5**						
1-Methylnaphthalene			103.5		%		50-140	22-AUG-19
2-Methylnaphthalene			97.4		%		50-140	22-AUG-19
Acenaphthene			105.5		%		50-140	22-AUG-19
Acenaphthylene			110.3		%		50-140	22-AUG-19
Anthracene			103.8		%		50-140	22-AUG-19
Benzo(a)anthracene			105.0		%		50-140	22-AUG-19
Benzo(a)pyrene			101.8		%		50-140	22-AUG-19
Benzo(b)fluoranthene			102.9		%		50-140	22-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4763936								
WG3137367-4 MS		**WG3137367-5**						
Benzo(g,h,i)perylene			98.9		%		50-140	22-AUG-19
Benzo(k)fluoranthene			99.2		%		50-140	22-AUG-19
Chrysene			107.3		%		50-140	22-AUG-19
Dibenzo(ah)anthracene			99.0		%		50-140	22-AUG-19
Fluoranthene			101.6		%		50-140	22-AUG-19
Fluorene			103.6		%		50-140	22-AUG-19
Indeno(1,2,3-cd)pyrene			102.3		%		50-140	22-AUG-19
Naphthalene			98.2		%		50-140	22-AUG-19
Phenanthrene			102.5		%		50-140	22-AUG-19
Pyrene			102.4		%		50-140	22-AUG-19
Batch R4765519								
WG3137689-3 DUP		**WG3137689-5**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	23-AUG-19
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	23-AUG-19
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Naphthalene		<0.013	<0.013	RPD-NA	ug/g	N/A	40	23-AUG-19
Phenanthrene		<0.046	<0.046	RPD-NA	ug/g	N/A	40	23-AUG-19
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
WG3137689-2 LCS								
1-Methylnaphthalene			100.7		%		50-140	23-AUG-19
2-Methylnaphthalene			95.6		%		50-140	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4765519								
WG3137689-2 LCS								
Acenaphthene			102.2		%		50-140	23-AUG-19
Acenaphthylene			106.9		%		50-140	23-AUG-19
Anthracene			103.8		%		50-140	23-AUG-19
Benzo(a)anthracene			107.7		%		50-140	23-AUG-19
Benzo(a)pyrene			101.7		%		50-140	23-AUG-19
Benzo(b)fluoranthene			99.8		%		50-140	23-AUG-19
Benzo(g,h,i)perylene			100.1		%		50-140	23-AUG-19
Benzo(k)fluoranthene			101.3		%		50-140	23-AUG-19
Chrysene			105.8		%		50-140	23-AUG-19
Dibenzo(ah)anthracene			100.8		%		50-140	23-AUG-19
Fluoranthene			101.5		%		50-140	23-AUG-19
Fluorene			101.5		%		50-140	23-AUG-19
Indeno(1,2,3-cd)pyrene			102.4		%		50-140	23-AUG-19
Naphthalene			98.4		%		50-140	23-AUG-19
Phenanthrene			102.5		%		50-140	23-AUG-19
Pyrene			101.1		%		50-140	23-AUG-19
WG3137689-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	23-AUG-19
2-Methylnaphthalene			<0.030		ug/g		0.03	23-AUG-19
Acenaphthene			<0.050		ug/g		0.05	23-AUG-19
Acenaphthylene			<0.050		ug/g		0.05	23-AUG-19
Anthracene			<0.050		ug/g		0.05	23-AUG-19
Benzo(a)anthracene			<0.050		ug/g		0.05	23-AUG-19
Benzo(a)pyrene			<0.050		ug/g		0.05	23-AUG-19
Benzo(b)fluoranthene			<0.050		ug/g		0.05	23-AUG-19
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	23-AUG-19
Benzo(k)fluoranthene			<0.050		ug/g		0.05	23-AUG-19
Chrysene			<0.050		ug/g		0.05	23-AUG-19
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	23-AUG-19
Fluoranthene			<0.050		ug/g		0.05	23-AUG-19
Fluorene			<0.050		ug/g		0.05	23-AUG-19
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	23-AUG-19
Naphthalene			<0.013		ug/g		0.013	23-AUG-19
Phenanthrene			<0.046		ug/g		0.046	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4765519								
WG3137689-1 MB								
Pyrene			<0.050		ug/g		0.05	23-AUG-19
Surrogate: 2-Fluorobiphenyl			98.6		%		50-140	23-AUG-19
Surrogate: p-Terphenyl d14			85.1		%		50-140	23-AUG-19
WG3137689-4 MS		**WG3137689-5**						
1-Methylnaphthalene			102.1		%		50-140	23-AUG-19
2-Methylnaphthalene			97.3		%		50-140	23-AUG-19
Acenaphthene			104.6		%		50-140	23-AUG-19
Acenaphthylene			107.2		%		50-140	23-AUG-19
Anthracene			104.5		%		50-140	23-AUG-19
Benzo(a)anthracene			109.4		%		50-140	23-AUG-19
Benzo(a)pyrene			105.1		%		50-140	23-AUG-19
Benzo(b)fluoranthene			105.2		%		50-140	23-AUG-19
Benzo(g,h,i)perylene			103.2		%		50-140	23-AUG-19
Benzo(k)fluoranthene			103.4		%		50-140	23-AUG-19
Chrysene			110.4		%		50-140	23-AUG-19
Dibenzo(ah)anthracene			104.7		%		50-140	23-AUG-19
Fluoranthene			103.6		%		50-140	23-AUG-19
Fluorene			103.6		%		50-140	23-AUG-19
Indeno(1,2,3-cd)pyrene			107.7		%		50-140	23-AUG-19
Naphthalene			99.5		%		50-140	23-AUG-19
Phenanthrene			106.0		%		50-140	23-AUG-19
Pyrene			103.0		%		50-140	23-AUG-19
PH-WT	**Soil**							
Batch R4762903								
WG3138033-1 DUP		**L2330521-5**						
pH		7.71	7.70	J	pH units	0.01	0.3	22-AUG-19
WG3138957-1 LCS								
pH			6.96		pH units		6.9-7.1	22-AUG-19
SAR-R511-WT	**Soil**							
Batch R4768554								
WG3142441-4 DUP		**WG3142441-3**						
Calcium (Ca)		35.5	35.2		mg/L	0.8	30	26-AUG-19
Sodium (Na)		55.3	55.7		mg/L	0.7	30	26-AUG-19
Magnesium (Mg)		9.94	9.82		mg/L	1.2	30	26-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R4768554								
WG3142441-2 IRM		**WT SAR3**						
Calcium (Ca)			85.7		%		70-130	26-AUG-19
Sodium (Na)			100.9		%		70-130	26-AUG-19
Magnesium (Mg)			88.7		%		70-130	26-AUG-19
WG3142441-5 LCS								
Calcium (Ca)			102.7		%		70-130	26-AUG-19
Sodium (Na)			101.8		%		70-130	26-AUG-19
Magnesium (Mg)			97.4		%		70-130	26-AUG-19
WG3142441-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	26-AUG-19
Sodium (Na)			<0.50		mg/L		0.5	26-AUG-19
Magnesium (Mg)			<0.50		mg/L		0.5	26-AUG-19
VOC-511-HS-WT	**Soil**							
Batch R4765451								
WG3139077-4 DUP		**WG3139077-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	23-AUG-19
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	23-AUG-19
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4765451								
WG3139077-4 DUP		**WG3139077-3**						
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	23-AUG-19
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	23-AUG-19
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	23-AUG-19
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	23-AUG-19
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	23-AUG-19
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	23-AUG-19
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	23-AUG-19
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	23-AUG-19
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	23-AUG-19
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	23-AUG-19
WG3139077-2 LCS								
1,1,1,2-Tetrachloroethane			103.6		%		60-130	23-AUG-19
1,1,2,2-Tetrachloroethane			103.0		%		60-130	23-AUG-19
1,1,1-Trichloroethane			102.1		%		60-130	23-AUG-19
1,1,2-Trichloroethane			99.8		%		60-130	23-AUG-19
1,1-Dichloroethane			101.0		%		60-130	23-AUG-19
1,1-Dichloroethylene			93.5		%		60-130	23-AUG-19
1,2-Dibromoethane			99.3		%		70-130	23-AUG-19
1,2-Dichlorobenzene			103.6		%		70-130	23-AUG-19
1,2-Dichloroethane			103.7		%		60-130	23-AUG-19
1,2-Dichloropropane			104.1		%		70-130	23-AUG-19
1,3-Dichlorobenzene			105.8		%		70-130	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4765451								
WG3139077-2 LCS								
1,4-Dichlorobenzene			106.3		%		70-130	23-AUG-19
Acetone			98.8		%		60-140	23-AUG-19
Benzene			104.7		%		70-130	23-AUG-19
Bromodichloromethane			103.3		%		50-140	23-AUG-19
Bromoform			104.3		%		70-130	23-AUG-19
Bromomethane			89.1		%		50-140	23-AUG-19
Carbon tetrachloride			101.3		%		70-130	23-AUG-19
Chlorobenzene			105.8		%		70-130	23-AUG-19
Chloroform			103.6		%		70-130	23-AUG-19
cis-1,2-Dichloroethylene			101.0		%		70-130	23-AUG-19
cis-1,3-Dichloropropene			116.2		%		70-130	23-AUG-19
Dibromochloromethane			100.9		%		60-130	23-AUG-19
Dichlorodifluoromethane			49.8	MES	%		50-140	23-AUG-19
Ethylbenzene			101.0		%		70-130	23-AUG-19
n-Hexane			85.5		%		70-130	23-AUG-19
Methylene Chloride			100.9		%		70-130	23-AUG-19
MTBE			99.0		%		70-130	23-AUG-19
m+p-Xylenes			105.7		%		70-130	23-AUG-19
Methyl Ethyl Ketone			96.7		%		60-140	23-AUG-19
Methyl Isobutyl Ketone			97.3		%		60-140	23-AUG-19
o-Xylene			102.7		%		70-130	23-AUG-19
Styrene			102.3		%		70-130	23-AUG-19
Tetrachloroethylene			105.6		%		60-130	23-AUG-19
Toluene			102.4		%		70-130	23-AUG-19
trans-1,2-Dichloroethylene			100.7		%		60-130	23-AUG-19
trans-1,3-Dichloropropene			112.6		%		70-130	23-AUG-19
Trichloroethylene			105.5		%		60-130	23-AUG-19
Trichlorofluoromethane			93.7		%		50-140	23-AUG-19
Vinyl chloride			92.1		%		60-140	23-AUG-19
WG3139077-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	23-AUG-19
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	23-AUG-19
1,1,1-Trichloroethane			<0.050		ug/g		0.05	23-AUG-19
1,1,2-Trichloroethane			<0.050		ug/g		0.05	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4765451								
WG3139077-1 MB								
1,1-Dichloroethane			<0.050		ug/g		0.05	23-AUG-19
1,1-Dichloroethylene			<0.050		ug/g		0.05	23-AUG-19
1,2-Dibromoethane			<0.050		ug/g		0.05	23-AUG-19
1,2-Dichlorobenzene			<0.050		ug/g		0.05	23-AUG-19
1,2-Dichloroethane			<0.050		ug/g		0.05	23-AUG-19
1,2-Dichloropropane			<0.050		ug/g		0.05	23-AUG-19
1,3-Dichlorobenzene			<0.050		ug/g		0.05	23-AUG-19
1,4-Dichlorobenzene			<0.050		ug/g		0.05	23-AUG-19
Acetone			<0.50		ug/g		0.5	23-AUG-19
Benzene			<0.0068		ug/g		0.0068	23-AUG-19
Bromodichloromethane			<0.050		ug/g		0.05	23-AUG-19
Bromoform			<0.050		ug/g		0.05	23-AUG-19
Bromomethane			<0.050		ug/g		0.05	23-AUG-19
Carbon tetrachloride			<0.050		ug/g		0.05	23-AUG-19
Chlorobenzene			<0.050		ug/g		0.05	23-AUG-19
Chloroform			<0.050		ug/g		0.05	23-AUG-19
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	23-AUG-19
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	23-AUG-19
Dibromochloromethane			<0.050		ug/g		0.05	23-AUG-19
Dichlorodifluoromethane			<0.050		ug/g		0.05	23-AUG-19
Ethylbenzene			<0.018		ug/g		0.018	23-AUG-19
n-Hexane			<0.050		ug/g		0.05	23-AUG-19
Methylene Chloride			<0.050		ug/g		0.05	23-AUG-19
MTBE			<0.050		ug/g		0.05	23-AUG-19
m+p-Xylenes			<0.030		ug/g		0.03	23-AUG-19
Methyl Ethyl Ketone			<0.50		ug/g		0.5	23-AUG-19
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	23-AUG-19
o-Xylene			<0.020		ug/g		0.02	23-AUG-19
Styrene			<0.050		ug/g		0.05	23-AUG-19
Tetrachloroethylene			<0.050		ug/g		0.05	23-AUG-19
Toluene			<0.080		ug/g		0.08	23-AUG-19
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	23-AUG-19
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4765451								
WG3139077-1 MB								
Trichloroethylene			<0.010		ug/g		0.01	23-AUG-19
Trichlorofluoromethane			<0.050		ug/g		0.05	23-AUG-19
Vinyl chloride			<0.020		ug/g		0.02	23-AUG-19
Surrogate: 1,4-Difluorobenzene			106.2		%		50-140	23-AUG-19
Surrogate: 4-Bromofluorobenzene			94.5		%		50-140	23-AUG-19
WG3139077-5 MS		**L2331048-1**						
1,1,1,2-Tetrachloroethane			98.4		%		50-140	23-AUG-19
1,1,2,2-Tetrachloroethane			92.8		%		50-140	23-AUG-19
1,1,1-Trichloroethane			92.4		%		50-140	23-AUG-19
1,1,2-Trichloroethane			92.5		%		50-140	23-AUG-19
1,1-Dichloroethane			94.4		%		50-140	23-AUG-19
1,1-Dichloroethylene			87.9		%		50-140	23-AUG-19
1,2-Dibromoethane			92.2		%		50-140	23-AUG-19
1,2-Dichlorobenzene			97.0		%		50-140	23-AUG-19
1,2-Dichloroethane			94.5		%		50-140	23-AUG-19
1,2-Dichloropropane			94.6		%		50-140	23-AUG-19
1,3-Dichlorobenzene			100.1		%		50-140	23-AUG-19
1,4-Dichlorobenzene			99.7		%		50-140	23-AUG-19
Acetone			93.6		%		50-140	23-AUG-19
Benzene			96.8		%		50-140	23-AUG-19
Bromodichloromethane			94.1		%		50-140	23-AUG-19
Bromoform			95.2		%		50-140	23-AUG-19
Bromomethane			81.9		%		50-140	23-AUG-19
Carbon tetrachloride			95.6		%		50-140	23-AUG-19
Chlorobenzene			99.99		%		50-140	23-AUG-19
Chloroform			95.7		%		50-140	23-AUG-19
cis-1,2-Dichloroethylene			93.6		%		50-140	23-AUG-19
cis-1,3-Dichloropropene			102.2		%		50-140	23-AUG-19
Dibromochloromethane			94.6		%		50-140	23-AUG-19
Dichlorodifluoromethane			51.7		%		50-140	23-AUG-19
Ethylbenzene			97.6		%		50-140	23-AUG-19
n-Hexane			81.6		%		50-140	23-AUG-19
Methylene Chloride			92.0		%		50-140	23-AUG-19
MTBE			94.5		%		50-140	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4765451								
WG3139077-5 MS		**L2331048-1**						
m+p-Xylenes			101.4		%		50-140	23-AUG-19
Methyl Ethyl Ketone			84.4		%		50-140	23-AUG-19
Methyl Isobutyl Ketone			83.8		%		50-140	23-AUG-19
o-Xylene			98.6		%		50-140	23-AUG-19
Styrene			96.5		%		50-140	23-AUG-19
Tetrachloroethylene			101.7		%		50-140	23-AUG-19
Toluene			99.1		%		50-140	23-AUG-19
trans-1,2-Dichloroethylene			93.3		%		50-140	23-AUG-19
trans-1,3-Dichloropropene			102.0		%		50-140	23-AUG-19
Trichloroethylene			98.1		%		50-140	23-AUG-19
Trichlorofluoromethane			89.4		%		50-140	23-AUG-19
Vinyl chloride			86.9		%		50-140	23-AUG-19
Batch R4767573								
WG3139734-4 DUP		**WG3139734-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	23-AUG-19
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	23-AUG-19
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4767573								
WG3139734-4 DUP		**WG3139734-3**						
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	23-AUG-19
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	23-AUG-19
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	23-AUG-19
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	23-AUG-19
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	23-AUG-19
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	23-AUG-19
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	23-AUG-19
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	23-AUG-19
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	23-AUG-19
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	23-AUG-19
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	23-AUG-19
WG3139734-2 LCS								
1,1,1,2-Tetrachloroethane			102.7		%		60-130	23-AUG-19
1,1,2,2-Tetrachloroethane			110.1		%		60-130	23-AUG-19
1,1,1-Trichloroethane			99.6		%		60-130	23-AUG-19
1,1,2-Trichloroethane			104.7		%		60-130	23-AUG-19
1,1-Dichloroethane			103.0		%		60-130	23-AUG-19
1,1-Dichloroethylene			95.2		%		60-130	23-AUG-19
1,2-Dibromoethane			101.4		%		70-130	23-AUG-19
1,2-Dichlorobenzene			108.6		%		70-130	23-AUG-19
1,2-Dichloroethane			106.8		%		60-130	23-AUG-19
1,2-Dichloropropane			112.3		%		70-130	23-AUG-19
1,3-Dichlorobenzene			105.4		%		70-130	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4767573								
WG3139734-2 LCS								
1,4-Dichlorobenzene			108.1		%		70-130	23-AUG-19
Acetone			109.7		%		60-140	23-AUG-19
Benzene			109.6		%		70-130	23-AUG-19
Bromodichloromethane			107.0		%		50-140	23-AUG-19
Bromoform			106.4		%		70-130	23-AUG-19
Bromomethane			87.6		%		50-140	23-AUG-19
Carbon tetrachloride			100.5		%		70-130	23-AUG-19
Chlorobenzene			106.1		%		70-130	23-AUG-19
Chloroform			103.6		%		70-130	23-AUG-19
cis-1,2-Dichloroethylene			100.8		%		70-130	23-AUG-19
cis-1,3-Dichloropropene			109.6		%		70-130	23-AUG-19
Dibromochloromethane			98.6		%		60-130	23-AUG-19
Dichlorodifluoromethane			59.9		%		50-140	23-AUG-19
Ethylbenzene			102.7		%		70-130	23-AUG-19
n-Hexane			93.5		%		70-130	23-AUG-19
Methylene Chloride			100.6		%		70-130	23-AUG-19
MTBE			101.4		%		70-130	23-AUG-19
m+p-Xylenes			103.2		%		70-130	23-AUG-19
Methyl Ethyl Ketone			107.2		%		60-140	23-AUG-19
Methyl Isobutyl Ketone			106.5		%		60-140	23-AUG-19
o-Xylene			102.2		%		70-130	23-AUG-19
Styrene			102.3		%		70-130	23-AUG-19
Tetrachloroethylene			96.6		%		60-130	23-AUG-19
Toluene			100.6		%		70-130	23-AUG-19
trans-1,2-Dichloroethylene			98.4		%		60-130	23-AUG-19
trans-1,3-Dichloropropene			102.4		%		70-130	23-AUG-19
Trichloroethylene			105.8		%		60-130	23-AUG-19
Trichlorofluoromethane			94.5		%		50-140	23-AUG-19
Vinyl chloride			100.0		%		60-140	23-AUG-19
WG3139734-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	23-AUG-19
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	23-AUG-19
1,1,1-Trichloroethane			<0.050		ug/g		0.05	23-AUG-19
1,1,2-Trichloroethane			<0.050		ug/g		0.05	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4767573								
WG3139734-1 MB								
1,1-Dichloroethane			<0.050		ug/g		0.05	23-AUG-19
1,1-Dichloroethylene			<0.050		ug/g		0.05	23-AUG-19
1,2-Dibromoethane			<0.050		ug/g		0.05	23-AUG-19
1,2-Dichlorobenzene			<0.050		ug/g		0.05	23-AUG-19
1,2-Dichloroethane			<0.050		ug/g		0.05	23-AUG-19
1,2-Dichloropropane			<0.050		ug/g		0.05	23-AUG-19
1,3-Dichlorobenzene			<0.050		ug/g		0.05	23-AUG-19
1,4-Dichlorobenzene			<0.050		ug/g		0.05	23-AUG-19
Acetone			<0.50		ug/g		0.5	23-AUG-19
Benzene			0.0163	MB-LOR	ug/g		0.0068	23-AUG-19
Bromodichloromethane			<0.050		ug/g		0.05	23-AUG-19
Bromoform			<0.050		ug/g		0.05	23-AUG-19
Bromomethane			<0.050		ug/g		0.05	23-AUG-19
Carbon tetrachloride			<0.050		ug/g		0.05	23-AUG-19
Chlorobenzene			<0.050		ug/g		0.05	23-AUG-19
Chloroform			<0.050		ug/g		0.05	23-AUG-19
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	23-AUG-19
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	23-AUG-19
Dibromochloromethane			<0.050		ug/g		0.05	23-AUG-19
Dichlorodifluoromethane			<0.050		ug/g		0.05	23-AUG-19
Ethylbenzene			<0.018		ug/g		0.018	23-AUG-19
n-Hexane			<0.050		ug/g		0.05	23-AUG-19
Methylene Chloride			<0.050		ug/g		0.05	23-AUG-19
MTBE			<0.050		ug/g		0.05	23-AUG-19
m+p-Xylenes			<0.030		ug/g		0.03	23-AUG-19
Methyl Ethyl Ketone			<0.50		ug/g		0.5	23-AUG-19
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	23-AUG-19
o-Xylene			<0.020		ug/g		0.02	23-AUG-19
Styrene			<0.050		ug/g		0.05	23-AUG-19
Tetrachloroethylene			<0.050		ug/g		0.05	23-AUG-19
Toluene			<0.080		ug/g		0.08	23-AUG-19
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	23-AUG-19
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4767573								
WG3139734-1 MB								
Trichloroethylene			<0.010		ug/g		0.01	23-AUG-19
Trichlorofluoromethane			<0.050		ug/g		0.05	23-AUG-19
Vinyl chloride			<0.020		ug/g		0.02	23-AUG-19
Surrogate: 1,4-Difluorobenzene			110.2		%		50-140	23-AUG-19
Surrogate: 4-Bromofluorobenzene			95.0		%		50-140	23-AUG-19
WG3139734-5 MS		**L2330521-8**						
1,1,1,2-Tetrachloroethane			107.8		%		50-140	23-AUG-19
1,1,2,2-Tetrachloroethane			111.6		%		50-140	23-AUG-19
1,1,1-Trichloroethane			108.2		%		50-140	23-AUG-19
1,1,2-Trichloroethane			108.3		%		50-140	23-AUG-19
1,1-Dichloroethane			107.1		%		50-140	23-AUG-19
1,1-Dichloroethylene			101.7		%		50-140	23-AUG-19
1,2-Dibromoethane			105.2		%		50-140	23-AUG-19
1,2-Dichlorobenzene			111.0		%		50-140	23-AUG-19
1,2-Dichloroethane			110.7		%		50-140	23-AUG-19
1,2-Dichloropropane			117.9		%		50-140	23-AUG-19
1,3-Dichlorobenzene			110.4		%		50-140	23-AUG-19
1,4-Dichlorobenzene			111.0		%		50-140	23-AUG-19
Acetone			115.6		%		50-140	23-AUG-19
Benzene			114.7		%		50-140	23-AUG-19
Bromodichloromethane			112.1		%		50-140	23-AUG-19
Bromoform			109.2		%		50-140	23-AUG-19
Bromomethane			91.9		%		50-140	23-AUG-19
Carbon tetrachloride			106.4		%		50-140	23-AUG-19
Chlorobenzene			111.3		%		50-140	23-AUG-19
Chloroform			108.7		%		50-140	23-AUG-19
cis-1,2-Dichloroethylene			104.4		%		50-140	23-AUG-19
cis-1,3-Dichloropropene			109.7		%		50-140	23-AUG-19
Dibromochloromethane			101.8		%		50-140	23-AUG-19
Dichlorodifluoromethane			71.4		%		50-140	23-AUG-19
Ethylbenzene			108.6		%		50-140	23-AUG-19
n-Hexane			101.6		%		50-140	23-AUG-19
Methylene Chloride			103.7		%		50-140	23-AUG-19
MTBE			105.5		%		50-140	23-AUG-19

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4767573								
WG3139734-5 MS		**L2330521-8**						
m+p-Xylenes			109.1		%		50-140	23-AUG-19
Methyl Ethyl Ketone			110.7		%		50-140	23-AUG-19
Methyl Isobutyl Ketone			107.0		%		50-140	23-AUG-19
o-Xylene			107.4		%		50-140	23-AUG-19
Styrene			107.0		%		50-140	23-AUG-19
Tetrachloroethylene			102.1		%		50-140	23-AUG-19
Toluene			106.8		%		50-140	23-AUG-19
trans-1,2-Dichloroethylene			102.9		%		50-140	23-AUG-19
trans-1,3-Dichloropropene			102.5		%		50-140	23-AUG-19
Trichloroethylene			111.2		%		50-140	23-AUG-19
Trichlorofluoromethane			103.0		%		50-140	23-AUG-19
Vinyl chloride			109.3		%		50-140	23-AUG-19

Quality Control Report

Workorder: L2330521 Report Date: 06-SEP-19

Client: LANDTEK LIMITED
205 NEBO ROAD UNIT 3
HAMILTON ON L8W2E1
Contact: KATIE MCISAAC

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

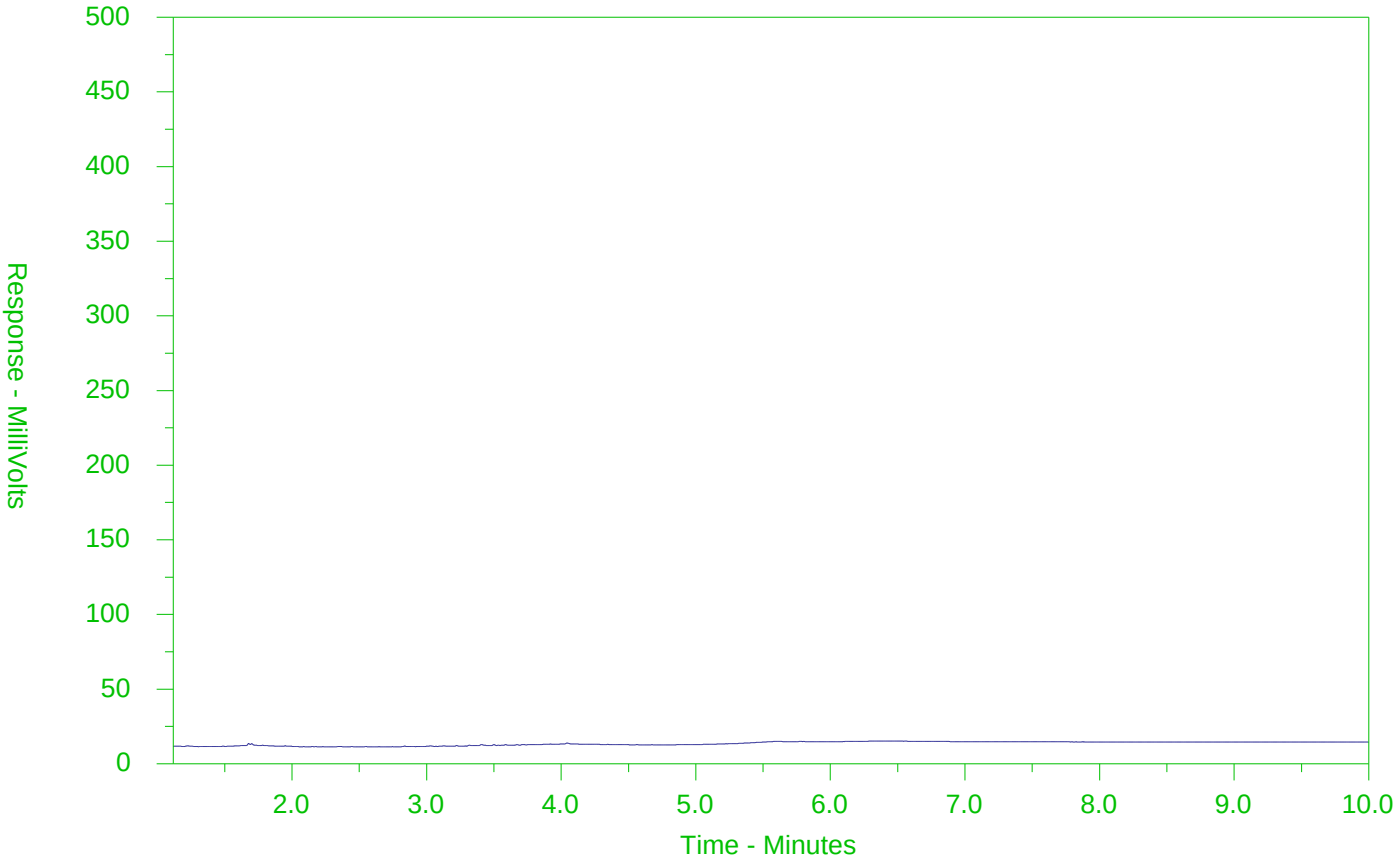
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2330521-3
Client Sample ID: MW1-7



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

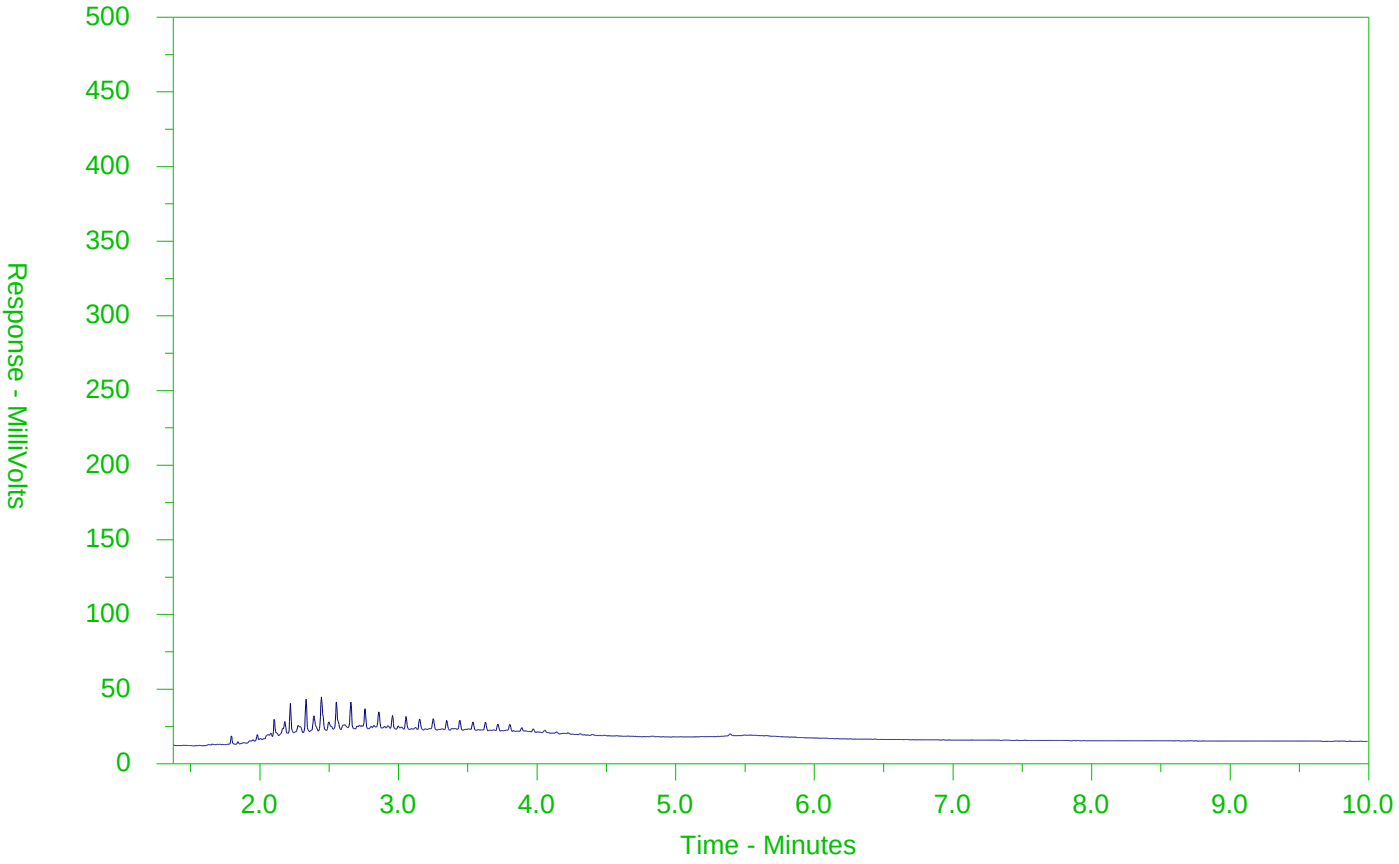
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2330521-6
Client Sample ID: MW2-7



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

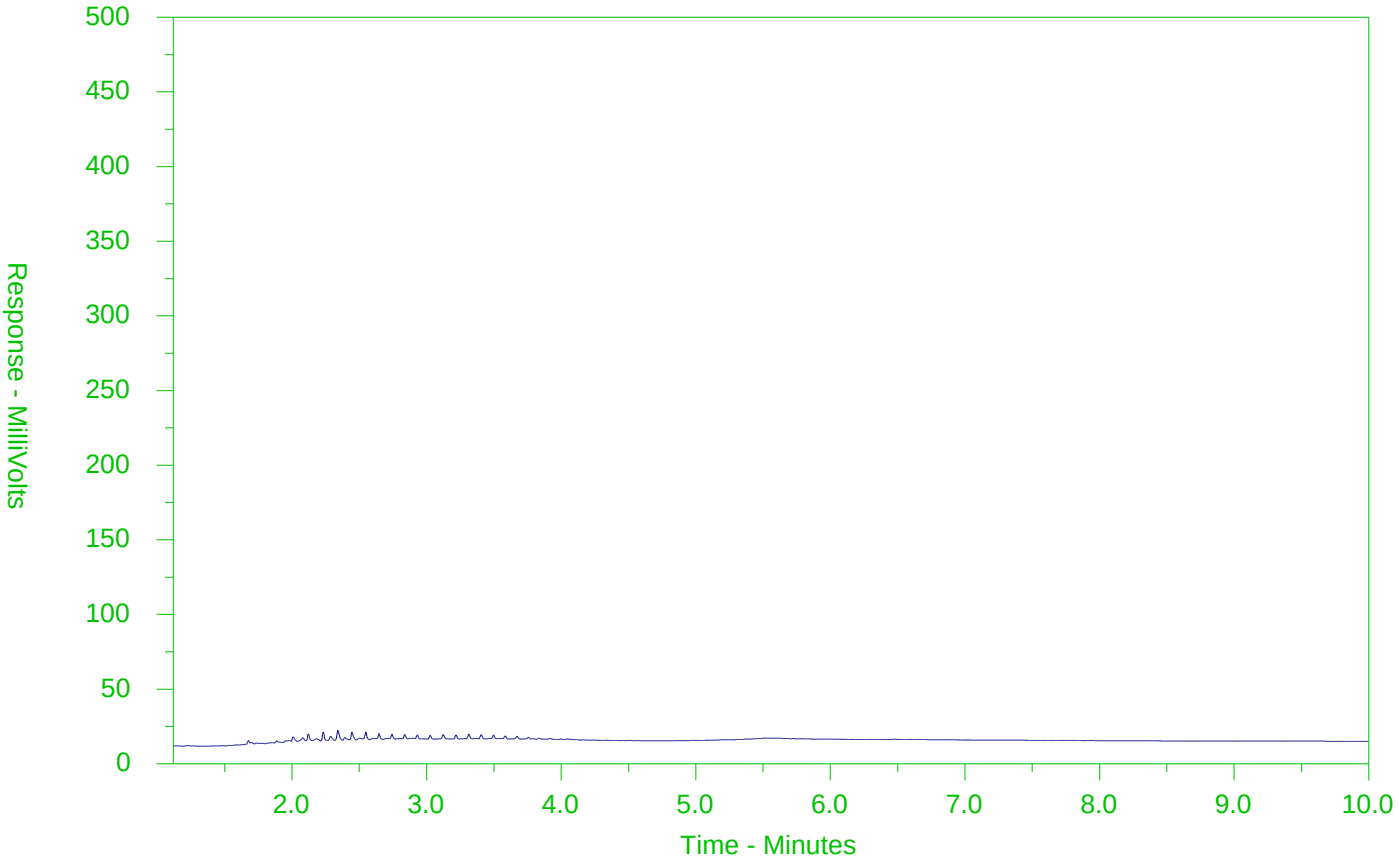
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2330521-8
Client Sample ID: MW3-5



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

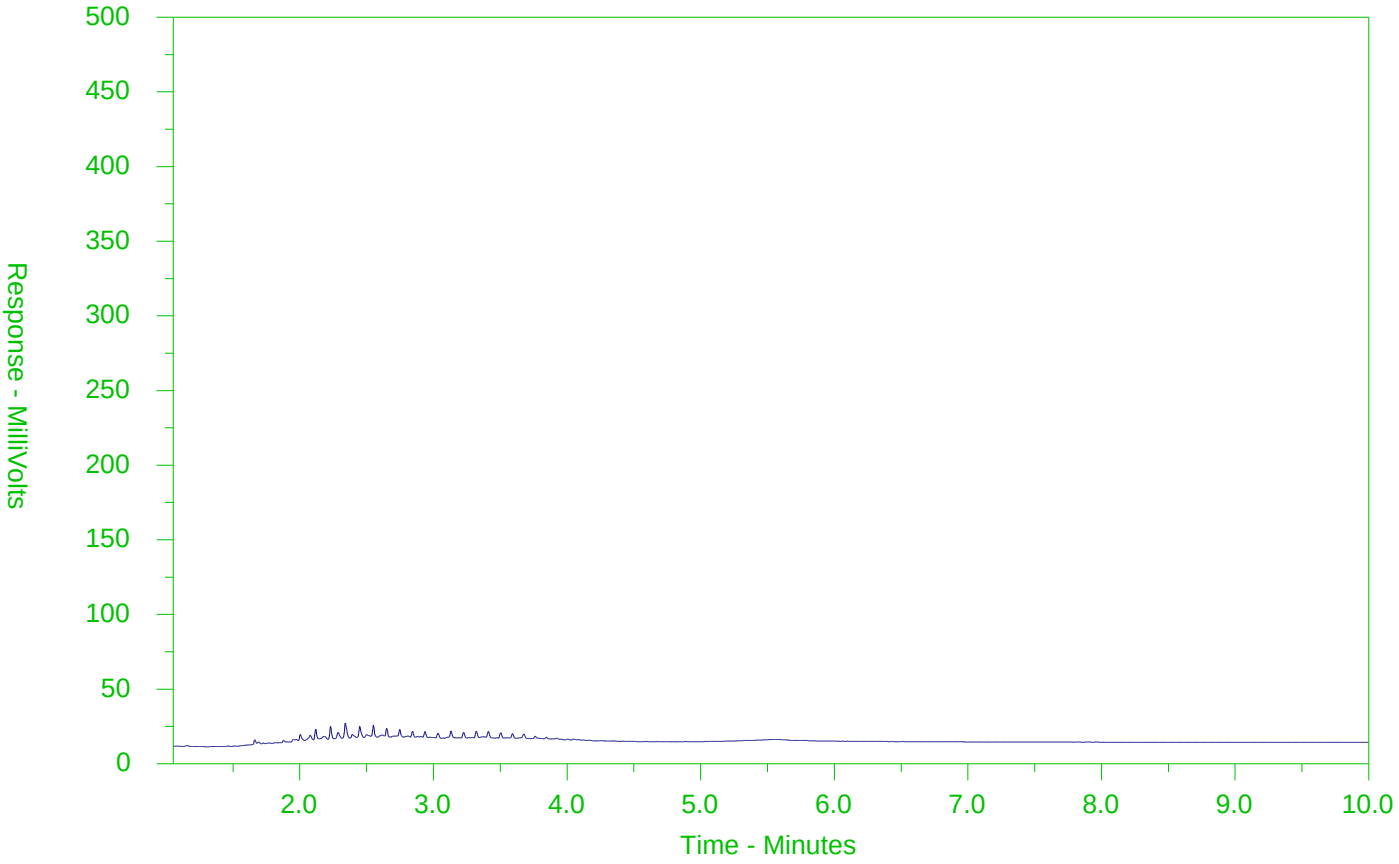
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2330521-10
Client Sample ID: MW4-7



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

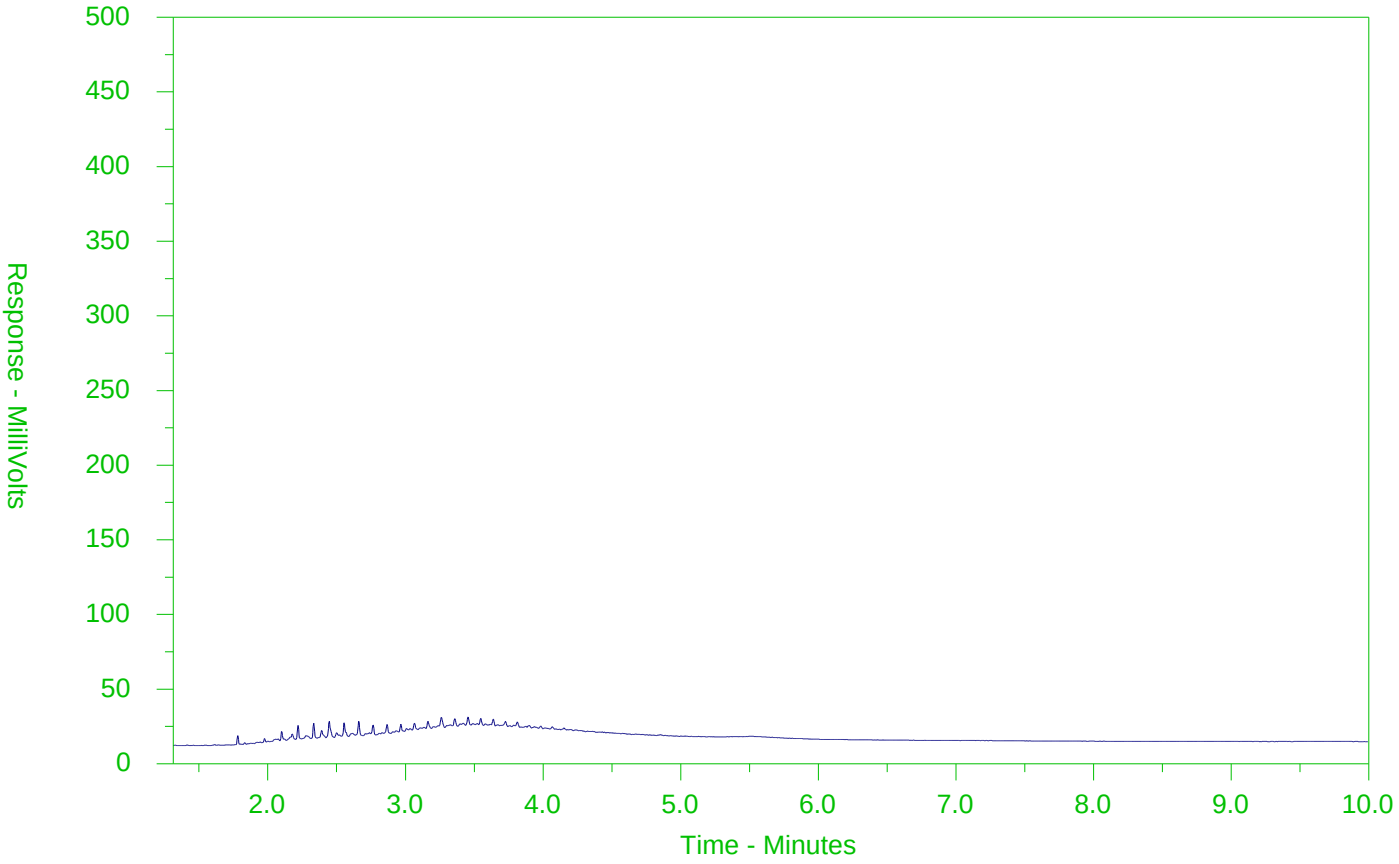
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2330521-11
Client Sample ID: MW4-700



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2330521-COFC

COC Number: 17 - 625150

Page 1 of 2

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Turnaround Time (TAT) Required — Please contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Landtek	Select Report Format: ☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Kahe	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	905 393 3733	☒ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E-100%] ☐ / Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs:
Street:	Nebo	Email 1 or Fax	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Hamilton	Email 2 kahe@landtekLimited.com	
Postal Code:		Email 3	

Invoice To		Invoice Distribution
	Same as Report To ☒ YES ☐ NO	Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☒ YES ☐ NO	
Company:		Email 1 or Fax
Contact:		Email 2

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	19239	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):	L2330521 RD	ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Analysis Request: Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below — MS-1	PAH	PHC/VOC	SAMPLES ON HOLD	Sample is hazardous (please provide further details	NUMBER OF CONTAINERS
	MW1-2	13-08-19	AM	SOIL	X					1
	MW1-3					X				1
	MW1-7						X			3
	MW2-1					X				1
	MW2-2				X					1
	MW2-7						X			3
	MW3-1				X					1
	MW3-5						X			3
	MW4-2	14-08-19			X					1
	MW4-7	14-08-19					X			3
	MW4-700	14-08-19					X			3
	~~Dup~~ BH5-1	13-08-19			X					1

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☒ NO	Table 3
Are samples for human consumption/ use? ☐ YES ☒ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐
Ice Packs ☒	Ice Cubes ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated ☐				

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				9.1			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Kahe MYsaal	Aug 16, 2019	900					08/16/19	15:35

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JULY 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2330521-COFC

COC Number: 17 - 625151

Page 2 of 2

Report To	Contact and company name below will appear on the final report
Company:	Landtek
Contact:	Kate
Phone:	9053833737
	Company address below will appear on the final report
Street:	Nebo
City/Province:	Hamilton
Postal Code:	

Report Format	
Select Report Format:	PDF
Quality Control (QC) Report with Report	YES NO
Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	EMAIL MAIL FAX
Email 1 or Fax	
Email 2	Kate [redacted]@landtek.ltd.com
Email 3	

Invoice To		
	Same as Report To	YES NO
	Copy of Invoice with Report	YES NO
Company:		
Contact:		

Invoice Distribution	
Select Invoice Distribution:	EMAIL MAIL FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	19239
PO / AFE:	
LSD:	

[redacted] (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): L2330521 RD.

ALS Contact: | Sampler:

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4-20%]		1 Business day [E-100%]
	3 day [P3-25%]		Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)]
	2 day [P2-50%]		

[redacted] - Contact your AM to confirm all E&P TATs (surcharges may apply)

Standard TAT if received by 3 pm - business days - no surcharges apply

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Metals	PAH	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	BH6-1	13-08-19	PM	SOIL	X				1
	BH7-1	14-08-19				X			1
	BH7-100					X			1
	BH7-2				X				1
	BH7-200				X				1

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Table 3

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen | SIF Observations: Yes No

Ice Packs | Ice Cubes | Custody seal intact: Yes No

Cooling Initiated

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				9.1			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Kate McMunn	Aug 16, 2019	900					08/16/19	15:35

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JULY 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

LANDTEK LIMITED

BH/MW 1

Project No.:	19239	Drill Date:	August 13, 2019
Project:	Phase 2 Environmental Site Assessment	Drill Method:	[ ] solid stem [x] hollow stem [ ] vibratory
Location:	222, 226 and 228 Barton Street East and 255, 257, 261, 263 and 265 Wellington Street North, Hamilton, Ontario	Datum:	Geodetic

Material Description	Symbol	Elev. Depth	Samples No.	Samples Type	Scale (m)	SPT "N" Value	Soil Moisture (%)	GWL	Monitor Details	Test Data
Ground Surface										Flushmount
±75 mm of Asphalt			1	SS	0.0	15				bentonite backfill to ground level
SILTY SAND (FILL): brown, trace gravel and red brick, compact, dry			2	SS	-0.5					
					-1.0	0				
			3	SS	-1.5					
					-2.0	0				
			4	SS	-2.5					
					-3.0	6				
			5	SS	-3.5					
wet at 3.8 m						5				sand backfill to 3.0 m
			6	SS	-4.0					WL = 4.1 m August 21/2019
					-4.5	2				
SAND (FILL): red, trace silt and red brick, compact, wet			7	SS	-5.0					
					-5.5	0				3.0 m of slotted 50 mm dia. PVC pipe
SILTY CLAY: grey, trace sand, wet			8	SS	-6.0	9				
BOREHOLE TERMINATED		6.0			-6.5					6.0 m
					-7.0					
					-7.5					
					-8.0					
					-8.5					
					-9.0					
					-9.5					
					-10.0					
					-10.5					
					-11.0					
					-11.5					
					-12.0					

Notes:
1. On completion, borehole open to 6.0 m.
2. Groundwater seepage encountered at 3.8 m.
3. Water level reading: WL at 4.1 m depth on August 21, 2019.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

LANDTEK LIMITED
205 Nebo Road, Unit 3
Hamilton, Ontario, Canada, L8W 2E1
Ph: (905) 383-3733 Fax: (905) 383-8433
www.landteklimited.com

LANDTEK LIMITED

BH/MW 2

Project No.:	19239	Drill Date:	August 13, 2019
Project:	Phase 2 Environmental Site Assessment	Drill Method:	[x] solid stem [ ] hollow stem [ ] vibratory
Location:	222, 226 and 228 Barton Street East and 255, 257, 261, 263 and 265 Wellington Street North, Hamilton, Ontario	Datum:	Geodetic

Material Description	Symbol	Elev. Depth	Sample No.	Sample Type	Scale (m)	SPT "N" Value	Soil Moisture (%)	GWL	Monitor Details	Test Data
Ground Surface										Stick-up
±75 mm of Asphalt			1	SS	0.0	15				bentonite backfill to ground level
SILTY SAND (FILL): brown, trace gravel and red brick, compact, dry			2	SS	-1.0	0				
			3	SS	-1.5	0				
			4	SS	-2.5	6				
wet at 3.8 m					-3.5			▽		
SAND (FILL): red, trace silt red brick, compact, wet			5	SS	-4.5	5				sand backfill to 3.9 m
SILTY CLAY: grey, trace sand			6	SS	-5.5	2				
			7	SS	-6.5	0				3.0 m of slotted 50 mm dia. PVC pipe
			8	SS	-7.5	9				
BOREHOLE TERMINATED		8.2			-8.0					7.6 m
					-12.0					

Notes:
1. On completion, borehole open to 6.0 m.
2. Groundwater seepage encountered at 3.8 m.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

LANDTEK LIMITED
205 Nebo Road, Unit 3
Hamilton, Ontario, Canada, L8W 2E1
Ph: (905) 383-3733 Fax: (905) 383-8433
www.landteklimited.com

LANDTEK LIMITED

BH/MW 3

Project No.:	19239	Drill Date:	August 13, 2019
Project:	Phase 2 Environmental Site Assessment	Drill Method:	[x] solid stem [ ] hollow stem [ ] vibratory
Location:	222, 226 and 228 Barton Street East and 255, 257, 261, 263 and 265 Wellington Street North, Hamilton, Ontario	Datum:	Geodetic

Material Description	Symbol	Elev. Depth	Samples No.	Samples Type
Ground Surface				
±75 mm of Topsoil			1	SS
SAND (FILL): brown, trace gravel and organics, loose, dry			2	SS
SILTY CLAY: grey to brown, compact, moist			3	SS
			4	SS
gravel seam at 6.0 m			5	SS
BOREHOLE TERMINATED		6.7	8	SS

SPT "N" Value (Scale (m)): 0 25 50 75 100; 0.0 -0.5 -1.0 -1.5 -2.0 -2.5 -3.0 -3.5 -4.0 -4.5 -5.0 -5.5 -6.0 -6.5 -7.0 -7.5 -8.0 -8.5 -9.0 -9.5 -10.0 -10.5 -11.0 -11.5 -12.0

SPT values: 15, 0, 0, 6, 5

Soil Moisture (%): 0 25 50

GWL

Monitor Details

Test Data: Stick-up; bentonite backfill to ground level; sand backfill to 3.9 m; 6; 7; 3.0 m of slotted 50 mm dia. PVC pipe; 7.6 m

Notes:
1. On completion, borehole open to 6.0 m.
2. Groundwater seepage encountered at 3.8 m.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

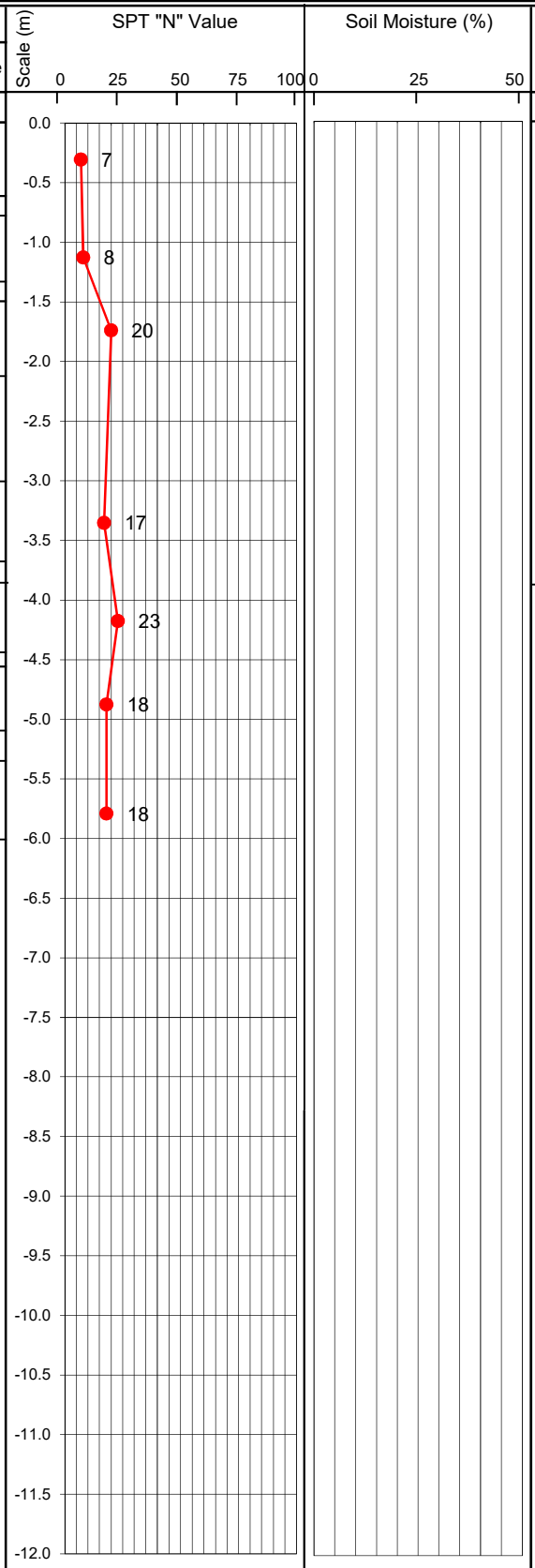
LANDTEK LIMITED
205 Nebo Road, Unit 3
Hamilton, Ontario, Canada, L8W 2E1
Ph: (905) 383-3733 Fax: (905) 383-8433
www.landteklimited.com

LANDTEK LIMITED

BH/MW 4

Project No.:	19239	Drill Date:	August 13, 2019
Project:	Phase 2 Environmental Site Assessment	Drill Method:	[x] solid stem [ ] hollow stem [ ] vibratory
Location:	222, 226 and 228 Barton Street East and 255, 257, 261, 263 and 265 Wellington Street North, Hamilton, Ontario	Datum:	Geodetic

Material Description	Symbol	Elev. Depth	Samples No.	Samples Type	Test Data
Ground Surface					Flushmount
±75 mm of Asphalt			1	SS	
SILTY SAND (FILL): brown, trace gravel, loose, dry			2	SS	
SILTY CLAY: brown to grey, compact, moist			3	SS	bentonite backfill to ground level
			4	SS	sand backfill to 3.0 m
			5	SS	
			6	SS	
			7	SS	
BOREHOLE TERMINATED		6.0			6.0 m
					3.0 m of Slotted 50 mm dia. PVC pipe
					9.1 m



Notes:
1. On completion, borehole open to 6.0 m.
2. Groundwater seepage encountered at 3.8 m.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

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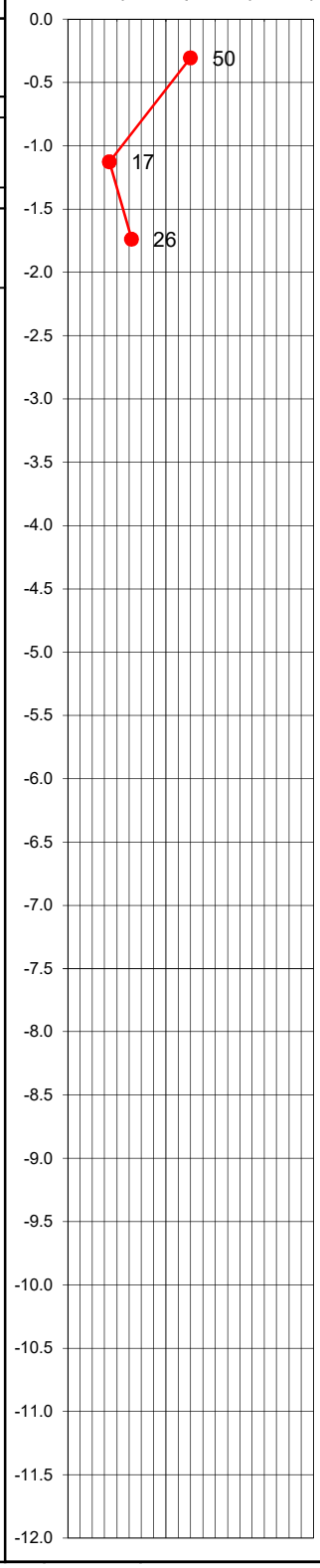
BH 5

Project No.:	19239	Drill Date:	August 13, 2019
Project:	Phase 2 Environmental Site Assessment	Drill Method:	[x] solid stem [ ] hollow stem [ ] vibratory
Location:	222, 226 and 228 Barton Street East and 255, 257, 261, 263 and 265 Wellington Street North, Hamilton, Ontario	Datum:	Geodetic

Material Description	Symbol	Elev. Depth	Samples No.	Samples Type	Scale (m)	SPT "N" Value	Soil Moisture (%)	GWL	Monitor Details	Test Data
Ground Surface										Flushmount
±75 mm of Asphalt			1	SS						
SAND AND GRAVEL (FILL): brown, trace cobbles, loose, dry			2	SS						
SILTY CLAY: brown, compact, dry			3	SS						
BOREHOLE TERMINATED		2.1								

SPT "N" Value: 0, 25, 50, 75, 100 — Soil Moisture (%): 0, 25, 50



Notes: 1. On completion, borehole open to 2.1 m.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

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BH 6

Project No.:	19239	Drill Date:	August 13, 2019
Project:	Phase 2 Environmental Site Assessment	Drill Method:	[x] solid stem [ ] hollow stem [ ] vibratory
Location:	222, 226 and 228 Barton Street East and 255, 257, 261, 263 and 265 Wellington Street North, Hamilton, Ontario	Datum:	Geodetic

Material Description	Symbol	Elev. Depth	Samples No.	Samples Type	Scale (m)	SPT "N" Value	Soil Moisture (%)	GWL	Monitor Details	Test Data
Ground Surface										Flushmount
±75 mm of Asphalt			1	SS	0.0	22				
SAND AND GRAVEL (FILL): brown, trace red brick, loose, dry			2	SS	-0.5	3				
			3	SS	-1.0	1				
BOREHOLE TERMINATED		2.1			-1.5					
					-2.0					
					-2.5					
					-3.0					
					-3.5					
					-4.0					
					-4.5					
					-5.0					
					-5.5					
					-6.0					
					-6.5					
					-7.0					
					-7.5					
					-8.0					
					-8.5					
					-9.0					
					-9.5					
					-10.0					
					-10.5					
					-11.0					
					-11.5					
					-12.0					

SPT "N" Value: 0 25 50 75 100

Soil Moisture (%): 0 25 50

Notes: 1. On completion, borehole open to 2.1 m.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

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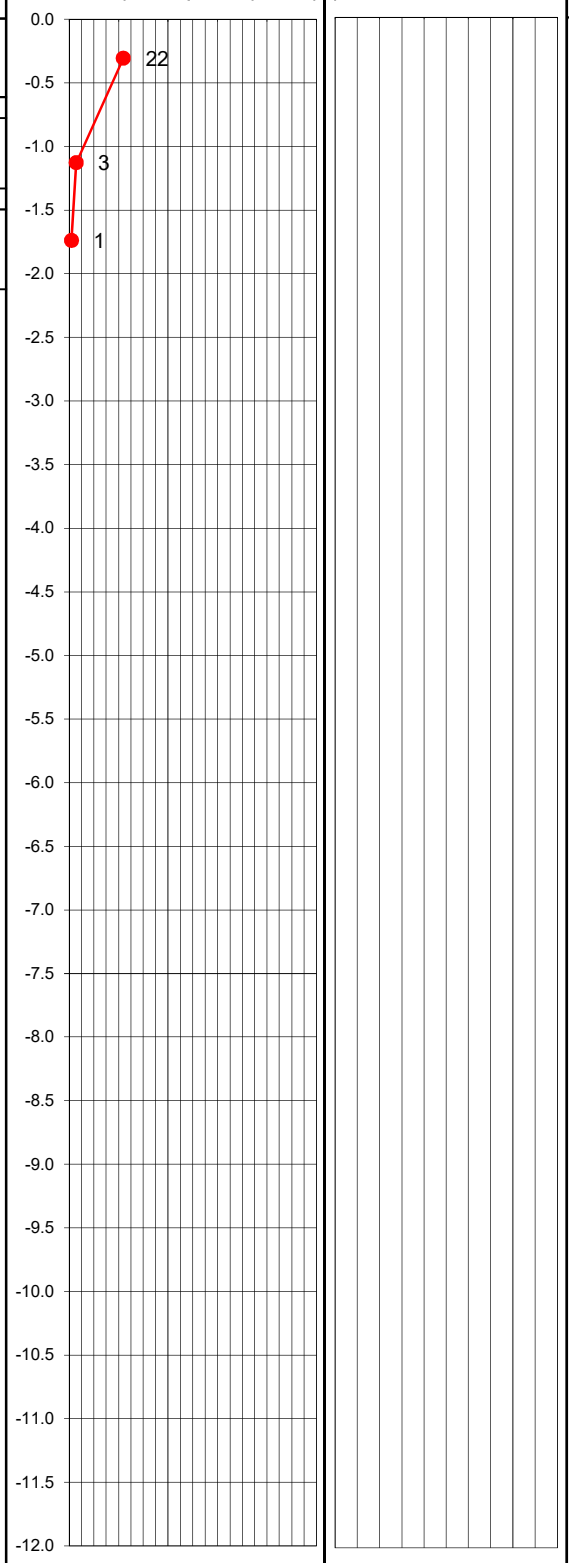
BH 7

Project No.:	19239	Drill Date:	August 13, 2019
Project:	Phase 2 Environmental Site Assessment	Drill Method:	[x] solid stem [ ] hollow stem [ ] vibratory
Location:	222, 226 and 228 Barton Street East and 255, 257, 261, 263 and 265 Wellington Street North, Hamilton, Ontario	Datum:	Geodetic

Material Description	Symbol	Elev. Depth	Samples No.	Samples Type	Test Data
Ground Surface					Flushmount
±75 mm of Asphalt			1	SS	
SAND AND GRAVEL (FILL): brown, trace red brick, loose, dry			2	SS	
			3	SS	
BOREHOLE TERMINATED		2.1			



Notes: 1. On completion, borehole open to 2.1 m.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

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