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Phase Two Environmental Site Assessment

1842 King Street East
Hamilton, Ontario

Prepared for:

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File: 20242

December 2020

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 1842 King Street East, Hamilton, Ontario ("the Phase One Property" or "the Site"). The work was initiated following authorization to proceed from Ms. Michelle Mattern of New Horizon Development Group (the Client) in August of 2020.

The Phase Two ESA was completed in general accordance with 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.

SITE DESCRIPTION

The Phase One Property is rectangular in shape and comprises an area of approximately 2.9 hectares. The Site is bounded by King Street East to the north follow by community property use (i.e. churches) and residential properties. Lawrence Road is located to the south of the Site followed by residential properties, to the east followed by residential properties followed by Rosedale Avenue and residential properties to the west of the Site. Further to the East past the residential properties are commercial properties. To the northeast are commercial properties including an automotive garage.

SUMMARY OF WORK PLAN

Landtek was retained by the Client to prepare a Phase One ESA report for the Site. 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:

Areas of Potential Environmental Concern (APECs)

APEC[1]	Location of APEC on the Phase One Property	PCA [2]	Location of PCA (on-site or off-site)	Contaminants of Potential Concern [3]	Media Potentially Impacted (groundwater, soil, and/or sediment) [4]
A	South Portion of the Site	30. Importation of Fill of Unknown Quality	On-Site	Metals and As, Sb, Se, Hg, CN-EC, SAR, pH	Soil
B	South central Portion of the Site	28. Gasoline and Associated Products Stored in Fixed Tanks	On-Site	BTEX, PHCs,	Soil and groundwater
C	Southwest and east Portion of the Site	Other1: De-icing activities	On-Site	EC, SAR	Soil
D	Northeastern	52: Storage,	Off-Site	BTEX, PHCs,	Soil and

APEC[1]	Location of APEC on the Phase One Property	PCA [2]	Location of PCA (on-site or off-site)	Contaminants of Potential Concern [3]	Media Potentially Impacted (groundwater, soil, and/or sediment) [4]
	Portion	maintenance, fueling and repair of equipment, vehicles and material used to maintain transportation system		VOCs	groundwater

Notes:
Notes:
1 - Area of Potential Environmental Concern (APEC) means the area on, in or under the Phase One Property where one or more contaminants are potentially present, as determined through the phase one environmental site assessment, including through,
(a) Identification of past or present uses on, in or under the phase one 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 One 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, as amended .
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
VOCs – volatile organic compounds
BTEX – benzene, toluene, ethylbenzene and xylenes

Soil Quality

The soil samples collected for analysis as described in the relevant sections of this report indicate that the soils on-Site are impacted and concentrations exceed the applicable O. Reg. 153/04 Table 3 SCS RPI:

Shallow fill material (0 to 0.6 m bgs) was impacted with select metals, EC and/or SAR in several location in the parking lot areas.

Groundwater Quality

The groundwater samples collected for analysis as described in the relevant sections of this report indicate that the groundwater on-Site is not impacted and concentrations met the applicable O. Reg. 153/04 Table 3 RPI SCS on the Site.

RECOMMENDATIONS

Based on the results of this Phase 2 ESA, an appropriate Remedial Action Plan will need to be prepared to confirm the suitability of the Site for its intended development and use.

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1.0 INTRODUCTION

Landtek Limited (Landtek) is pleased to submit the findings of the Phase One Environmental Site Assessment (ESA) report for the property located at 1842 King Street East, Hamilton, Ontario ("the Phase One Property" or "the Site"), as shown on **Figure 1**. The work was initiated following authorization to proceed from Ms. Michelle Mattern of New Horizon Development Group (the Client) in August of 2020.

The current land-use for the Site is community – university campus. The area includes residential, commercial and community land-uses. The Site is to be redeveloped into residential dwellings According to O.Reg. 153/04, a university classroom as defined under the *Education Choice and Excellence Act* current land use as 'community', the change in land use to residential is be considered a more sensitive use. The Site was formerly Briarwood School prior to 2000, as defined under the Education Act, and would considered to be 'institutional'. A Record of Site Condition would likely be required under O.Reg 153/04 for the Site.

It is understood that this work is required as part of future redevelopment. The purpose of the Phase Two ESA was to assess if evidence of potential and/or actual environmental contamination exists at the Site as a result of current and/or past activities at the Site and/or neighbouring properties located within 250 m of the Site (Study Area).

The Phase Two ESA was completed in general accordance with Ontario Regulation 153/04 as amended (O. Reg. 153/04). The current soil and groundwater quality standards provided in the document *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*, April 15, 2011. The Phase 2 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.

1.1 Site Description

The Phase One Property is rectangular in shape and comprises an area of approximately 2.9 hectares. The Site is bounded by King Street East to the north follow by community property use (i.e. churches) and residential properties. Lawrence Road is located to the south of the Site followed by residential properties, to the east followed by residential properties followed by Rosedale Avenue and residential properties to the west of the Site. Further to the East past the residential properties are commercial properties. To the northeast are commercial properties including an automotive garage.

1.2 Property Ownership

The Site information is provided in **Table 1**, below.

Table 1: Site Information

Description	Details
Municipal Address: 1842 King Street East, Stoney Creek, Ontario	
Legal Description	Part Lots 1 and 2, Concession 3, as in AB12452 Township of Barton, City of Hamilton
PIN	17272-0222 (LT)
Zoning	community
Property Owner	New Horizon Development Group

Based on information sources reviewed, the Site land-use was constructed as a secondary school in 1962 with an addition in 1966. The Site was acquired by Brock University and operated as the Hamilton campus since 2002. Prior to 1962, the Site was historically residential since 1875.

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, 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 parkland, while the intended land-use for the property is reported to be mixed use (i.e., commercial and residential). The more sensitive land-use (i.e., "residential") was considered the intended land-use;

- *Potable or non-potable groundwater*: Domestic water supply wells are not located within the Study Area and all properties within the Study Area are supplied with municipal drinking water;

- Proximity to surface water body: The Phase Two Property *greater than* 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 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;

- *pH of soil*: If the surface soil (soil <1.5 m in depth) has a pH value of less than 5 or greater than 9, or if the subsurface soil (soil >1.5 m in depth) has a pH value of less than 5 or greater than 11 then the site is considered to be an environmentally sensitive area. 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.

In accordance with Ontario Regulation 153/04 (O. Reg. 153/04), Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition and *Residential/Parkland/Institutional (RPI) property use for fine textured soils* were selected as the applicable standards for the Site:

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

Based on previous geotechnical experience and a review of the existing geological publication for the site area, Ontario Geological Survey (OGS) Map P0993, "Quaternary Geology of the Grimsby Area" the superficial geology underlying the site comprises native subsurface soil conditions in the area of the site are anticipated to consist of glaciolacustrine beach sand and gravel overlying glacial till deposits of the Halton Till.

The OGS Map M2343 "Paleozoic Geology of the Grimsby Area", indicates the bedrock in the area comprises red shale of the Queenston Formation. Based on the information provided by the OGS Map P2401 "Bedrock Topography Series, Grimsby Area", bedrock is inferred to underly the site at an elevation of approximately 83 m. With a ground surface elevation of approximately 104 m to 106 m, the anticipated depth to bedrock is approximately 20 m to 22 m below ground level.

Information provided by historical borehole records in the vicinity of the site, and held by the OGS, generally confirms the anticipated geological conditions beneath the site. Based on the data from records for Borehole ID 624500, located in the northeast corner of the site, the superficial geology consists of sand and gravel deposits to depths of approximately 10.0 m, overlying clay till to a depth of at least 12.8 m. Records for Borehole ID 621542, located approximately 25 m south of the site, indicate that thicknesses of the sand and gravel deposits are variable, reportedly shallowing to depths of approximately 4.0 m.

The nearest surface water course is the Red Hill Creek, situated approximately 1.2km to the east of the site at its closest point. The Lake Ontario shoreline is located approximately 9.5 km to the northeast at its closest point.

Based on groundwater monitoring well and water supply well information available for the area, groundwater depths are indicated to be in the order of 10 m to 12 m below existing ground level, though local fluctuations to shallower depths are both noted and anticipated. The groundwater regimes are expected to be encountered within the sand and gravel deposits reported beneath the site and the deeper bedrock.

2.2 Previous Investigations

The following previous environmental reports were reviewed for the Site and Study Area during the preparation of this report. Three reports were supplied to Landtek by the Client:

Landtek was provided with the following reports for review:

- "*Phase I Environmental Site Assessment, Briarwood School 1842 King Street East, Hamilton, Ontario*", for Brock University by Conestoga-Rover & Associates dated March 2000. (2000 Phase 1 ESA)
- *Phase II Environmental Site Assessment – 1842 King Street East, Hamilton, Ontario* for Brock University by Pinchin Ltd dated April 2, 2020 (2020 Phase 2 ESA)

CRA Phase 1 ESA

Conestoga-Rovers & Associates (CRA) was retained to complete a Phase I Environmental Site Assessment (ESA) of the Briarwood School. The purpose of the Phase I ESA was to identify,

through a non intrusive investigation, the existence of any significant actual or potential environmental liabilities associated with the Site.

- "*Phase I Environmental Site Assessment, Briarwood School 1842 King Street East, Hamilton, Ontario*", for Brock University by Conestoga-Rover & Associates dated March 2000. (2000 Phase I ESA)

Based on the results of the Phase I ESA, the following potential environmental liabilities were identified to be associated with the Site.

- No information was available to document the integrity of the abandoned UST present on Site. No investigations have been carried out to investigate releases or soil/groundwater quality in the vicinity of the UST. The UST and any impacted soil should be removed in accordance with MOE guidelines.

- Wastewater: Discharge of excess quantities of grease contravenes Regional Municipality of Hamilton-Wentworth sewer use by-laws grease traps should be cleaned regularly as part of a maintenance program.

- Asbestos Containing Materials (ACMs): The Inventory identifies pipe joints, floor tiles, transite panels, duct insulation and a black table top as ACMs. At the time of the Site inspection, the ACMs identified above were observed to be in good condition.

- A sign on the abandoned incinerator indicates that it contains asbestos. The asbestos should be removed prior to disposal of the unit.

- Polychlorinated Biphenyls (PCBs): Fluorescent light ballasts throughout the Site may contain PCBs.

Pinchin Phase 2 ESA

Pinchin completed a *CSA Standard Z768-01* Phase I ESA of the Site, the findings of which were provided in the report. The results of the Phase I ESA completed by Pinchin identified the following areas of potential environmental concern that could give rise to potential subsurface impacts in connection with the Site:

- "Phase I Environmental Site Assessment, 1842 King Street East, Hamilton, Ontario", dated January 7, 2020 (2020 Phase I ESA)

The results of the Phase I ESA completed by Pinchin identified the following potential issues of environmental concern:

- A 10,000-gallon (45,400L) diesel underground storage tank (UST) had been removed from the Site in August 2006. The UST had been on Site since the 1960s. A total 229 tonnes of contaminated soil was removed from the Site, and the excavation was reportedly backfilled with granular material. No report documenting the removal of the UST was provided.

- An automotive garage with one gasoline UST was depicted on a 1960 fire insurance plan at 1878 King Street East, located adjacent to the east of the Site. The garage had been listed from 1950 to 2013.

The Phase II ESA was conducted at the Site in March 2020 consisting of the advancement of four (4) boreholes to assess for the presence of environmental impacts; Three of which were completed as groundwater monitoring wells. The monitoring well by the UST was drilled to 9 m.

Select soil samples collected during the borehole drilling program were submitted for laboratory analyses of petroleum hydrocarbons (PHCs) in the F1 to F4 fraction ranges (F1-F4), volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene and xylenes (collectively 'BTEX'), polycyclic aromatic hydrocarbons (PAHs) and/or lead.

The soil and groundwater quality was assessed based on the Ontario Ministry of the Environment, Conservation and Parks (MECP) Table 3 Standards for ICC land use and medium/fine textured soil. The reported concentrations of PHCs (F1-F4), VOCs, BTEX, PAHs and/or lead in the soil samples submitted for analyses met the Table 3 Standards.

The findings of this Phase II ESA, soil quality at the Site meets the Table 3 Standards for the parameters analyzed. Groundwater was not encountered within the depths of the investigation.

3.0 SCOPE OF THE INVESTIGATION

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

The boreholes/monitoring wells proposed for the Phase Two ESA corresponding to each of the APECs are also presented in **Table 2** which provides the rationale for the work proposed. The investigation locations are shown on **Figure 3**.

Table 2: **Areas of Potential Environmental Concern (APECs)**

The following is a summary of the PCA, PCA location, and associated APEC identified:

APEC[1]	Location of APEC on the Phase One Property	PCA [2]	Location of PCA (on-site or off-site)	Contaminants of Potential Concern [3]	Media Potentially Impacted (groundwater, soil, and/or sediment) [4]
A	South Portion of the Site	30. Importation of Fill of Unknown Quality	On-Site	Metals and As, Sb, Se, Hg, CN-EC, SAR, pH	Soil
B	South central Portion of the Site	28. Gasoline and Associated Products Stored in Fixed Tanks	On-Site	BTEX, PHCs,	Soil and groundwater
C	Southwest and east Portion of the Site	Other1: De-icing activities	On-Site	EC, SAR	Soil
D	Northeastern Portion	52: Storage, maintenance, fueling and repair of equipment, vehicles and material used to maintain transportation system	Off-Site	BTEX, PHCs, VOCs	Soil and groundwater

Notes:
1 - Area of Potential Environmental Concern (APEC) means the area on, in or under the Phase One Property where one or more contaminants are potentially present, as determined through the phase one environmental site assessment, including through,
(a) Identification of past or present uses on, in or under the phase one 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 One 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
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
VOCs – volatile organic compounds
BTEX – benzene, toluene, ethylbenzene and xylenes

4.0 METHODOLOGY

Landtek proposed boreholes to supplement the existing geotechnical information. The analytical program presents information on the sampling locations, media sampled, sample depths and analytical parameters for which samples were analysed.

Landtek retained experienced contractors for the drilling activities. Landtek field staffs, were briefed prior to commencement of the field work by the Project Manager and the Project QP_{ESA}. Field staffs 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

Fieldwork undertaken by Landtek at the site included clearance of underground services, borehole layout, borehole drilling and soil sampling, and field supervision. A total of 10 boreholes (boreholes BH1 to BH10) were drilled between August 17 and 19, 2020. The boreholes were logged using those standard symbols and terms defined in **Appendix A**.

The boreholes were drilled using a CME-75 track-mounted drilling rig equipped with continuous flight solid and hollow stem augers and were advanced to target depths or practical auger refusal, ranging between approximately 5.0 m and 12 m below existing ground level. Full time supervision of drilling and coring operations was carried out by a representative of Landtek.

4.2 Soil Sampling

Environmental boreholes were 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 A**) 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 frequency of field screening measurements during the drilling investigation was approximately 0.6 m (~2 ft) intervals.

4.4 Groundwater: Monitoring Well Installation

Boreholes BH2, BH4 and BH7 were completed as monitoring wells to monitor groundwater levels to target the anticipated excavation depths to be carried out during site development, and were subsequently renamed MW2, MW4 and MW7 respectively. The monitoring wells were constructed using new, 50 mm poly-vinyl chloride (PVC) screen. The borehole logs in **Appendix A** present the monitoring well installation details.

The monitoring wells were constructed using polyvinyl chloride (“PVC”) well screens (1.5 m 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.

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 50 mm 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 monument protective casings. Monitoring well locations are shown on **Figure 3**.

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

On October 12, 2020, groundwater sampling was carried out. Samples were obtained from monitoring wells originally installed.

During the sampling, groundwater samples were collected 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 B**.

4.7 Elevation Surveying

Elevations at the borehole locations were established by Landtek relative to site measurements using the geodetic station. The geodetic elevation of the benchmark is 106.0 metres 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 primary and duplicate sample containers. 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.

4 REVIEW AND EVALUATION

4.1 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.

"Bedrock Topography of the Grimsby Area", Ministry of Natural Resources, Ontario Geological Survey, Preliminary Map P. 2401 published in 1981 indicates the bedrock formation is at an elevation of approximately 66 m. The bedrock consists of sandstone, shale, dolostone, siltstone of the Lockport Formation.

4.2 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 Site was the shallow groundwater table, present within the native gravel and sand.

On Dec 10, 2020, the measured groundwater elevations ranged from 94 to 94.7 metres above mean sea level (mASL). Groundwater elevation are summarized below in **Table 3**.

Table 3: Depth to Groundwater and Groundwater Elevation Summary

Location	Elevation	Sep 28, 2020		Oct 14, 2020		Dec 10, 2020	
	mASL	Depth (m bgs)	Elev. (mASL)	Depth (m bgs)	Elev. (mASL)	Depth (m bgs)	Elev. (mASL)
BH/MW2	105.8	Dry	94.7	11.1	94.7	11.1	94.7
BH/MW4	105.8	Dry	--	11.2	94.0	11.0	94.0
BH/MW7	103.6	11.0	92.6	10.1	94.4	9.2	94.4

Based on the measured groundwater elevations on the location of Battlefield Creek, the inferred groundwater flow direction is towards the east.

4.3 Soil: Field Screening

Results of field screening for hydrocarbon / combustibles ranged from 0 ppm (non-detect) (various) to 10 ppm.

4.4 Soil Quality

The results of the laboratory analysis of the soil samples analysed have been compared with the Table 3 SCS (residential, fine textured soils) and are presented in **Table 4**. Laboratory certificates are presented in **Appendix B**. The schedule of chemical testing and the summary of test results for soils are shown in **Table 4**. Samples were selected based on location and depth of potential areas of concern as well as olfactory or vapour reading indicators, where possible.

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

Sample	Depth (mbgs)	Analyses	Exceedance		
			Parameter	Sample (µg/g)	Table 3 (µg/g)
BH1 SS1	0.0-0.6	metals & inorganics	Mercury	**0.8**	**0.27**
BH(MW)4 SS1	0.0-0.6	metals & inorganics	SAR	**30**	5.0
BH(MW)4 SS7	7.0-7.5	VOC, PHCs F1-F4	No Exceedances	--	--
BH(MW)4 SS9	9.0-9.5	VOC, PHCs F1-F4	No Exceedances	--	--
BH6 SS1	0.0-0.6	metals & inorganics	SAR	**5.18**	5.0
BH7 SS1	0.0-0.6	metals & inorganics	EC cadmium	2.44 1.51	0.7 1.2
BH7 SS8	9.0 – 9.5	VOC, PHCs F1-F4	No Exceedances	--	--
BH8 SS1	0.0-0.6	metals & inorganics	SAR	**17**	5.0
BH101-S7	4.6-5.2	VOC, PHCs F1-F4, lead, PAHs	No Exceedances	--	--
BH102-S7	4.6-5.5	VOC, PHCs F1-F4, lead, PAHs	No Exceedances	--	--
MW103 -S7	4.9-6.1	BTEX, PHCs F1-F4, PAHs	No Exceedances	--	--
BH104-S5	3.2-3.4	BTEX, PHCs F1-F4, 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 (R/P/I) land use standards
M&I – Metals and Inorganics
PHC F1-F4 – Petroleum Hydrocarbons Fraction 1 to Fraction 4 (PHC F1-F4)
BTEX – Benzene, Toluene, Ethylbenzene, and Xylenes
VOC – Volatile Organic Compounds
Approximate sample depth (metres) below grade

4.5 Groundwater Quality

The schedule of chemical testing and the summary of test results for groundwater are shown in **Table 5** below.

Table 5: Schedule of Chemical Analyses and Summary of Test Results for Groundwater

Sample	Sample Date	Analyses	Head space (ppm)	Exceedances		
				Parameter	Sample Results (µg/L)	Table 3 SCS** (µg/L)
MW7	Oct 1/20	VOCs, PHCs F1-F4, metals & inorganic	0	--	No exceedances	--
MW2	Oct 14/20	VOCs, PHCs F1-F4, metals & inorganic	0	--	No exceedances	--
MW4	Oct 14/20	VOCs, PHCs F1-F4, metals & inorganic	0	--	No exceedances	--
DUP (MW7)		VOCs, PHCs F1-F4, metals & inorganic				

****** Sample results compared with Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act', April 2011.
M&I – Metals and Inorganics
PHC F1-F4 – Petroleum Hydrocarbons Fraction 1 to Fraction 4 (PHC F1-F4)
VOC – Volatile Organic Compounds

4.6 Groundwater: Headspace Screening

Results of field screening for hydrocarbon / combustibles ranged from 0 ppm (non-detect) was 10 ppm in MW7.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Soil Quality

The soil samples collected for analysis as described in the relevant sections of this report indicate that the soils on-Site are impacted and concentrations exceed the applicable O. Reg. 153/04 Table 3 SCS RPI:

Shallow fill material (0 to 0.6 m bgs) was impacted with select metals, EC and/or SAR in several location in the parking lot areas.

5.2 Groundwater Quality

The groundwater samples collected for analysis as described in the relevant sections of this report indicate that the groundwater on-Site is not impacted and concentrations met the applicable O. Reg. 153/04 Table 3 RPI SCS on the Site.

5.3 RECOMMENDATIONS

Based on the results of this Phase Two ESA, an appropriate Remedial Action Plan will need to be prepared to confirm the suitability of the Site for its intended development and use.

Yours truly,

LANDTEK LIMITED

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

6 LIMITATIONS

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 Site 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.

7 REFERENCES

- Ontario Regulation 153/04, as amended by O. Reg. 407/19;
- 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://norfolk.maps.arcgis.com/apps/webappviewer/index.html?id=c6683057b83744dfb36afb773ba09135
https://library.mcmaster.ca/maps/airphotos/
https://www.ontario.ca/page/make-natural-heritage-area-map
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http://www.gisapplication.lrc.gov.on.ca/services/COSINE/Remote/095a080b_e87a_43a8_8579_dba14759aa7d.html?print=true

https://www.gisapplication.lrc.gov.on.ca/SourceWaterProtection/Index.html?viewer=SourceWaterProtection.SWPViewer&locale=en-US

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 30 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.

FIGURES

APPENDIX A

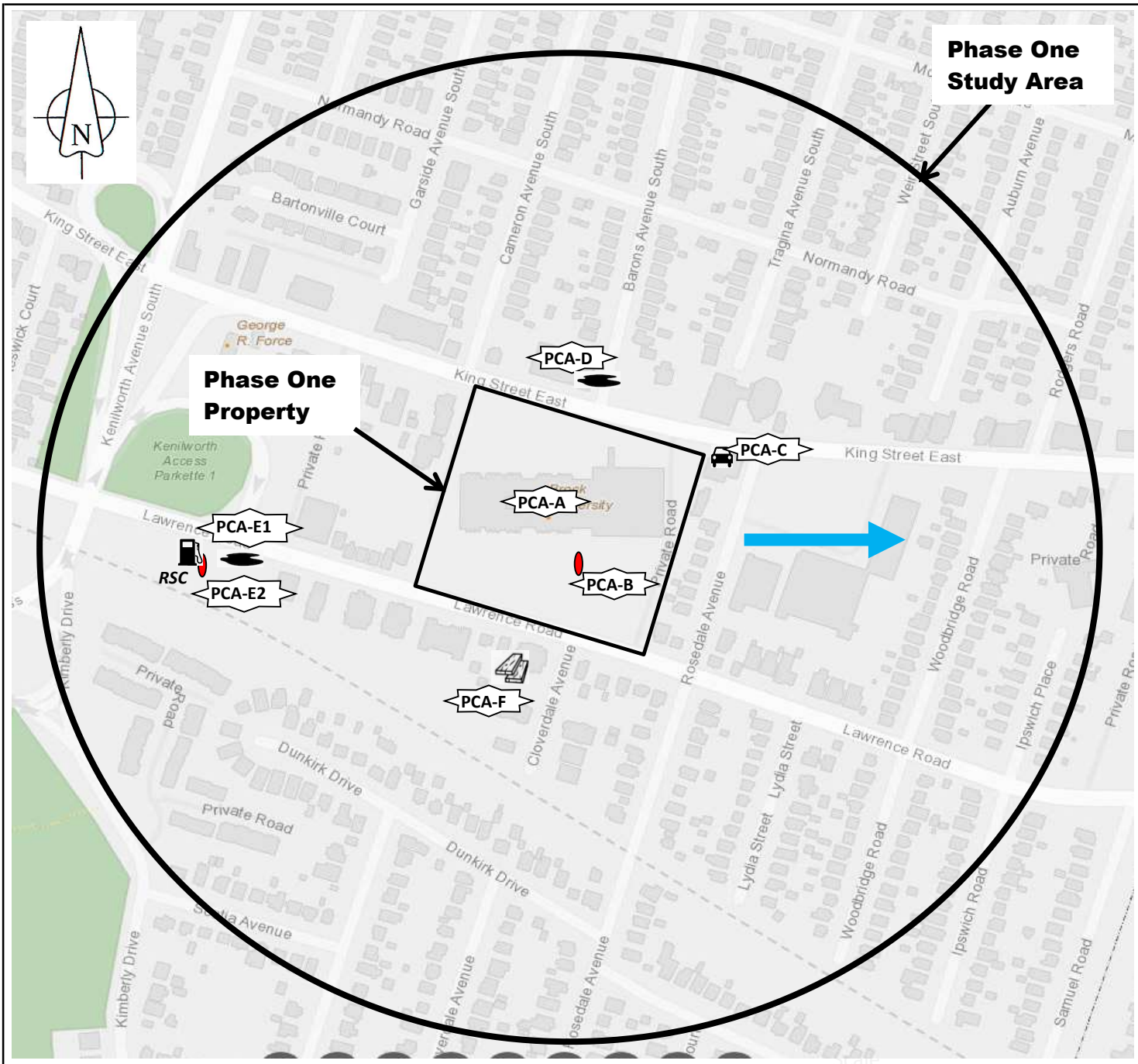
Borehole Logs

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSES
Including Laboratory QA/QC Data

Soil and Groundwater Results

FIGURES



LEGEND

- former gasoline service station
- former UST or AST location
- former or current garage or autobody shop
- spill
- former lumber yard
- PCA-A — Potential Contaminating Activitity
- groundwater flow

0 125 250m

LANDTEK LIMITED

Scale:	Date: August 2020
Phase One ESA 1842 King Street East Hamilton, Ontario	
Title:	Fig 1 - Site Location Plan and PCAs
Project No. 20242	

Potential Contaminating Activities

PCA-A: fill material of unknown uality
PCA-B: Former fuel oil UST
PCA-C : Former automotive garage

Areas of Potential Environmental Concern

APEC-A: fill material of unknown quality
APEC-B: Former fuel oil UST
APEC-C : Former automotive garage

Building foot print *(1966-2020)*

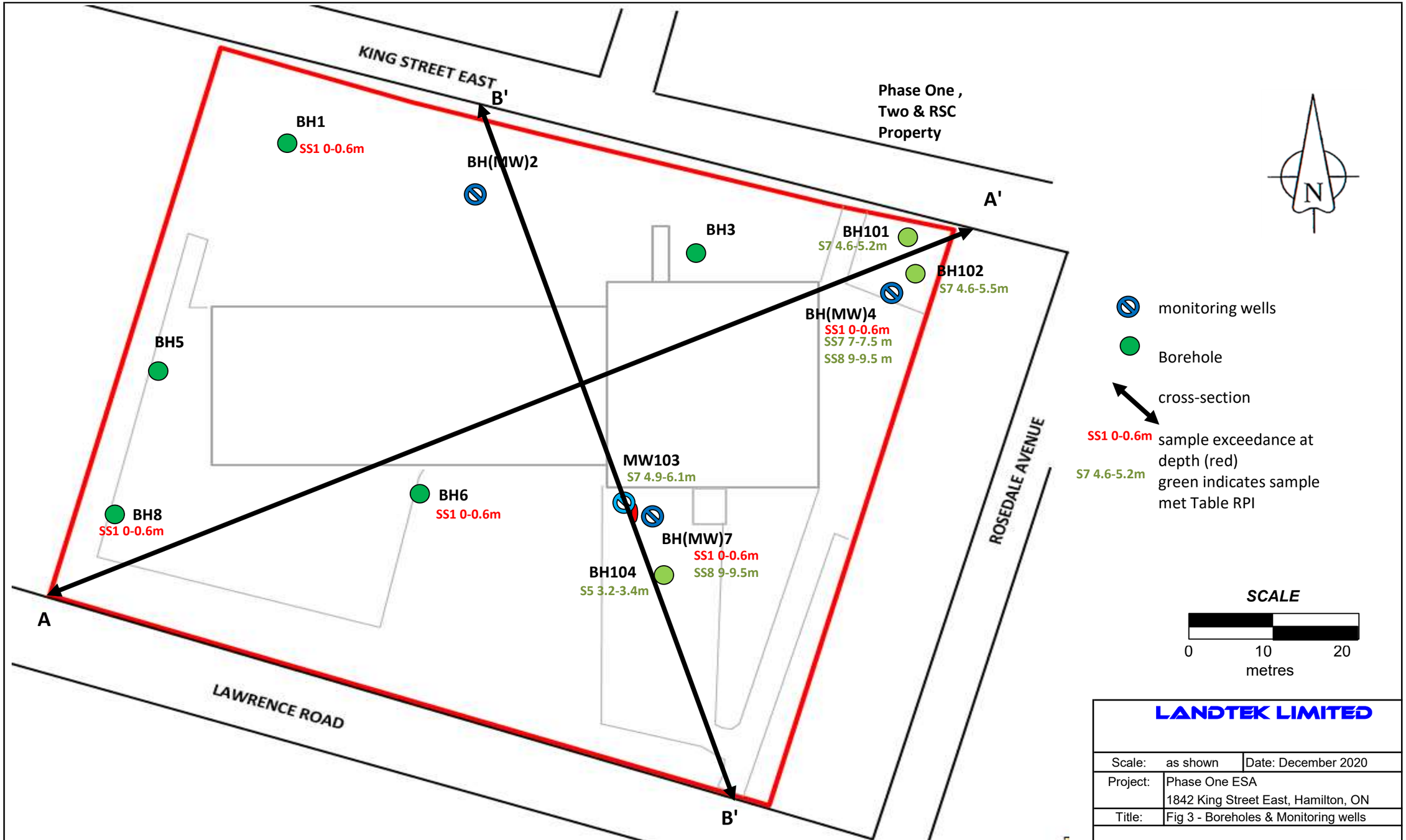
Former UST

SCALE

0 10 20
metres

LANDTEK LIMITED

Scale:	as shown	Date: December 2020	
Project:	Phase One ESA 1842 King Street East, Hamilton, ON		
Title:	Fig 2 - PCAs & Historic Infrastructure		
Project No.	20242		

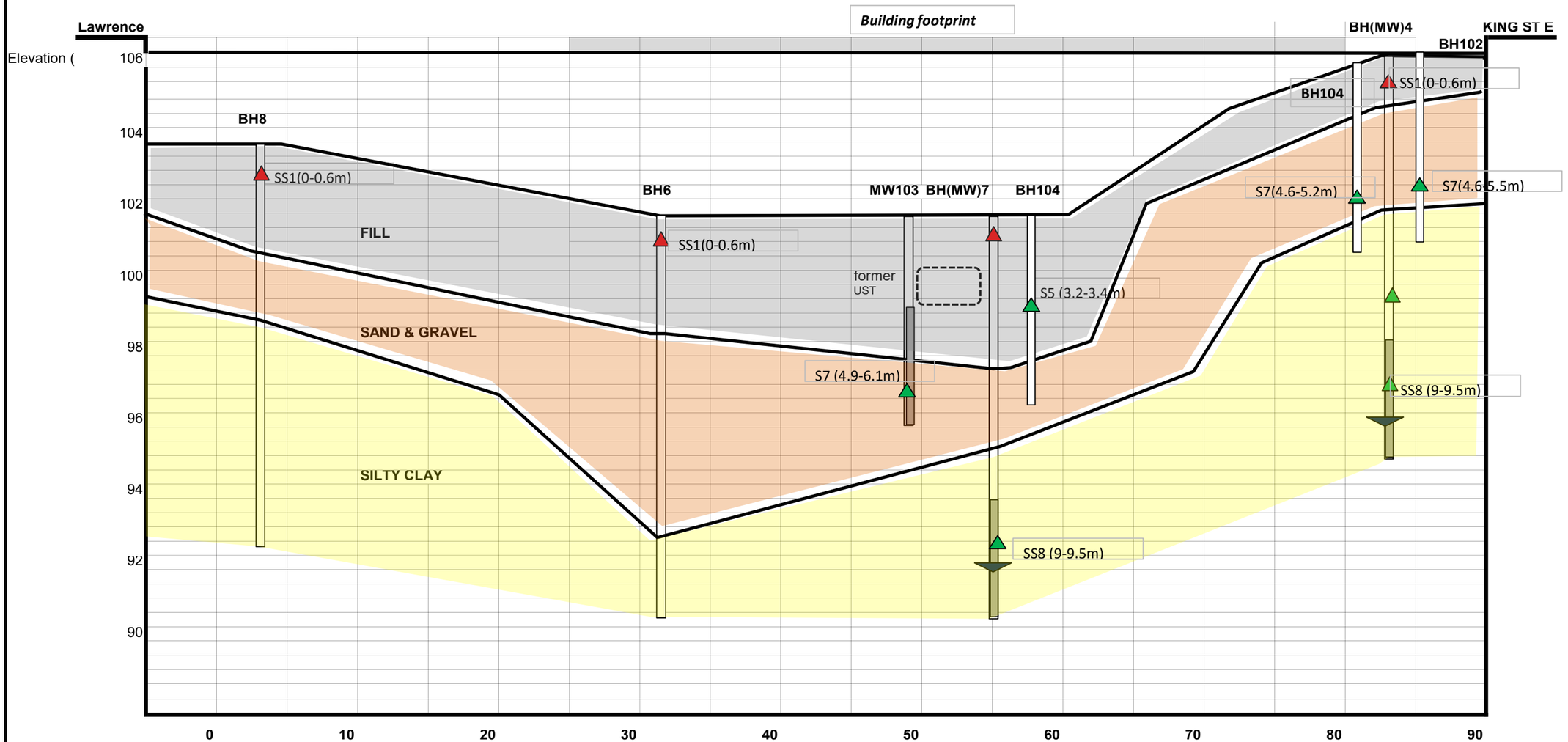


LANDTEK LIMITED

Scale:	as shown	Date: December 2020
Project:	Phase One ESA 1842 King Street East, Hamilton, ON	
Title:	Fig 3 - Boreholes & Monitoring wells	
Project No.	20242	

Phase One, Phase Two & RSC Property

A A'



Legend

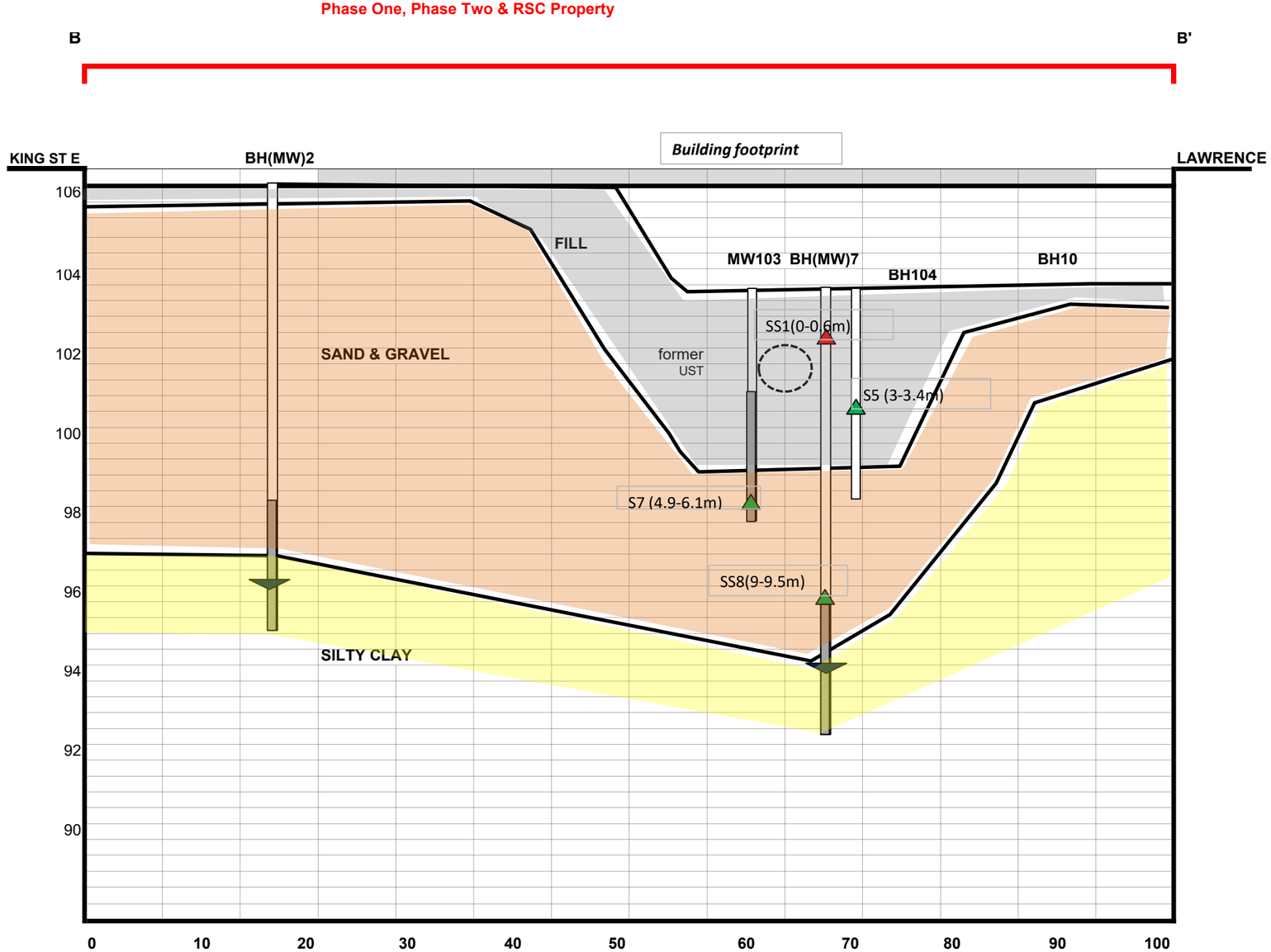
- sample locations
- sample exceedance
- groundwater elevation December 10,2020

Stratigraphy inferred between test location

LANDTEK LIMITED

Scale:	as shown	Date: Dec 2020
Project:	Phase Two ESA 1842 King Street East Hamilton, Ontario	
Title:	Fig 4: Cross-Section A-A'	
Project No.	19346	

Phase One, Phase Two & RSC Property



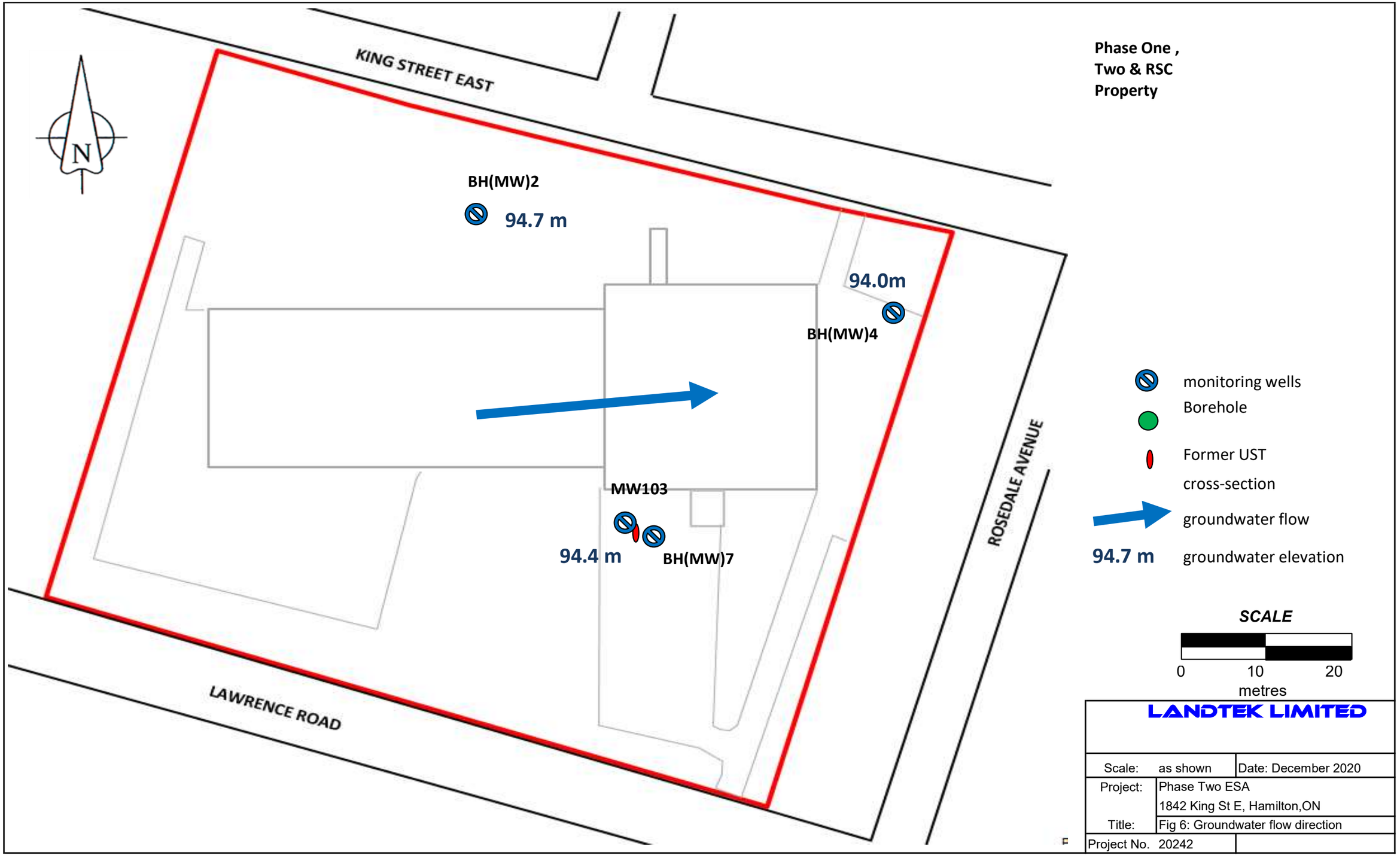
Legend

- sample locations
- sample exceedance
- groundwater elevation Dec 10, 2020
- limit of Fill

Stratigraphy inferred between test location

LANDTEK LIMITED

Scale:	as shown	Date: Dec 2020
Project:	Phase Two ESA	
	1842 King Street East	
	Hamilton, Ontario	
Title:	Figure 5: Cross-Section B-B'	
Project No.	20242	



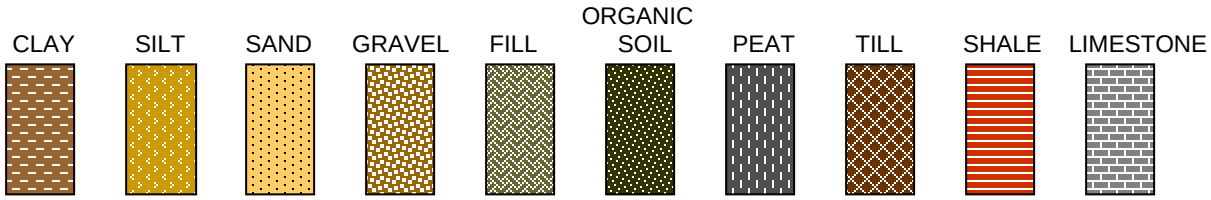
LANDTEK LIMITED

Scale:	as shown	Date: December 2020
Project:	Phase Two ESA 1842 King St E, Hamilton,ON	
Title:	Fig 6: Groundwater flow direction	
Project No.	20242	

APPENDIX A

Borehole Logs

APPENDIX B
SYMBOLS AND TERMS USED IN THE REPORT



RELATIVE PROPORTIONS

Term	Range
Trace	0 - 5%
A Little	5 – 15%
Some	15 – 30%
With	30 – 50%

CLASSIFICATION BY PARTICLE SIZE

Boulder ---------- > 200 mm
Cobble ---------- 80 mm – 200 mm
Gravel -
Coarse ---------- 19 mm – 80 mm
Fine ---------- 4.75 mm – 19 mm
Sand -
Coarse ---------- 4.75 mm – 2 mm
Medium -------- 2 mm – 0.425 mm
Fine ---------- 0.425 mm – 0.75 mm
Silt ---------- 0.075 mm – 0.002 mm
Clay ---------- < 0.002 mm

DENSITY OF NON-COHESIVE SOILS

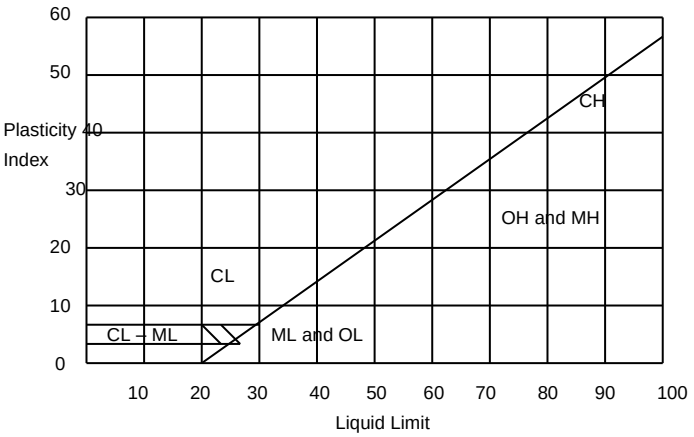
Descriptive Term	Relative Density	Standard Penetration Test
Very Loose	0 – 15%	0 – 4 Blows Per 300 mm Penetration
Loose	15 – 35%	4 – 10 Blows Per 300 mm Penetration
Compact	35 – 65%	10 – 30 Blows Per 300 mm Penetration
Dense	65 – 85%	30 – 50 Blows Per 300 mm Penetration
Very Dense	85 – 100%	Over 50 Blows Per 300 mm Penetration

CONSISTENCY OF COHESIVE SOILS

Descriptive Term	Undrained Shear Strength kPa (psf)	N Value Standard Penetration Test	Remarks
Very Soft	< 12 (< 250)	< 2	Can penetrate with fist
Soft	12 – 25 (250 – 500)	2 – 4	Can indent with fist
Firm	25 – 50 (500 –1000)	4 – 8	Can penetrate with thumb
Stiff	50 – 100 (1000 – 2000)	8 – 15	Can indent with thumb
Very Stiff	100 – 200 (2000 – 4000)	15 – 30	Can indent with thumb-nail
Hard	> 200 (> 4000)	> 30	Can indent with thumb-nail

Notes: 1. Relative density determined by standard laboratory tests.
2. N value – blows/300 mm penetration of a 623 N (140 Lb.) hammer falling 760 mm (30 in.) on a 50 mm O.D. split spoon soil sampler. The split spoon sampler is driven 450 mm (18 in.) or 610 mm (24 in.). The “N” value is the Standard Penetration Test (SPT) value and is normally taken as the number of blows to advance the sampler the last 300 mm.

APPENDIX B CONTINUED
CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES
ASTM Designation: D 2487 - 69 AND D 2488 – 69
(Unified Soil Classification System)

Major Divisions			Group Symbols	Typical Names	Classification Criteria		
Coarse-grained soils More than 50% retained on No. 200 sieve *	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean gravels	**GW**	Well-graded gravels and gravel-sand mixtures, little or no fines	Classification on basis of percentage of fines Less than 5% pass No. 200 sieve . . . . . GW, GP, SW, SP More than 12% pass No. 200 sieve . . . . . GM, GC, SM, SC 5 to 12% pass No.200 sieve . . . . . Borderline classifications requiring use of dual symbols	C_u=D60/D10 greater than 4; C_z = $(D30)^2$/(D10xD60) between 1 and 3	
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines		Not meeting both criteria for GW	
		Gravels with fines	**GM**	Silty gravels, gravel-sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures		Atterberg limits above "A" line with P.I. greater than 7	
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	**SW**	Well-graded sands and gravelly sands, little or no fines		C_u=D60/D10 greater than 6; C_z = $(D30)^2$/ (D10xD60) between 1 and 3	
			SP	Poorly graded sands and gravelly sands, little or no fines		Not meeting both criteria for SW	
		Sands with fines	**SM**	Silty sands, sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures		Atterberg limits above "A" line with P.I. greater than 7	
Fine-grained soils 50% or more passes No. 200 sieve *	Silts and clays Liquid limit 50% or less		**ML**	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	Plasticity Chart For classification of fine-grained soils and fine fraction of coarse-grained soils. Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols. Equation of A-line: PI=0.73 (LL-20)  	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silts			
			OL	Organic silts and organic silts of low plasticity			
	Silts and clays Liquid limit greater than 50%		**MH**	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts			
			CH	Inorganic clays of high plasticity, fat clays			
			OH	Organic clays of medium to high plasticity			
	Highly organic soils		**Pt**	Peat, much and other highly organic soils	* Based on the material passing the 3 in. (76mm) sieve.		

APPENDIX C

CHEMICAL LABORATORY TESTING RESULTS

LANDTEK LIMITED
ATTN: PAUL BLUNT
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1

Date Received: 20-AUG-20
Report Date: 27-AUG-20 07:22 (MT)
Version: FINAL

Client Phone: 905-383-3733

Certificate of Analysis

Lab Work Order #: L2491976

Project P.O. #: 20242
Job Reference: 20242
C of C Numbers:
Legal Site Desc:

Aaron Payne
Account Manager

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

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L2491976-1 BH1 SS1						
Sampled By: CLIENT on 20-AUG-20						
Matrix: SOIL						#1
Physical Tests						
Conductivity	0.160		0.0040	mS/cm	24-AUG-20	0.7
% Moisture	7.67		0.25	%	21-AUG-20	
pH	7.42		0.10	pH units	24-AUG-20	
Cyanides						
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	24-AUG-20	0.051
Saturated Paste Extractables						
SAR	0.11		0.10	SAR	24-AUG-20	5
Calcium (Ca)	16.0		0.50	mg/L	24-AUG-20	
Magnesium (Mg)	2.72		0.50	mg/L	24-AUG-20	
Sodium (Na)	1.88		0.50	mg/L	24-AUG-20	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	24-AUG-20	7.5
Arsenic (As)	15.6		1.0	ug/g	24-AUG-20	18
Barium (Ba)	148		1.0	ug/g	24-AUG-20	390
Beryllium (Be)	0.67		0.50	ug/g	24-AUG-20	4
Boron (B)	5.5		5.0	ug/g	24-AUG-20	120
Boron (B), Hot Water Ext.	0.27		0.10	ug/g	24-AUG-20	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	24-AUG-20	1.2
Chromium (Cr)	21.8		1.0	ug/g	24-AUG-20	160
Cobalt (Co)	10.3		1.0	ug/g	24-AUG-20	22
Copper (Cu)	70.0		1.0	ug/g	24-AUG-20	140
Lead (Pb)	52.4		1.0	ug/g	24-AUG-20	120
Mercury (Hg)	0.800		0.0050	ug/g	24-AUG-20	*0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	24-AUG-20	6.9
Nickel (Ni)	21.9		1.0	ug/g	24-AUG-20	100
Selenium (Se)	<1.0		1.0	ug/g	24-AUG-20	2.4
Silver (Ag)	<0.20		0.20	ug/g	24-AUG-20	20
Thallium (Tl)	<0.50		0.50	ug/g	24-AUG-20	1
Uranium (U)	<1.0		1.0	ug/g	24-AUG-20	23
Vanadium (V)	37.3		1.0	ug/g	24-AUG-20	86
Zinc (Zn)	113		5.0	ug/g	24-AUG-20	340
Speciated Metals						
Chromium, Hexavalent	0.80		0.20	ug/g	24-AUG-20	8
L2491976-2 MW4 SS1						
Sampled By: CLIENT on 20-AUG-20						
Matrix: SOIL						#1
Physical Tests						
Conductivity	0.601		0.0040	mS/cm	24-AUG-20	0.7
% Moisture	8.24		0.25	%	21-AUG-20	
pH	8.20		0.10	pH units	24-AUG-20	
Cyanides						
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	24-AUG-20	0.051
Saturated Paste Extractables						
SAR	>30.	SAR:L	0.10	SAR	24-AUG-20	*5

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Soil-Res/Park/Inst. Property Use (Coarse)

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

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2491976-2	MW4 SS1									
Sampled By:	CLIENT on 20-AUG-20									
Matrix:	SOIL						#1			
Saturated Paste Extractables										
	Calcium (Ca)	<0.50		0.50	mg/L	24-AUG-20				
	Magnesium (Mg)	<0.50		0.50	mg/L	24-AUG-20				
	Sodium (Na)	127		0.50	mg/L	24-AUG-20				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	24-AUG-20	7.5			
	Arsenic (As)	9.6		1.0	ug/g	24-AUG-20	18			
	Barium (Ba)	80.6		1.0	ug/g	24-AUG-20	390			
	Beryllium (Be)	0.99		0.50	ug/g	24-AUG-20	4			
	Boron (B)	10.4		5.0	ug/g	24-AUG-20	120			
	Boron (B), Hot Water Ext.	0.64		0.10	ug/g	24-AUG-20	1.5			
	Cadmium (Cd)	<0.50		0.50	ug/g	24-AUG-20	1.2			
	Chromium (Cr)	17.7		1.0	ug/g	24-AUG-20	160			
	Cobalt (Co)	9.7		1.0	ug/g	24-AUG-20	22			
	Copper (Cu)	66.7		1.0	ug/g	24-AUG-20	140			
	Lead (Pb)	13.9		1.0	ug/g	24-AUG-20	120			
	Mercury (Hg)	0.0742		0.0050	ug/g	24-AUG-20	0.27			
	Molybdenum (Mo)	<1.0		1.0	ug/g	24-AUG-20	6.9			
	Nickel (Ni)	21.1		1.0	ug/g	24-AUG-20	100			
	Selenium (Se)	<1.0		1.0	ug/g	24-AUG-20	2.4			
	Silver (Ag)	<0.20		0.20	ug/g	24-AUG-20	20			
	Thallium (Tl)	<0.50		0.50	ug/g	24-AUG-20	1			
	Uranium (U)	<1.0		1.0	ug/g	24-AUG-20	23			
	Vanadium (V)	32.8		1.0	ug/g	24-AUG-20	86			
	Zinc (Zn)	68.7		5.0	ug/g	24-AUG-20	340			
Speciated Metals										
	Chromium, Hexavalent	0.32		0.20	ug/g	24-AUG-20	8			
L2491976-3	MW4 SS7									
Sampled By:	CLIENT on 20-AUG-20									
Matrix:	SOIL						#1			
Physical Tests										
	% Moisture	4.71		0.25	%	21-AUG-20				
Volatile Organic Compounds										
	Benzene	<0.0068		0.0068	ug/g	26-AUG-20	0.21			
	Ethylbenzene	<0.018		0.018	ug/g	26-AUG-20	2			
	Toluene	<0.080		0.080	ug/g	26-AUG-20	2.3			
	o-Xylene	<0.020		0.020	ug/g	26-AUG-20				
	m+p-Xylenes	<0.030		0.030	ug/g	26-AUG-20				
	Xylenes (Total)	<0.050		0.050	ug/g	26-AUG-20	3.1			
	Surrogate: 4-Bromofluorobenzene	117.3		50-140	%	26-AUG-20				
	Surrogate: 1,4-Difluorobenzene	123.4		50-140	%	26-AUG-20				
Hydrocarbons										
	F1 (C6-C10)	<5.0		5.0	ug/g	26-AUG-20	55			
	F1-BTEX	<5.0		5.0	ug/g	26-AUG-20	55			
	F2 (C10-C16)	<10		10	ug/g	25-AUG-20	98			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Soil-Res/Park/Inst. Property Use (Coarse)

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

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L2491976-3 MW4 SS7						
Sampled By: CLIENT on 20-AUG-20						
Matrix: SOIL						#1
Hydrocarbons						
F3 (C16-C34)	<50		50	ug/g	25-AUG-20	300
F4 (C34-C50)	61		50	ug/g	25-AUG-20	2800
Total Hydrocarbons (C6-C50)	<72		72	ug/g	26-AUG-20	
Chrom. to baseline at nC50	YES			No Unit	25-AUG-20	
Surrogate: 2-Bromobenzotrifluoride	90.1		60-140	%	25-AUG-20	
Surrogate: 3,4-Dichlorotoluene	93.4		60-140	%	26-AUG-20	
L2491976-4 BH7 SS1						
Sampled By: CLIENT on 20-AUG-20						
Matrix: SOIL						#1
Physical Tests						
Conductivity	2.44		0.0040	mS/cm	24-AUG-20	*0.7
% Moisture	2.71		0.25	%	21-AUG-20	
pH	8.57		0.10	pH units	24-AUG-20	
Cyanides						
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	24-AUG-20	0.051
Saturated Paste Extractables						
SAR	0.46		0.10	SAR	24-AUG-20	5
Calcium (Ca)	654		0.50	mg/L	24-AUG-20	
Magnesium (Mg)	16.3		0.50	mg/L	24-AUG-20	
Sodium (Na)	43.4		0.50	mg/L	24-AUG-20	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	24-AUG-20	7.5
Arsenic (As)	3.6		1.0	ug/g	24-AUG-20	18
Barium (Ba)	30.7		1.0	ug/g	24-AUG-20	390
Beryllium (Be)	<0.50		0.50	ug/g	24-AUG-20	4
Boron (B)	8.6		5.0	ug/g	24-AUG-20	120
Boron (B), Hot Water Ext.	0.18		0.10	ug/g	24-AUG-20	1.5
Cadmium (Cd)	1.51		0.50	ug/g	24-AUG-20	*1.2
Chromium (Cr)	6.3		1.0	ug/g	24-AUG-20	160
Cobalt (Co)	1.3		1.0	ug/g	24-AUG-20	22
Copper (Cu)	5.9		1.0	ug/g	24-AUG-20	140
Lead (Pb)	58.9		1.0	ug/g	24-AUG-20	120
Mercury (Hg)	0.0114		0.0050	ug/g	24-AUG-20	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	24-AUG-20	6.9
Nickel (Ni)	3.4		1.0	ug/g	24-AUG-20	100
Selenium (Se)	<1.0		1.0	ug/g	24-AUG-20	2.4
Silver (Ag)	<0.20		0.20	ug/g	24-AUG-20	20
Thallium (Tl)	<0.50		0.50	ug/g	24-AUG-20	1
Uranium (U)	<1.0		1.0	ug/g	24-AUG-20	23
Vanadium (V)	6.1		1.0	ug/g	24-AUG-20	86
Zinc (Zn)	314		5.0	ug/g	24-AUG-20	340
Speciated Metals						
Chromium, Hexavalent	0.39		0.20	ug/g	24-AUG-20	8

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Soil-Res/Park/Inst. Property Use (Coarse)

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

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2491976-5 MW7 SS8									
Sampled By: CLIENT on 20-AUG-20									
Matrix: SOIL						#1			
Physical Tests									
% Moisture	16.8		0.25	%	21-AUG-20				
Volatile Organic Compounds									
Benzene	<0.0068		0.0068	ug/g	26-AUG-20	0.21			
Ethylbenzene	<0.018		0.018	ug/g	26-AUG-20	2			
Toluene	<0.080		0.080	ug/g	26-AUG-20	2.3			
o-Xylene	<0.020		0.020	ug/g	26-AUG-20				
m+p-Xylenes	<0.030		0.030	ug/g	26-AUG-20				
Xylenes (Total)	<0.050		0.050	ug/g	26-AUG-20	3.1			
Surrogate: 4-Bromofluorobenzene	110.6		50-140	%	26-AUG-20				
Surrogate: 1,4-Difluorobenzene	116.4		50-140	%	26-AUG-20				
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	26-AUG-20	55			
F1-BTEX	<5.0		5.0	ug/g	26-AUG-20	55			
F2 (C10-C16)	14		10	ug/g	25-AUG-20	98			
F3 (C16-C34)	68		50	ug/g	25-AUG-20	300			
F4 (C34-C50)	<50		50	ug/g	25-AUG-20	2800			
Total Hydrocarbons (C6-C50)	81		72	ug/g	26-AUG-20				
Chrom. to baseline at nC50	YES			No Unit	25-AUG-20				
Surrogate: 2-Bromobenzotrifluoride	83.2		60-140	%	25-AUG-20				
Surrogate: 3,4-Dichlorotoluene	86.9		60-140	%	26-AUG-20				
L2491976-6 BH6 SS1									
Sampled By: CLIENT on 20-AUG-20									
Matrix: SOIL						#1			
Physical Tests									
Conductivity	0.141		0.0040	mS/cm	24-AUG-20	0.7			
% Moisture	14.6		0.25	%	21-AUG-20				
pH	7.74		0.10	pH units	24-AUG-20				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	24-AUG-20	0.051			
Saturated Paste Extractables									
SAR	5.18	SAR:M	0.10	SAR	24-AUG-20	*5			
Calcium (Ca)	1.82		0.50	mg/L	24-AUG-20				
Magnesium (Mg)	<0.50		0.50	mg/L	24-AUG-20				
Sodium (Na)	25.4		0.50	mg/L	24-AUG-20				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	24-AUG-20	7.5			
Arsenic (As)	4.7		1.0	ug/g	24-AUG-20	18			
Barium (Ba)	57.7		1.0	ug/g	24-AUG-20	390			
Beryllium (Be)	<0.50		0.50	ug/g	24-AUG-20	4			
Boron (B)	<5.0		5.0	ug/g	24-AUG-20	120			
Boron (B), Hot Water Ext.	0.14		0.10	ug/g	24-AUG-20	1.5			
Cadmium (Cd)	<0.50		0.50	ug/g	24-AUG-20	1.2			
Chromium (Cr)	11.1		1.0	ug/g	24-AUG-20	160			
Cobalt (Co)	5.8		1.0	ug/g	24-AUG-20	22			
Copper (Cu)	27.4		1.0	ug/g	24-AUG-20	140			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Soil-Res/Park/Inst. Property Use (Coarse)

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

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2491976-6 BH6 SS1									
Sampled By: CLIENT on 20-AUG-20									
Matrix: SOIL						#1			
Metals									
Lead (Pb)	19.7		1.0	ug/g	24-AUG-20	120			
Mercury (Hg)	0.0256		0.0050	ug/g	24-AUG-20	0.27			
Molybdenum (Mo)	<1.0		1.0	ug/g	24-AUG-20	6.9			
Nickel (Ni)	11.1		1.0	ug/g	24-AUG-20	100			
Selenium (Se)	<1.0		1.0	ug/g	24-AUG-20	2.4			
Silver (Ag)	<0.20		0.20	ug/g	24-AUG-20	20			
Thallium (Tl)	<0.50		0.50	ug/g	24-AUG-20	1			
Uranium (U)	<1.0		1.0	ug/g	24-AUG-20	23			
Vanadium (V)	21.5		1.0	ug/g	24-AUG-20	86			
Zinc (Zn)	44.7		5.0	ug/g	24-AUG-20	340			
Speciated Metals									
Chromium, Hexavalent	0.53		0.20	ug/g	24-AUG-20	8			
L2491976-7 MW4 SS9									
Sampled By: CLIENT on 20-AUG-20									
Matrix: SOIL						#1			
Physical Tests									
% Moisture	24.8		0.25	%	21-AUG-20				
Volatile Organic Compounds									
Benzene	<0.0068		0.0068	ug/g	26-AUG-20	0.21			
Ethylbenzene	<0.018		0.018	ug/g	26-AUG-20	2			
Toluene	<0.080		0.080	ug/g	26-AUG-20	2.3			
o-Xylene	<0.020		0.020	ug/g	26-AUG-20				
m+p-Xylenes	<0.030		0.030	ug/g	26-AUG-20				
Xylenes (Total)	<0.050		0.050	ug/g	26-AUG-20	3.1			
Surrogate: 4-Bromofluorobenzene	117.4		50-140	%	26-AUG-20				
Surrogate: 1,4-Difluorobenzene	123.7		50-140	%	26-AUG-20				
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	26-AUG-20	55			
F1-BTEX	<5.0		5.0	ug/g	26-AUG-20	55			
F2 (C10-C16)	<10		10	ug/g	25-AUG-20	98			
F3 (C16-C34)	<50		50	ug/g	25-AUG-20	300			
F4 (C34-C50)	<50		50	ug/g	25-AUG-20	2800			
Total Hydrocarbons (C6-C50)	<72		72	ug/g	26-AUG-20				
Chrom. to baseline at nC50	YES			No Unit	25-AUG-20				
Surrogate: 2-Bromobenzotrifluoride	84.4		60-140	%	25-AUG-20				
Surrogate: 3,4-Dichlorotoluene	99.8		60-140	%	26-AUG-20				
L2491976-8 BH8 SS1									
Sampled By: CLIENT on 20-AUG-20									
Matrix: SOIL						#1			
Physical Tests									
Conductivity	0.357		0.0040	mS/cm	24-AUG-20	0.7			
% Moisture	4.62		0.25	%	21-AUG-20				
pH	7.94		0.10	pH units	24-AUG-20				
Cyanides									

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Soil-Res/Park/Inst. Property Use (Coarse)

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

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1
L2491976-8 BH8 SS1						
Sampled By: CLIENT on 20-AUG-20						
Matrix: SOIL						
Cyanides						
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	24-AUG-20	0.051
Saturated Paste Extractables						
SAR	>17.	SAR:L	0.10	SAR	24-AUG-20	*5
Calcium (Ca)	<0.50		0.50	mg/L	24-AUG-20	
Magnesium (Mg)	<0.50		0.50	mg/L	24-AUG-20	
Sodium (Na)	72.9		0.50	mg/L	24-AUG-20	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	24-AUG-20	7.5
Arsenic (As)	7.5		1.0	ug/g	24-AUG-20	18
Barium (Ba)	156		1.0	ug/g	24-AUG-20	390
Beryllium (Be)	<0.50		0.50	ug/g	24-AUG-20	4
Boron (B)	7.7		5.0	ug/g	24-AUG-20	120
Boron (B), Hot Water Ext.	0.21		0.10	ug/g	24-AUG-20	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	24-AUG-20	1.2
Chromium (Cr)	13.0		1.0	ug/g	24-AUG-20	160
Cobalt (Co)	6.5		1.0	ug/g	24-AUG-20	22
Copper (Cu)	54.7		1.0	ug/g	24-AUG-20	140
Lead (Pb)	15.5		1.0	ug/g	24-AUG-20	120
Mercury (Hg)	0.0186		0.0050	ug/g	24-AUG-20	0.27
Molybdenum (Mo)	<1.0		1.0	ug/g	24-AUG-20	6.9
Nickel (Ni)	13.8		1.0	ug/g	24-AUG-20	100
Selenium (Se)	<1.0		1.0	ug/g	24-AUG-20	2.4
Silver (Ag)	<0.20		0.20	ug/g	24-AUG-20	20
Thallium (Tl)	<0.50		0.50	ug/g	24-AUG-20	1
Uranium (U)	<1.0		1.0	ug/g	24-AUG-20	23
Vanadium (V)	21.2		1.0	ug/g	24-AUG-20	86
Zinc (Zn)	56.6		5.0	ug/g	24-AUG-20	340
Speciated Metals						
Chromium, Hexavalent	<0.20		0.20	ug/g	24-AUG-20	8

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Soil-Res/Park/Inst. Property Use (Coarse)

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

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
SAR:M	Reported SAR represents a maximum value. Actual SAR may be lower if both Ca and Mg were detectable.
SAR:L	SAR is incalculable due to Ca and Mg below DL (with Na above DL). Lowest possible SAR is reported as minimum value.

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).

BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing 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).

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).

Reference Information

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.

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).

Reference Information

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

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

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:

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	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: L2491976 Report Date: 27-AUG-20

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R5199099								
WG3389407-4 DUP		**L2492029-2**						
Boron (B), Hot Water Ext.		0.84	0.84		ug/g	0.0	30	24-AUG-20
WG3389407-2 IRM		**WT SAR4**						
Boron (B), Hot Water Ext.			98.6		%		70-130	24-AUG-20
WG3389407-3 LCS								
Boron (B), Hot Water Ext.			102.0		%		70-130	24-AUG-20
WG3389407-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	24-AUG-20
BTX-511-HS-WT	**Soil**							
Batch R5200862								
WG3388193-4 DUP		**WG3388193-3**						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	26-AUG-20
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	26-AUG-20
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	26-AUG-20
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	26-AUG-20
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	26-AUG-20
WG3388193-2 LCS								
Benzene			105.1		%		70-130	26-AUG-20
Ethylbenzene			99.2		%		70-130	26-AUG-20
m+p-Xylenes			101.8		%		70-130	26-AUG-20
o-Xylene			100.3		%		70-130	26-AUG-20
Toluene			99.8		%		70-130	26-AUG-20
WG3388193-1 MB								
Benzene			<0.0068		ug/g		0.0068	26-AUG-20
Ethylbenzene			<0.018		ug/g		0.018	26-AUG-20
m+p-Xylenes			<0.030		ug/g		0.03	26-AUG-20
o-Xylene			<0.020		ug/g		0.02	26-AUG-20
Toluene			<0.080		ug/g		0.08	26-AUG-20
Surrogate: 1,4-Difluorobenzene			131.3		%		50-140	26-AUG-20
Surrogate: 4-Bromofluorobenzene			124.1		%		50-140	26-AUG-20
WG3388193-5 MS		**WG3388193-3**						
Benzene			109.7		%		60-140	26-AUG-20
Ethylbenzene			100.9		%		60-140	26-AUG-20
m+p-Xylenes			102.7		%		60-140	26-AUG-20
o-Xylene			103.0		%		60-140	26-AUG-20
Toluene			102.2		%		60-140	26-AUG-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-R511-WT	**Soil**							
Batch R5198399								
WG3388118-3 DUP		**L2492019-2**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	24-AUG-20
WG3388118-2 LCS								
Cyanide, Weak Acid Diss			96.3		%		80-120	24-AUG-20
WG3388118-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	24-AUG-20
WG3388118-4 MS		**L2492019-2**						
Cyanide, Weak Acid Diss			115.6		%		70-130	24-AUG-20
CR-CR6-IC-WT	**Soil**							
Batch R5198677								
WG3388114-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			97.6		%		70-130	24-AUG-20
WG3388114-3 DUP		**L2491976-6**						
Chromium, Hexavalent		0.53	0.55		ug/g	4.0	35	24-AUG-20
WG3388114-2 LCS								
Chromium, Hexavalent			101.0		%		80-120	24-AUG-20
WG3388114-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	24-AUG-20
EC-WT	**Soil**							
Batch R5199235								
WG3389408-4 DUP		**WG3389408-3**						
Conductivity		0.305	0.303		mS/cm	0.7	20	24-AUG-20
WG3389408-2 IRM		**WT SAR4**						
Conductivity			104.8		%		70-130	24-AUG-20
WG3389631-1 LCS								
Conductivity			99.3		%		90-110	24-AUG-20
WG3389408-1 MB								
Conductivity			<0.0040		mS/cm		0.004	24-AUG-20
F1-HS-511-WT	**Soil**							
Batch R5200862								
WG3388193-4 DUP		**WG3388193-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	26-AUG-20
WG3388193-2 LCS								
F1 (C6-C10)			89.4		%		80-120	26-AUG-20
WG3388193-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	26-AUG-20
Surrogate: 3,4-Dichlorotoluene			100.0		%		60-140	26-AUG-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R5200862								
WG3388193-6 MS		**L2491976-7**						
F1 (C6-C10)			95.7		%		60-140	26-AUG-20
F2-F4-511-WT	**Soil**							
Batch R5199709								
WG3389434-3 DUP		**WG3389434-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	25-AUG-20
F3 (C16-C34)		194	145		ug/g	29	30	25-AUG-20
F4 (C34-C50)		<50	55	RPD-NA	ug/g	N/A	30	25-AUG-20
WG3389434-2 LCS								
F2 (C10-C16)			108.2		%		80-120	25-AUG-20
F3 (C16-C34)			111.4		%		80-120	25-AUG-20
F4 (C34-C50)			117.8		%		80-120	25-AUG-20
WG3389434-1 MB								
F2 (C10-C16)			<10		ug/g		10	25-AUG-20
F3 (C16-C34)			<50		ug/g		50	25-AUG-20
F4 (C34-C50)			<50		ug/g		50	25-AUG-20
Surrogate: 2-Bromobenzotrifluoride			80.5		%		60-140	25-AUG-20
WG3389434-4 MS		**WG3389434-5**						
F2 (C10-C16)			104.0		%		60-140	25-AUG-20
F3 (C16-C34)			98.6		%		60-140	25-AUG-20
F4 (C34-C50)			110.1		%		60-140	25-AUG-20
HG-200.2-CVAA-WT	**Soil**							
Batch R5198676								
WG3389399-2 CRM		**WT-SS-2**						
Mercury (Hg)			118.7		%		70-130	24-AUG-20
WG3389399-6 DUP		**WG3389399-5**						
Mercury (Hg)		0.0182	0.0182		ug/g	0.2	40	24-AUG-20
WG3389399-3 LCS								
Mercury (Hg)			106.0		%		80-120	24-AUG-20
WG3389399-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	24-AUG-20
MET-200.2-CCMS-WT	**Soil**							

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5199569								
WG3389399-2 CRM		**WT-SS-2**						
Antimony (Sb)			102.8		%		70-130	24-AUG-20
Arsenic (As)			101.4		%		70-130	24-AUG-20
Barium (Ba)			110.6		%		70-130	24-AUG-20
Beryllium (Be)			107.0		%		70-130	24-AUG-20
Boron (B)			10.2		mg/kg		3.5-13.5	24-AUG-20
Cadmium (Cd)			105.3		%		70-130	24-AUG-20
Chromium (Cr)			105.0		%		70-130	24-AUG-20
Cobalt (Co)			100.8		%		70-130	24-AUG-20
Copper (Cu)			100.1		%		70-130	24-AUG-20
Lead (Pb)			102.7		%		70-130	24-AUG-20
Molybdenum (Mo)			101.1		%		70-130	24-AUG-20
Nickel (Ni)			102.1		%		70-130	24-AUG-20
Selenium (Se)			0.13		mg/kg		0-0.34	24-AUG-20
Silver (Ag)			93.3		%		70-130	24-AUG-20
Thallium (Tl)			0.068		mg/kg		0.029-0.129	24-AUG-20
Uranium (U)			90.0		%		70-130	24-AUG-20
Vanadium (V)			104.1		%		70-130	24-AUG-20
Zinc (Zn)			96.4		%		70-130	24-AUG-20
WG3389399-6 DUP		**WG3389399-5**						
Antimony (Sb)		0.14	0.15		ug/g	5.5	30	24-AUG-20
Arsenic (As)		6.89	7.18		ug/g	4.1	30	24-AUG-20
Barium (Ba)		47.2	47.1		ug/g	0.4	40	24-AUG-20
Beryllium (Be)		0.73	0.71		ug/g	3.1	30	24-AUG-20
Boron (B)		11.6	11.9		ug/g	2.6	30	24-AUG-20
Cadmium (Cd)		0.051	0.067		ug/g	28	30	24-AUG-20
Chromium (Cr)		21.3	21.5		ug/g	0.6	30	24-AUG-20
Cobalt (Co)		12.7	13.2		ug/g	3.8	30	24-AUG-20
Copper (Cu)		46.6	44.2		ug/g	5.3	30	24-AUG-20
Lead (Pb)		7.57	9.83		ug/g	26	40	24-AUG-20
Molybdenum (Mo)		0.27	0.28		ug/g	5.0	40	24-AUG-20
Nickel (Ni)		27.2	32.7		ug/g	18	30	24-AUG-20
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	24-AUG-20
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	24-AUG-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5199569								
WG3389399-6 DUP		**WG3389399-5**						
Thallium (Tl)		0.095	0.104		ug/g	9.1	30	24-AUG-20
Uranium (U)		0.609	0.597		ug/g	2.0	30	24-AUG-20
Vanadium (V)		28.9	29.8		ug/g	3.1	30	24-AUG-20
Zinc (Zn)		58.7	61.4		ug/g	4.5	30	24-AUG-20
WG3389399-4 LCS								
Antimony (Sb)			115.2		%		80-120	24-AUG-20
Arsenic (As)			99.7		%		80-120	24-AUG-20
Barium (Ba)			100.5		%		80-120	24-AUG-20
Beryllium (Be)			103.1		%		80-120	24-AUG-20
Boron (B)			105.1		%		80-120	24-AUG-20
Cadmium (Cd)			98.6		%		80-120	24-AUG-20
Chromium (Cr)			99.4		%		80-120	24-AUG-20
Cobalt (Co)			95.9		%		80-120	24-AUG-20
Copper (Cu)			96.7		%		80-120	24-AUG-20
Lead (Pb)			100.2		%		80-120	24-AUG-20
Molybdenum (Mo)			105.0		%		80-120	24-AUG-20
Nickel (Ni)			97.4		%		80-120	24-AUG-20
Selenium (Se)			97.7		%		80-120	24-AUG-20
Silver (Ag)			97.9		%		80-120	24-AUG-20
Thallium (Tl)			96.8		%		80-120	24-AUG-20
Uranium (U)			88.7		%		80-120	24-AUG-20
Vanadium (V)			99.8		%		80-120	24-AUG-20
Zinc (Zn)			93.4		%		80-120	24-AUG-20
WG3389399-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	24-AUG-20
Arsenic (As)			<0.10		mg/kg		0.1	24-AUG-20
Barium (Ba)			<0.50		mg/kg		0.5	24-AUG-20
Beryllium (Be)			<0.10		mg/kg		0.1	24-AUG-20
Boron (B)			<5.0		mg/kg		5	24-AUG-20
Cadmium (Cd)			<0.020		mg/kg		0.02	24-AUG-20
Chromium (Cr)			<0.50		mg/kg		0.5	24-AUG-20
Cobalt (Co)			<0.10		mg/kg		0.1	24-AUG-20
Copper (Cu)			<0.50		mg/kg		0.5	24-AUG-20
Lead (Pb)			<0.50		mg/kg		0.5	24-AUG-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5199569								
WG3389399-1 MB								
Molybdenum (Mo)			<0.10		mg/kg		0.1	24-AUG-20
Nickel (Ni)			<0.50		mg/kg		0.5	24-AUG-20
Selenium (Se)			<0.20		mg/kg		0.2	24-AUG-20
Silver (Ag)			<0.10		mg/kg		0.1	24-AUG-20
Thallium (Tl)			<0.050		mg/kg		0.05	24-AUG-20
Uranium (U)			<0.050		mg/kg		0.05	24-AUG-20
Vanadium (V)			<0.20		mg/kg		0.2	24-AUG-20
Zinc (Zn)			<2.0		mg/kg		2	24-AUG-20
MOISTURE-WT	**Soil**							
Batch R5196616								
WG3388218-3 DUP		**L2491976-1**						
% Moisture		7.67	6.60		%	15	20	21-AUG-20
WG3388218-2 LCS								
% Moisture			102.3		%		90-110	21-AUG-20
WG3388218-1 MB								
% Moisture			<0.25		%		0.25	21-AUG-20
PH-WT	**Soil**							
Batch R5199138								
WG3388667-1 DUP		**L2492382-1**						
pH		8.16	8.34	J	pH units	0.18	0.3	24-AUG-20
WG3389622-1 LCS								
pH			6.91		pH units		6.9-7.1	24-AUG-20
SAR-R511-WT	**Soil**							
Batch R5199220								
WG3389408-4 DUP		**WG3389408-3**						
Calcium (Ca)		3.24	2.96		mg/L	9.0	30	24-AUG-20
Sodium (Na)		56.0	56.4		mg/L	0.7	30	24-AUG-20
Magnesium (Mg)		<0.50	<0.50	RPD-NA	mg/L	N/A	30	24-AUG-20
WG3389408-2 IRM		**WT SAR4**						
Calcium (Ca)			105.4		%		70-130	24-AUG-20
Sodium (Na)			98.0		%		70-130	24-AUG-20
Magnesium (Mg)			104.3		%		70-130	24-AUG-20
WG3389408-5 LCS								
Calcium (Ca)			99.0		%		80-120	24-AUG-20
Sodium (Na)			97.4		%		80-120	24-AUG-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R5199220								
WG3389408-5 LCS								
Magnesium (Mg)			95.2		%		80-120	24-AUG-20
WG3389408-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	24-AUG-20
Sodium (Na)			<0.50		mg/L		0.5	24-AUG-20
Magnesium (Mg)			<0.50		mg/L		0.5	24-AUG-20

Quality Control Report

Workorder: L2491976 Report Date: 27-AUG-20

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

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.

Hold Time Exceedances:

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

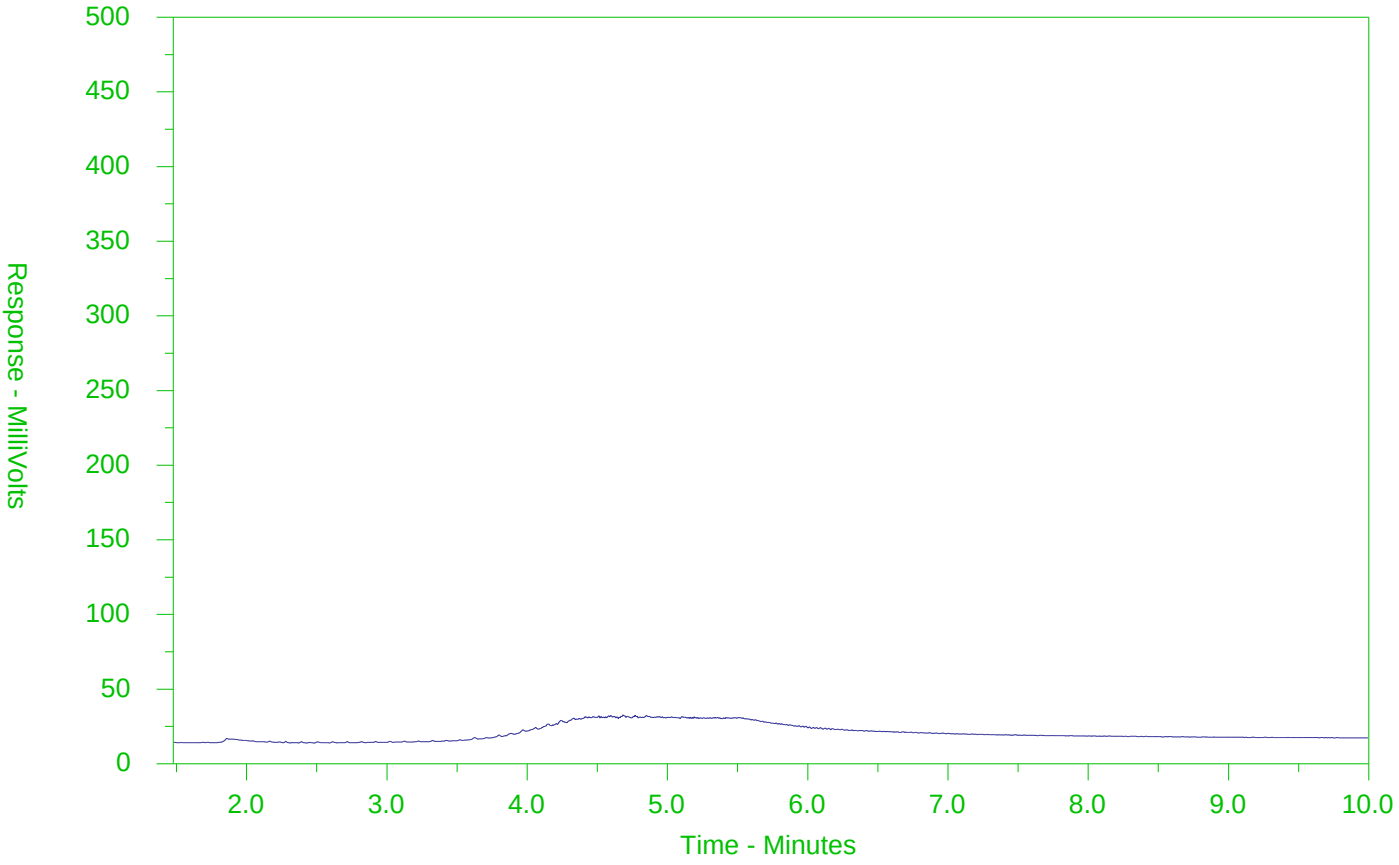
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where 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: L2491976-3
Client Sample ID: MW4 SS7



←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.

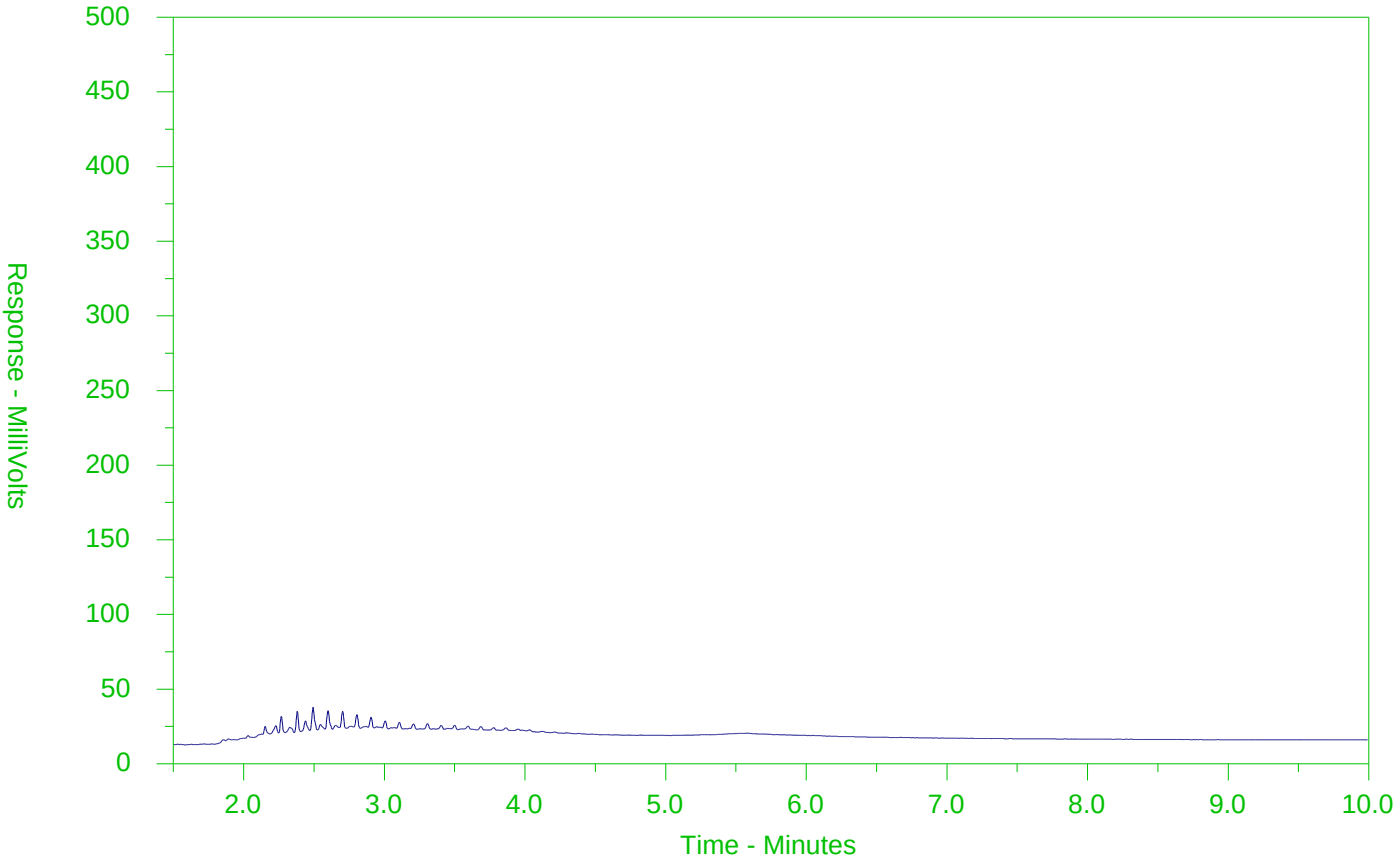
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: L2491976-5
Client Sample ID: MW7 SS8



←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.

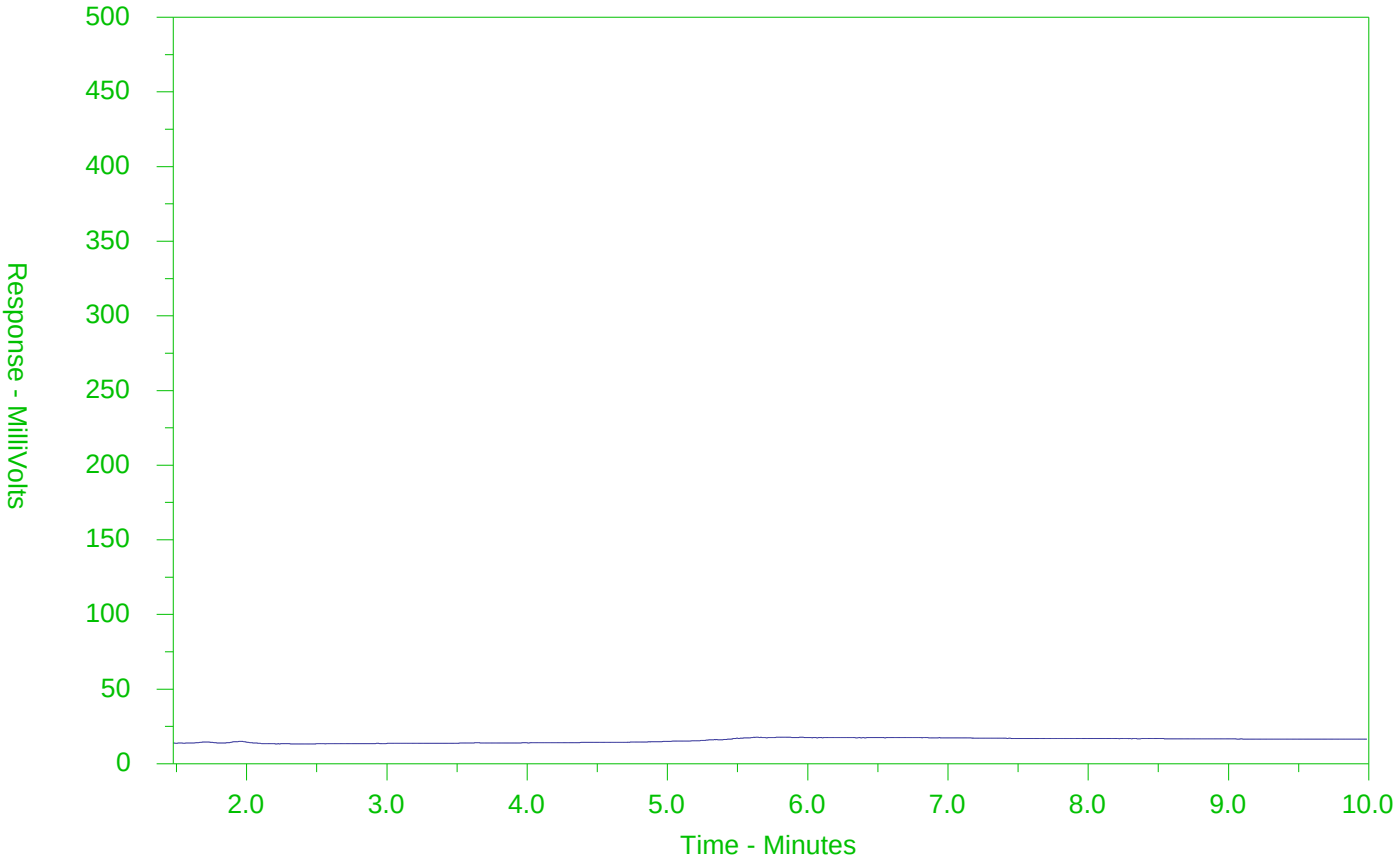
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: L2491976-7
Client Sample ID: MW4 SS9



←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.

LANDTEK LIMITED
ATTN: PAUL BLUNT
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1

Date Received: 01-OCT-20
Report Date: 07-OCT-20 15:02 (MT)
Version: FINAL

Client Phone: 905-383-3733

Certificate of Analysis

Lab Work Order #: L2510936

Project P.O. #: 20242
Job Reference: 20242
C of C Numbers: 17-844637
Legal Site Desc:

Aaron Payne
Account Manager

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ANALYTICAL REPORT

Summary of Guideline Exceedances

Guideline ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)						
(No parameter exceedances)						
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.

Physical Tests - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2510936-2 Sample Date: 30-SEP-20 Sample ID: MW7
Conductivity	mS/cm	-	-	1.36
pH	pH units	-	-	7.70

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

Anions and Nutrients - WATER

			Lab ID	L2510936-2
			Sample Date	30-SEP-20
			Sample ID	MW7
		Guide Limits		
Analyte	Unit	#1	#2	
Chloride (Cl)	mg/L	2300	2300	318 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

Cyanides - WATER

		Guide Limits			
				Lab ID	L2510936-1	L2510936-2
				Sample Date	30-SEP-20	30-SEP-20
				Sample ID	MW2	MW7
Analyte	Unit	#1	#2		
Cyanide, Weak Acid Diss	ug/L	66	66	<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.

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

ANALYTICAL REPORT

Dissolved Metals - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID L2510936-1 / Sample Date 30-SEP-20 / Sample ID MW2	Lab ID L2510936-2 / Sample Date 30-SEP-20 / Sample ID MW7
Dissolved Mercury Filtration Location		-	-	FIELD	FIELD
Dissolved Metals Filtration Location		-	-		FIELD
Antimony (Sb)-Dissolved	ug/L	20000	20000		0.35
Arsenic (As)-Dissolved	ug/L	1900	1900		1.87
Barium (Ba)-Dissolved	ug/L	29000	29000		208
Beryllium (Be)-Dissolved	ug/L	67	67		<0.10
Boron (B)-Dissolved	ug/L	45000	45000		346
Cadmium (Cd)-Dissolved	ug/L	2.7	2.7		0.012
Chromium (Cr)-Dissolved	ug/L	810	810		<0.50
Cobalt (Co)-Dissolved	ug/L	66	66		0.48
Copper (Cu)-Dissolved	ug/L	87	87		0.80
Lead (Pb)-Dissolved	ug/L	25	25		0.139
Mercury (Hg)-Dissolved	ug/L	0.29	2.8	<0.0050	<0.0050
Molybdenum (Mo)-Dissolved	ug/L	9200	9200		7.50
Nickel (Ni)-Dissolved	ug/L	490	490		1.35
Selenium (Se)-Dissolved	ug/L	63	63		0.089
Silver (Ag)-Dissolved	ug/L	1.5	1.5		<0.050
Sodium (Na)-Dissolved	ug/L	2300000	2300000		150000 DLHC
Thallium (Tl)-Dissolved	ug/L	510	510		0.011
Uranium (U)-Dissolved	ug/L	420	420		1.12
Vanadium (V)-Dissolved	ug/L	250	250		<0.50
Zinc (Zn)-Dissolved	ug/L	1100	1100		2.5

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				L2510936-1	L2510936-2
Sample Date				30-SEP-20	30-SEP-20
Sample ID				MW2	MW7
Analyte	**Unit**	**#1**	**#2**		
Chromium, Hexavalent	ug/L	140	140	<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.

Volatile Organic Compounds - WATER

				Lab ID	L2510936-2	L2510936-3
				Sample Date	30-SEP-20	30-SEP-20
				Sample ID	MW7	DUP
		Guide Limits				
Analyte	Unit	#1	#2			
Acetone	ug/L	130000	130000	<30 OWP	<30 OWP	
Benzene	ug/L	44	430	<0.50 OWP	<0.50 OWP	
Bromodichloromethane	ug/L	85000	85000	<2.0 OWP	<2.0 OWP	
Bromoform	ug/L	380	770	<5.0 OWP	<5.0 OWP	
Bromomethane	ug/L	5.6	56	<0.50 OWP	<0.50 OWP	
Carbon tetrachloride	ug/L	0.79	8.4	<0.20 OWP	<0.20 OWP	
Chlorobenzene	ug/L	630	630	<0.50 OWP	<0.50 OWP	
Dibromochloromethane	ug/L	82000	82000	<2.0 OWP	<2.0 OWP	
Chloroform	ug/L	2.4	22	<1.0 OWP	<1.0 OWP	
1,2-Dibromoethane	ug/L	0.25	0.83	<0.20 OWP	<0.20 OWP	
1,2-Dichlorobenzene	ug/L	4600	9600	<0.50 OWP	<0.50 OWP	
1,3-Dichlorobenzene	ug/L	9600	9600	<0.50 OWP	<0.50 OWP	
1,4-Dichlorobenzene	ug/L	8	67	<0.50 OWP	<0.50 OWP	
Dichlorodifluoromethane	ug/L	4400	4400	<2.0 OWP	<2.0 OWP	
1,1-Dichloroethane	ug/L	320	3100	<0.50 OWP	<0.50 OWP	
1,2-Dichloroethane	ug/L	1.6	12	<0.50 OWP	<0.50 OWP	
1,1-Dichloroethylene	ug/L	1.6	17	<0.50 OWP	<0.50 OWP	
cis-1,2-Dichloroethylene	ug/L	1.6	17	<0.50 OWP	<0.50 OWP	
trans-1,2-Dichloroethylene	ug/L	1.6	17	<0.50 OWP	<0.50 OWP	
Methylene Chloride	ug/L	610	5500	<5.0 OWP	<5.0 OWP	
1,2-Dichloropropane	ug/L	16	140	<0.50 OWP	<0.50 OWP	
cis-1,3-Dichloropropene	ug/L	-	-	<0.30 OWP	<0.30 OWP	
trans-1,3-Dichloropropene	ug/L	-	-	<0.30 OWP	<0.30 OWP	
1,3-Dichloropropene (cis & trans)	ug/L	5.2	45	<0.50	<0.50	
Ethylbenzene	ug/L	2300	2300	<0.50 OWP	<0.50 OWP	
n-Hexane	ug/L	51	520	<0.50 OWP	<0.50 OWP	
Methyl Ethyl Ketone	ug/L	470000	1500000	<20 OWP	<20 OWP	
Methyl Isobutyl Ketone	ug/L	140000	580000	<20 OWP	<20 OWP	
MTBE	ug/L	190	1400	<2.0 OWP	<2.0 OWP	
Styrene	ug/L	1300	9100	<0.50 OWP	<0.50 OWP	

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.

Volatile Organic Compounds - WATER

			Lab ID	L2510936-2	L2510936-3
			Sample Date	30-SEP-20	30-SEP-20
			Sample ID	MW7	DUP
Analyte	**Unit**	**Guide Limits #1**	**#2**		
1,1,1,2-Tetrachloroethane	ug/L	3.3	28	<0.50 OWP	<0.50 OWP
1,1,2,2-Tetrachloroethane	ug/L	3.2	15	<0.50 OWP	<0.50 OWP
Tetrachloroethylene	ug/L	1.6	17	<0.50 OWP	<0.50 OWP
Toluene	ug/L	18000	18000	<0.50 OWP	<0.50 OWP
1,1,1-Trichloroethane	ug/L	640	6700	<0.50 OWP	<0.50 OWP
1,1,2-Trichloroethane	ug/L	4.7	30	<0.50 OWP	<0.50 OWP
Trichloroethylene	ug/L	1.6	17	<0.50 OWP	<0.50 OWP
Trichlorofluoromethane	ug/L	2500	2500	<5.0 OWP	<5.0 OWP
Vinyl chloride	ug/L	0.5	1.7	<0.50 OWP	<0.50 OWP
o-Xylene	ug/L	-	-	<0.30 OWP	<0.30 OWP
m+p-Xylenes	ug/L	-	-	<0.40 OWP	<0.40 OWP
Xylenes (Total)	ug/L	4200	4200	<0.50	<0.50
Surrogate: 4-Bromofluorobenzene	%	-	-	97.9	97.4
Surrogate: 1,4-Difluorobenzene	%	-	-	100.6	101.1

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.

Hydrocarbons - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2510936-2 Sample Date: 30-SEP-20 Sample ID: MW7	Lab ID: L2510936-3 Sample Date: 30-SEP-20 Sample ID: DUP
F1 (C6-C10)	ug/L	750	750	<25 OWP	<25 OWP
F1-BTEX	ug/L	750	750	<25	<25
F2 (C10-C16)	ug/L	150	150	<100	<100
F3 (C16-C34)	ug/L	500	500	390	<250
F4 (C34-C50)	ug/L	500	500	<250	<250
Total Hydrocarbons (C6-C50)	ug/L	-	-	390	<370
Chrom. to baseline at nC50		-	-	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	93.9	96.4
Surrogate: 3,4-Dichlorotoluene	%	-	-	88.6	85.6

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).

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

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.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

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

Chain of Custody Numbers:

17-844637

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: L2510936 Report Date: 07-OCT-20

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1

Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	**Water**							
Batch R5245110								
WG3417383-10 DUP		**L2510872-8**						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	02-OCT-20
WG3417383-7 LCS								
Chloride (Cl)			102.4		%		90-110	02-OCT-20
WG3417383-6 MB								
Chloride (Cl)			<0.50		mg/L		0.5	02-OCT-20
WG3417383-9 MS		**L2510872-8**						
Chloride (Cl)			101.0		%		75-125	02-OCT-20
CN-WAD-R511-WT	**Water**							
Batch R5247856								
WG3418838-3 DUP		**WG3418838-5**						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	05-OCT-20
WG3418838-2 LCS								
Cyanide, Weak Acid Diss			106.4		%		80-120	05-OCT-20
WG3418838-1 MB								
Cyanide, Weak Acid Diss			<2.0		ug/L		2	05-OCT-20
WG3418838-4 MS		**WG3418838-5**						
Cyanide, Weak Acid Diss			97.9		%		75-125	05-OCT-20
CR-CR6-IC-R511-WT	**Water**							
Batch R5245109								
WG3417242-4 DUP		**WG3417242-3**						
Chromium, Hexavalent		<0.50	<0.50	RPD-NA	ug/L	N/A	20	02-OCT-20
WG3417242-2 LCS								
Chromium, Hexavalent			102.5		%		80-120	02-OCT-20
WG3417242-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	02-OCT-20
WG3417242-5 MS		**WG3417242-3**						
Chromium, Hexavalent			99.4		%		70-130	02-OCT-20
EC-R511-WT	**Water**							
Batch R5244082								
WG3416961-4 DUP		**WG3416961-3**						
Conductivity		2.22	2.21		mS/cm	0.5	10	02-OCT-20
WG3416961-2 LCS								
Conductivity			106.6		%		90-110	02-OCT-20
WG3416961-1 MB								
Conductivity			<0.0030		mS/cm		0.003	02-OCT-20
F1-HS-511-WT	**Water**							

Quality Control Report

Workorder: L2510936 Report Date: 07-OCT-20

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1

Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Water**							
Batch R5245007								
WG3416867-4 DUP		**WG3416867-3**						
F1 (C6-C10)		33	42		ug/L	25	30	05-OCT-20
WG3416867-1 LCS								
F1 (C6-C10)			102.4		%		80-120	05-OCT-20
WG3416867-2 MB								
F1 (C6-C10)			<25		ug/L		25	05-OCT-20
Surrogate: 3,4-Dichlorotoluene			124.1		%		60-140	05-OCT-20
WG3416867-5 MS		**WG3416867-3**						
F1 (C6-C10)			90.5		%		60-140	05-OCT-20
F2-F4-511-WT	**Water**							
Batch R5245122								
WG3416790-2 LCS								
F2 (C10-C16)			92.8		%		70-130	05-OCT-20
F3 (C16-C34)			97.1		%		70-130	05-OCT-20
F4 (C34-C50)			100.6		%		70-130	05-OCT-20
WG3416790-1 MB								
F2 (C10-C16)			<100		ug/L		100	05-OCT-20
F3 (C16-C34)			<250		ug/L		250	05-OCT-20
F4 (C34-C50)			<250		ug/L		250	05-OCT-20
Surrogate: 2-Bromobenzotrifluoride			94.5		%		60-140	05-OCT-20
HG-D-UG/L-CVAA-WT	**Water**							
Batch R5244035								
WG3417076-6 DUP		**WG3417076-5**						
Mercury (Hg)-Dissolved		<0.0050	<0.0050	RPD-NA	ug/L	N/A	20	02-OCT-20
WG3417076-2 LCS								
Mercury (Hg)-Dissolved			104.0		%		80-120	02-OCT-20
WG3417076-1 MB								
Mercury (Hg)-Dissolved			<0.0050		ug/L		0.005	02-OCT-20
WG3417076-8 MS		**WG3417076-7**						
Mercury (Hg)-Dissolved			101.4		%		70-130	02-OCT-20
MET-D-UG/L-MS-WT	**Water**							
Batch R5244887								
WG3416829-4 DUP		**WG3416829-3**						
Antimony (Sb)-Dissolved		0.35	0.35		ug/L	0.2	20	02-OCT-20
Arsenic (As)-Dissolved		1.87	1.80		ug/L	3.9	20	02-OCT-20
Barium (Ba)-Dissolved		208	211		ug/L	1.5	20	02-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R5244887								
WG3416829-4 DUP		**WG3416829-3**						
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	02-OCT-20
Boron (B)-Dissolved		346	340		ug/L	1.8	20	02-OCT-20
Cadmium (Cd)-Dissolved		0.0118	0.0107		ug/L	9.8	20	02-OCT-20
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	02-OCT-20
Cobalt (Co)-Dissolved		0.48	0.48		ug/L	1.5	20	02-OCT-20
Copper (Cu)-Dissolved		0.80	0.70		ug/L	14	20	02-OCT-20
Lead (Pb)-Dissolved		0.139	0.065	J	ug/L	0.074	0.1	02-OCT-20
Molybdenum (Mo)-Dissolved		7.50	7.78		ug/L	3.7	20	02-OCT-20
Nickel (Ni)-Dissolved		1.35	1.29		ug/L	4.7	20	02-OCT-20
Selenium (Se)-Dissolved		0.089	0.077		ug/L	14	20	02-OCT-20
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	02-OCT-20
Sodium (Na)-Dissolved		150000	147000		ug/L	1.8	20	02-OCT-20
Thallium (Tl)-Dissolved		0.011	0.011		ug/L	1.8	20	02-OCT-20
Uranium (U)-Dissolved		1.12	1.13		ug/L	0.9	20	02-OCT-20
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	02-OCT-20
Zinc (Zn)-Dissolved		2.5	1.7	J	ug/L	0.8	2	02-OCT-20
WG3416829-2 LCS								
Antimony (Sb)-Dissolved			97.9		%		80-120	02-OCT-20
Arsenic (As)-Dissolved			97.5		%		80-120	02-OCT-20
Barium (Ba)-Dissolved			99.9		%		80-120	02-OCT-20
Beryllium (Be)-Dissolved			101.7		%		80-120	02-OCT-20
Boron (B)-Dissolved			99.6		%		80-120	02-OCT-20
Cadmium (Cd)-Dissolved			95.9		%		80-120	02-OCT-20
Chromium (Cr)-Dissolved			96.2		%		80-120	02-OCT-20
Cobalt (Co)-Dissolved			97.2		%		80-120	02-OCT-20
Copper (Cu)-Dissolved			96.9		%		80-120	02-OCT-20
Lead (Pb)-Dissolved			100.3		%		80-120	02-OCT-20
Molybdenum (Mo)-Dissolved			99.7		%		80-120	02-OCT-20
Nickel (Ni)-Dissolved			97.2		%		80-120	02-OCT-20
Selenium (Se)-Dissolved			98.3		%		80-120	02-OCT-20
Silver (Ag)-Dissolved			98.9		%		80-120	02-OCT-20
Sodium (Na)-Dissolved			102.6		%		80-120	02-OCT-20
Thallium (Tl)-Dissolved			99.7		%		80-120	02-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R5244887								
WG3416829-2 LCS								
Uranium (U)-Dissolved			100.2		%		80-120	02-OCT-20
Vanadium (V)-Dissolved			98.5		%		80-120	02-OCT-20
Zinc (Zn)-Dissolved			96.9		%		80-120	02-OCT-20
WG3416829-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	02-OCT-20
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	02-OCT-20
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	02-OCT-20
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	02-OCT-20
Boron (B)-Dissolved			<10		ug/L		10	02-OCT-20
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	02-OCT-20
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	02-OCT-20
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	02-OCT-20
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	02-OCT-20
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	02-OCT-20
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	02-OCT-20
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	02-OCT-20
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	02-OCT-20
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	02-OCT-20
Sodium (Na)-Dissolved			<50		ug/L		50	02-OCT-20
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	02-OCT-20
Uranium (U)-Dissolved			<0.010		ug/L		0.01	02-OCT-20
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	02-OCT-20
Zinc (Zn)-Dissolved			<1.0		ug/L		1	02-OCT-20
WG3416829-5 MS		**WG3416829-3**						
Antimony (Sb)-Dissolved			95.6		%		70-130	02-OCT-20
Arsenic (As)-Dissolved			104.6		%		70-130	02-OCT-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	02-OCT-20
Beryllium (Be)-Dissolved			103.1		%		70-130	02-OCT-20
Boron (B)-Dissolved			N/A	MS-B	%		-	02-OCT-20
Cadmium (Cd)-Dissolved			91.2		%		70-130	02-OCT-20
Chromium (Cr)-Dissolved			96.4		%		70-130	02-OCT-20
Cobalt (Co)-Dissolved			92.6		%		70-130	02-OCT-20
Copper (Cu)-Dissolved			87.8		%		70-130	02-OCT-20
Lead (Pb)-Dissolved			89.7		%		70-130	02-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R5244887								
WG3416829-5 MS		**WG3416829-3**						
Molybdenum (Mo)-Dissolved			101.6		%		70-130	02-OCT-20
Nickel (Ni)-Dissolved			89.4		%		70-130	02-OCT-20
Selenium (Se)-Dissolved			108.8		%		70-130	02-OCT-20
Silver (Ag)-Dissolved			75.7		%		70-130	05-OCT-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	02-OCT-20
Thallium (Tl)-Dissolved			90.9		%		70-130	02-OCT-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	02-OCT-20
Vanadium (V)-Dissolved			101.5		%		70-130	02-OCT-20
Zinc (Zn)-Dissolved			90.3		%		70-130	02-OCT-20
PH-WT	**Water**							
Batch R5244082								
WG3416961-4 DUP		**WG3416961-3**						
pH		7.49	7.53	J	pH units	0.04	0.2	02-OCT-20
WG3416961-2 LCS								
pH			7.01		pH units		6.9-7.1	02-OCT-20
VOC-511-HS-WT	**Water**							
Batch R5245007								
WG3416867-4 DUP		**WG3416867-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	05-OCT-20
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	05-OCT-20
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-OCT-20
Bromoform		<5.0	<5.0					

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5245007								
WG3416867-4 DUP		**WG3416867-3**						
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	05-OCT-20
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	05-OCT-20
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	05-OCT-20
cis-1,2-Dichloroethylene		3.92	3.98		ug/L	1.5	30	05-OCT-20
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	05-OCT-20
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-OCT-20
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-OCT-20
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	05-OCT-20
Methyl Ethyl Ketone		26	25		ug/L	0.7	30	05-OCT-20
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	05-OCT-20
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	05-OCT-20
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	05-OCT-20
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	05-OCT-20
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	05-OCT-20
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	05-OCT-20
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	05-OCT-20
Vinyl chloride		6.18	6.10		ug/L	1.3	30	05-OCT-20
WG3416867-1 LCS								
1,1,1,2-Tetrachloroethane			98.6		%		70-130	05-OCT-20
1,1,2,2-Tetrachloroethane			106.3		%		70-130	05-OCT-20
1,1,1-Trichloroethane			99.9		%		70-130	05-OCT-20
1,1,2-Trichloroethane			108.4		%		70-130	05-OCT-20
1,1-Dichloroethane			106.2		%		70-130	05-OCT-20
1,1-Dichloroethylene			96.8		%		70-130	05-OCT-20
1,2-Dibromoethane			108.2		%		70-130	05-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5245007								
WG3416867-1 LCS								
1,2-Dichlorobenzene			113.5		%		70-130	05-OCT-20
1,2-Dichloroethane			109.3		%		70-130	05-OCT-20
1,2-Dichloropropane			105.8		%		70-130	05-OCT-20
1,3-Dichlorobenzene			111.7		%		70-130	05-OCT-20
1,4-Dichlorobenzene			113.0		%		70-130	05-OCT-20
Acetone			131.2		%		60-140	05-OCT-20
Benzene			103.3		%		70-130	05-OCT-20
Bromodichloromethane			113.4		%		70-130	05-OCT-20
Bromoform			108.3		%		70-130	05-OCT-20
Bromomethane			131.9		%		60-140	05-OCT-20
Carbon tetrachloride			97.9		%		70-130	05-OCT-20
Chlorobenzene			99.8		%		70-130	05-OCT-20
Chloroform			105.8		%		70-130	05-OCT-20
cis-1,2-Dichloroethylene			101.4		%		70-130	05-OCT-20
cis-1,3-Dichloropropene			101.9		%		70-130	05-OCT-20
Dibromochloromethane			102.7		%		70-130	05-OCT-20
Dichlorodifluoromethane			121.0		%		50-140	05-OCT-20
Ethylbenzene			95.3		%		70-130	05-OCT-20
n-Hexane			98.4		%		70-130	05-OCT-20
m+p-Xylenes			95.4		%		70-130	05-OCT-20
Methyl Ethyl Ketone			118.6		%		60-140	05-OCT-20
Methyl Isobutyl Ketone			119.9		%		60-140	05-OCT-20
Methylene Chloride			106.8		%		70-130	05-OCT-20
MTBE			101.1		%		70-130	05-OCT-20
o-Xylene			103.7		%		70-130	05-OCT-20
Styrene			98.4		%		70-130	05-OCT-20
Tetrachloroethylene			95.2		%		70-130	05-OCT-20
Toluene			103.5		%		70-130	05-OCT-20
trans-1,2-Dichloroethylene			97.4		%		70-130	05-OCT-20
trans-1,3-Dichloropropene			106.7		%		70-130	05-OCT-20
Trichloroethylene			99.5		%		70-130	05-OCT-20
Trichlorofluoromethane			95.1		%		60-140	05-OCT-20
Vinyl chloride			116.6		%		60-140	05-OCT-20
WG3416867-2 MB								

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5245007								
WG3416867-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	05-OCT-20
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	05-OCT-20
1,1,1-Trichloroethane			<0.50		ug/L		0.5	05-OCT-20
1,1,2-Trichloroethane			<0.50		ug/L		0.5	05-OCT-20
1,1-Dichloroethane			<0.50		ug/L		0.5	05-OCT-20
1,1-Dichloroethylene			<0.50		ug/L		0.5	05-OCT-20
1,2-Dibromoethane			<0.20		ug/L		0.2	05-OCT-20
1,2-Dichlorobenzene			<0.50		ug/L		0.5	05-OCT-20
1,2-Dichloroethane			<0.50		ug/L		0.5	05-OCT-20
1,2-Dichloropropane			<0.50		ug/L		0.5	05-OCT-20
1,3-Dichlorobenzene			<0.50		ug/L		0.5	05-OCT-20
1,4-Dichlorobenzene			<0.50		ug/L		0.5	05-OCT-20
Acetone			<30		ug/L		30	05-OCT-20
Benzene			<0.50		ug/L		0.5	05-OCT-20
Bromodichloromethane			<2.0		ug/L		2	05-OCT-20
Bromoform			<5.0		ug/L		5	05-OCT-20
Bromomethane			<0.50		ug/L		0.5	05-OCT-20
Carbon tetrachloride			<0.20		ug/L		0.2	05-OCT-20
Chlorobenzene			<0.50		ug/L		0.5	05-OCT-20
Chloroform			<1.0		ug/L		1	05-OCT-20
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	05-OCT-20
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	05-OCT-20
Dibromochloromethane			<2.0		ug/L		2	05-OCT-20
Dichlorodifluoromethane			<2.0		ug/L		2	05-OCT-20
Ethylbenzene			<0.50		ug/L		0.5	05-OCT-20
n-Hexane			<0.50		ug/L		0.5	05-OCT-20
m+p-Xylenes			<0.40		ug/L		0.4	05-OCT-20
Methyl Ethyl Ketone			<20		ug/L		20	05-OCT-20
Methyl Isobutyl Ketone			<20		ug/L		20	05-OCT-20
Methylene Chloride			<5.0		ug/L		5	05-OCT-20
MTBE			<2.0		ug/L		2	05-OCT-20
o-Xylene			<0.30		ug/L		0.3	05-OCT-20
Styrene			<0.50		ug/L		0.5	05-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5245007								
WG3416867-2 MB								
Tetrachloroethylene			<0.50		ug/L		0.5	05-OCT-20
Toluene			<0.50		ug/L		0.5	05-OCT-20
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	05-OCT-20
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	05-OCT-20
Trichloroethylene			<0.50		ug/L		0.5	05-OCT-20
Trichlorofluoromethane			<5.0		ug/L		5	05-OCT-20
Vinyl chloride			<0.50		ug/L		0.5	05-OCT-20
Surrogate: 1,4-Difluorobenzene			100.4		%		70-130	05-OCT-20
Surrogate: 4-Bromofluorobenzene			101.1		%		70-130	05-OCT-20
WG3416867-5 MS		**WG3416867-3**						
1,1,1,2-Tetrachloroethane			98.5		%		50-140	05-OCT-20
1,1,2,2-Tetrachloroethane			100.9		%		50-140	05-OCT-20
1,1,1-Trichloroethane			101.1		%		50-140	05-OCT-20
1,1,2-Trichloroethane			105.2		%		50-140	05-OCT-20
1,1-Dichloroethane			106.5		%		50-140	05-OCT-20
1,1-Dichloroethylene			96.3		%		50-140	05-OCT-20
1,2-Dibromoethane			104.4		%		50-140	05-OCT-20
1,2-Dichlorobenzene			112.9		%		50-140	05-OCT-20
1,2-Dichloroethane			107.3		%		50-140	05-OCT-20
1,2-Dichloropropane			106.0		%		50-140	05-OCT-20
1,3-Dichlorobenzene			111.0		%		50-140	05-OCT-20
1,4-Dichlorobenzene			111.3		%		50-140	05-OCT-20
Acetone			136.0		%		50-140	05-OCT-20
Benzene			102.8		%		50-140	05-OCT-20
Bromodichloromethane			112.4		%		50-140	05-OCT-20
Bromoform			103.6		%		50-140	05-OCT-20
Bromomethane			120.4		%		50-140	05-OCT-20
Carbon tetrachloride			98.6		%		50-140	05-OCT-20
Chlorobenzene			98.9		%		50-140	05-OCT-20
Chloroform			105.9		%		50-140	05-OCT-20
cis-1,2-Dichloroethylene			99.0		%		50-140	05-OCT-20
cis-1,3-Dichloropropene			91.0		%		50-140	05-OCT-20
Dibromochloromethane			100.5		%		50-140	05-OCT-20
Dichlorodifluoromethane			101.7		%		50-140	05-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5245007								
WG3416867-5 MS		**WG3416867-3**						
Ethylbenzene			95.2		%		50-140	05-OCT-20
n-Hexane			97.3		%		50-140	05-OCT-20
m+p-Xylenes			95.0		%		50-140	05-OCT-20
Methyl Ethyl Ketone			108.0		%		50-140	05-OCT-20
Methyl Isobutyl Ketone			108.4		%		50-140	05-OCT-20
Methylene Chloride			104.1		%		50-140	05-OCT-20
MTBE			100.0		%		50-140	05-OCT-20
o-Xylene			103.5		%		50-140	05-OCT-20
Styrene			95.1		%		50-140	05-OCT-20
Tetrachloroethylene			93.6		%		50-140	05-OCT-20
Toluene			103.8		%		50-140	05-OCT-20
trans-1,2-Dichloroethylene			94.7		%		50-140	05-OCT-20
trans-1,3-Dichloropropene			94.4		%		50-140	05-OCT-20
Trichloroethylene			97.5		%		50-140	05-OCT-20
Trichlorofluoromethane			92.7		%		50-140	05-OCT-20
Vinyl chloride			108.0		%		50-140	05-OCT-20

Quality Control Report

Workorder: L2510936 Report Date: 07-OCT-20

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

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.

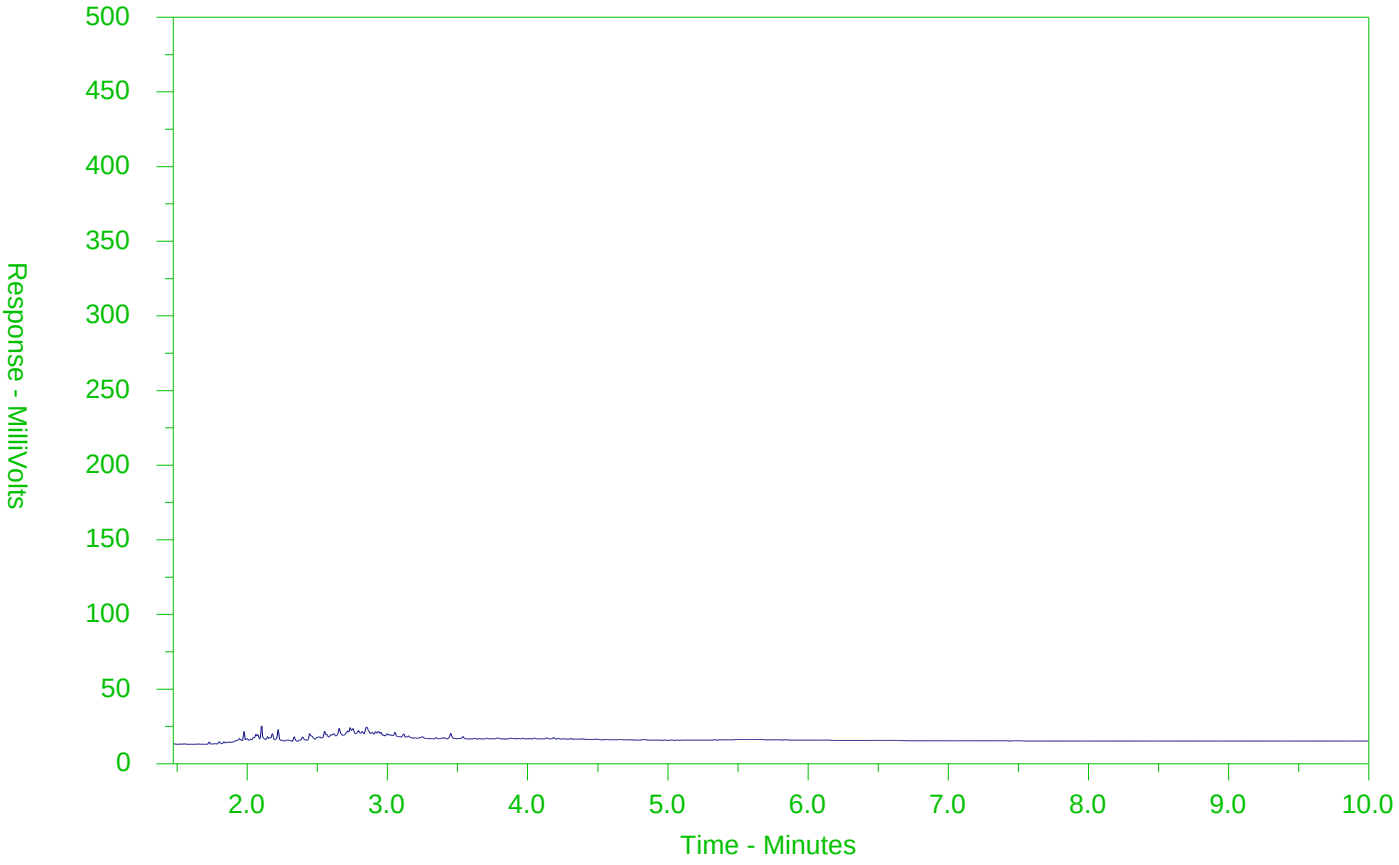
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where 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: L2510936-2
Client Sample ID: MW7



←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.

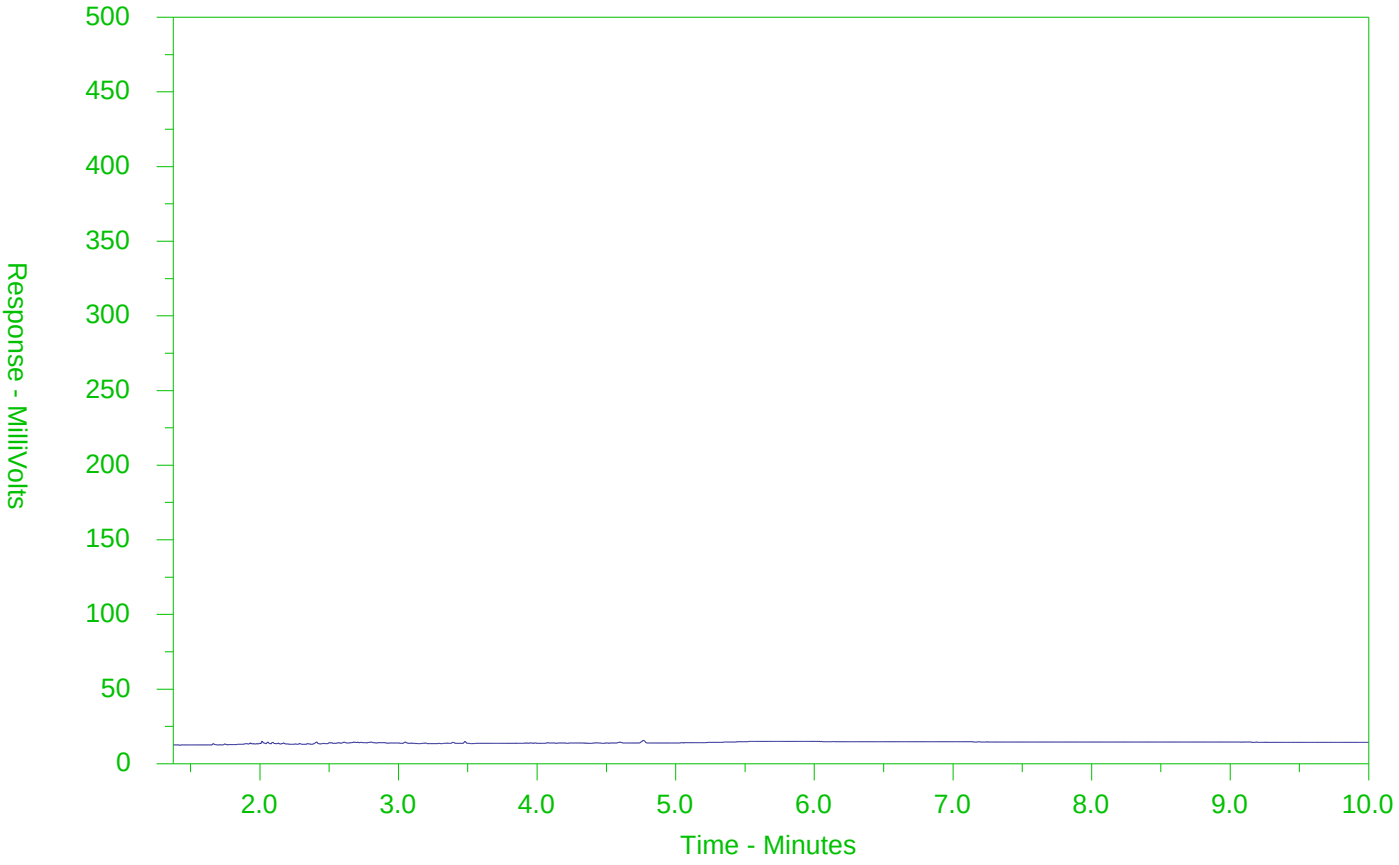
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: L2510936-3
Client Sample ID: DUP



←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.

LANDTEK LIMITED
ATTN: PAUL BLUNT
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1

Date Received: 15-OCT-20
Report Date: 22-OCT-20 07:24 (MT)
Version: FINAL

Client Phone: 905-383-3733

Certificate of Analysis

Lab Work Order #: L2517204

Project P.O. #: NOT SUBMITTED
Job Reference: 20242
C of C Numbers: 17-801550
Legal Site Desc:

Aaron Payne
Account Manager

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

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1
L2517204-1 MW4						
Sampled By: CLIENT on 14-OCT-20						
Matrix: WATER						
Volatile Organic Compounds						
Acetone	<30	OWP	30	ug/L	19-OCT-20	130000
Benzene	<0.50	OWP	0.50	ug/L	19-OCT-20	430
Bromodichloromethane	<2.0	OWP	2.0	ug/L	19-OCT-20	85000
Bromoform	<5.0	OWP	5.0	ug/L	19-OCT-20	770
Bromomethane	<0.50	OWP	0.50	ug/L	19-OCT-20	56
Carbon tetrachloride	<0.20	OWP	0.20	ug/L	19-OCT-20	8.4
Chlorobenzene	<0.50	OWP	0.50	ug/L	19-OCT-20	630
Dibromochloromethane	<2.0	OWP	2.0	ug/L	19-OCT-20	82000
Chloroform	<1.0	OWP	1.0	ug/L	19-OCT-20	22
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L	19-OCT-20	0.83
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L	19-OCT-20	9600
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L	19-OCT-20	9600
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L	19-OCT-20	67
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L	19-OCT-20	4400
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L	19-OCT-20	3100
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L	19-OCT-20	12
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L	19-OCT-20	17
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	19-OCT-20	17
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	19-OCT-20	17
Methylene Chloride	<5.0	OWP	5.0	ug/L	19-OCT-20	5500
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L	19-OCT-20	140
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	19-OCT-20	
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	19-OCT-20	
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	20-OCT-20	45
Ethylbenzene	<0.50	OWP	0.50	ug/L	19-OCT-20	2300
n-Hexane	<0.50	OWP	0.50	ug/L	19-OCT-20	520
Methyl Ethyl Ketone	<20	OWP	20	ug/L	19-OCT-20	1500000
Methyl Isobutyl Ketone	<20	OWP	20	ug/L	19-OCT-20	580000
MTBE	<2.0	OWP	2.0	ug/L	19-OCT-20	1400
Styrene	<0.50	OWP	0.50	ug/L	19-OCT-20	9100
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	19-OCT-20	28
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	19-OCT-20	15
Tetrachloroethylene	<0.50	OWP	0.50	ug/L	19-OCT-20	17
Toluene	<0.50	OWP	0.50	ug/L	19-OCT-20	18000
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L	19-OCT-20	6700
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L	19-OCT-20	30
Trichloroethylene	<0.50	OWP	0.50	ug/L	19-OCT-20	17
Trichlorofluoromethane	<5.0	OWP	5.0	ug/L	19-OCT-20	2500
Vinyl chloride	<0.50	OWP	0.50	ug/L	19-OCT-20	1.7
o-Xylene	<0.30	OWP	0.30	ug/L	19-OCT-20	
m+p-Xylenes	<0.40	OWP	0.40	ug/L	19-OCT-20	
Xylenes (Total)	<0.50		0.50	ug/L	20-OCT-20	4200
Surrogate: 4-Bromofluorobenzene	88.5		70-130	%	19-OCT-20	
Surrogate: 1,4-Difluorobenzene	100.7		70-130	%	19-OCT-20	
Hydrocarbons						
F1 (C6-C10)	<25	OWP	25	ug/L	19-OCT-20	750

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

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

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L2517204-1 MW4						
Sampled By: CLIENT on 14-OCT-20						
Matrix: WATER						#1
Hydrocarbons						
F1-BTEX	<25		25	ug/L	20-OCT-20	750
F2 (C10-C16)	130	OWP	100	ug/L	19-OCT-20	150
F3 (C16-C34)	450	OWP	250	ug/L	19-OCT-20	500
F4 (C34-C50)	<250	OWP	250	ug/L	19-OCT-20	500
Total Hydrocarbons (C6-C50)	580		370	ug/L	20-OCT-20	
Chrom. to baseline at nC50	YES			No Unit	19-OCT-20	
Surrogate: 2-Bromobenzotrifluoride	92.9		60-140	%	19-OCT-20	
Surrogate: 3,4-Dichlorotoluene	59.8	SURR-ND	60-140	%	19-OCT-20	
L2517204-2 MW2						
Sampled By: CLIENT on 14-OCT-20						
Matrix: WATER						#1
Volatile Organic Compounds						
Acetone	<30	OWP	30	ug/L	20-OCT-20	130000
Benzene	<0.50	OWP	0.50	ug/L	20-OCT-20	430
Bromodichloromethane	<2.0	OWP	2.0	ug/L	20-OCT-20	85000
Bromoform	<5.0	OWP	5.0	ug/L	20-OCT-20	770
Bromomethane	<0.50	OWP	0.50	ug/L	20-OCT-20	56
Carbon tetrachloride	<0.20	OWP	0.20	ug/L	20-OCT-20	8.4
Chlorobenzene	<0.50	OWP	0.50	ug/L	20-OCT-20	630
Dibromochloromethane	<2.0	OWP	2.0	ug/L	20-OCT-20	82000
Chloroform	<1.0	OWP	1.0	ug/L	20-OCT-20	22
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L	20-OCT-20	0.83
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L	20-OCT-20	9600
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L	20-OCT-20	9600
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L	20-OCT-20	67
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L	20-OCT-20	4400
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L	20-OCT-20	3100
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L	20-OCT-20	12
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L	20-OCT-20	17
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	20-OCT-20	17
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	20-OCT-20	17
Methylene Chloride	<5.0	OWP	5.0	ug/L	20-OCT-20	5500
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L	20-OCT-20	140
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	20-OCT-20	
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	20-OCT-20	
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	20-OCT-20	45
Ethylbenzene	<0.50	OWP	0.50	ug/L	20-OCT-20	2300
n-Hexane	<0.50	OWP	0.50	ug/L	20-OCT-20	520
Methyl Ethyl Ketone	<20	OWP	20	ug/L	20-OCT-20	1500000
Methyl Isobutyl Ketone	<20	OWP	20	ug/L	20-OCT-20	580000
MTBE	<2.0	OWP	2.0	ug/L	20-OCT-20	1400
Styrene	<0.50	OWP	0.50	ug/L	20-OCT-20	9100
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	20-OCT-20	28
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	20-OCT-20	15

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

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

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1
L2517204-2 MW2						
Sampled By: CLIENT on 14-OCT-20						
Matrix: WATER						
Volatile Organic Compounds						
Tetrachloroethylene	<0.50	OWP	0.50	ug/L	20-OCT-20	17
Toluene	<0.50	OWP	0.50	ug/L	20-OCT-20	18000
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L	20-OCT-20	6700
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L	20-OCT-20	30
Trichloroethylene	0.76	OWP	0.50	ug/L	20-OCT-20	17
Trichlorofluoromethane	<5.0	OWP	5.0	ug/L	20-OCT-20	2500
Vinyl chloride	<0.50	OWP	0.50	ug/L	20-OCT-20	1.7
o-Xylene	<0.30	OWP	0.30	ug/L	20-OCT-20	
m+p-Xylenes	<0.40	OWP	0.40	ug/L	20-OCT-20	
Xylenes (Total)	<0.50		0.50	ug/L	20-OCT-20	4200
Surrogate: 4-Bromofluorobenzene	87.9		70-130	%	20-OCT-20	
Surrogate: 1,4-Difluorobenzene	100.8		70-130	%	20-OCT-20	
Hydrocarbons						
F1 (C6-C10)	<25	OWP	25	ug/L	20-OCT-20	750
F1-BTEX	<25		25	ug/L	20-OCT-20	750
F2 (C10-C16)	<100		100	ug/L	19-OCT-20	150
F3 (C16-C34)	<250		250	ug/L	19-OCT-20	500
F4 (C34-C50)	<250		250	ug/L	19-OCT-20	500
Total Hydrocarbons (C6-C50)	<370		370	ug/L	20-OCT-20	
Chrom. to baseline at nC50	YES			No Unit	19-OCT-20	
Surrogate: 2-Bromobenzotrifluoride	96.6		60-140	%	19-OCT-20	
Surrogate: 3,4-Dichlorotoluene	82.1		60-140	%	20-OCT-20	

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T3-Non-Potable Ground Water-All Types of Property Uses (Fine)

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

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
SURR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.
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 sediment.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
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.

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).

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

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:

17-801550

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:

Reference Information

Laboratory Definition Code	Laboratory Location	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: L2517204 Report Date: 22-OCT-20

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Water**							
Batch R5256715								
WG3427039-4 DUP		**WG3427039-3**						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	20-OCT-20
WG3427039-1 LCS								
F1 (C6-C10)			106.2		%		80-120	19-OCT-20
WG3427039-2 MB								
F1 (C6-C10)			<25		ug/L		25	19-OCT-20
Surrogate: 3,4-Dichlorotoluene			50.4	SURQC	%		60-140	19-OCT-20
WG3427039-5 MS		**WG3427039-3**						
F1 (C6-C10)			89.8		%		60-140	20-OCT-20
F2-F4-511-WT	**Water**							
Batch R5256711								
WG3425580-2 LCS								
F2 (C10-C16)			100.4		%		70-130	19-OCT-20
F3 (C16-C34)			107.0		%		70-130	19-OCT-20
F4 (C34-C50)			109.6		%		70-130	19-OCT-20
WG3425580-1 MB								
F2 (C10-C16)			<100		ug/L		100	19-OCT-20
F3 (C16-C34)			<250		ug/L		250	19-OCT-20
F4 (C34-C50)			<250		ug/L		250	19-OCT-20
Surrogate: 2-Bromobenzotrifluoride			93.8		%		60-140	19-OCT-20
VOC-511-HS-WT	**Water**							
Batch R5256715								
WG3427039-4 DUP		**WG3427039-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	20-OCT-20
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5256715								
WG3427039-4 DUP		**WG3427039-3**						
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	20-OCT-20
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	20-OCT-20
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	20-OCT-20
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	20-OCT-20
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	20-OCT-20
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	20-OCT-20
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	20-OCT-20
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	20-OCT-20
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	20-OCT-20
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	20-OCT-20
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	20-OCT-20
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	20-OCT-20
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	20-OCT-20
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	20-OCT-20
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	20-OCT-20
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	20-OCT-20
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	20-OCT-20
WG3427039-1 LCS								
1,1,1,2-Tetrachloroethane			91.9		%		70-130	19-OCT-20
1,1,2,2-Tetrachloroethane			104.9		%		70-130	19-OCT-20
1,1,1-Trichloroethane			104.0		%		70-130	19-OCT-20
1,1,2-Trichloroethane			95.0		%		70-130	19-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5256715								
WG3427039-1 LCS								
1,1-Dichloroethane			88.5		%		70-130	19-OCT-20
1,1-Dichloroethylene			99.9		%		70-130	19-OCT-20
1,2-Dibromoethane			93.5		%		70-130	19-OCT-20
1,2-Dichlorobenzene			99.8		%		70-130	19-OCT-20
1,2-Dichloroethane			104.5		%		70-130	19-OCT-20
1,2-Dichloropropane			105.7		%		70-130	19-OCT-20
1,3-Dichlorobenzene			103.7		%		70-130	19-OCT-20
1,4-Dichlorobenzene			102.4		%		70-130	19-OCT-20
Acetone			114.3		%		60-140	19-OCT-20
Benzene			105.2		%		70-130	19-OCT-20
Bromodichloromethane			119.3		%		70-130	19-OCT-20
Bromoform			101.3		%		70-130	19-OCT-20
Bromomethane			133.9		%		60-140	19-OCT-20
Carbon tetrachloride			102.7		%		70-130	19-OCT-20
Chlorobenzene			95.2		%		70-130	19-OCT-20
Chloroform			107.1		%		70-130	19-OCT-20
cis-1,2-Dichloroethylene			110.1		%		70-130	19-OCT-20
cis-1,3-Dichloropropene			101.6		%		70-130	19-OCT-20
Dibromochloromethane			89.4		%		70-130	19-OCT-20
Dichlorodifluoromethane			92.6		%		50-140	19-OCT-20
Ethylbenzene			95.8		%		70-130	19-OCT-20
n-Hexane			103.4		%		70-130	19-OCT-20
m+p-Xylenes			95.7		%		70-130	19-OCT-20
Methyl Ethyl Ketone			113.8		%		60-140	19-OCT-20
Methyl Isobutyl Ketone			114.8		%		60-140	19-OCT-20
Methylene Chloride			105.4		%		70-130	19-OCT-20
MTBE			108.6		%		70-130	19-OCT-20
o-Xylene			101.8		%		70-130	19-OCT-20
Styrene			91.0		%		70-130	19-OCT-20
Tetrachloroethylene			96.3		%		70-130	19-OCT-20
Toluene			97.6		%		70-130	19-OCT-20
trans-1,2-Dichloroethylene			100.4		%		70-130	19-OCT-20
trans-1,3-Dichloropropene			96.2		%		70-130	19-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5256715								
WG3427039-1 LCS								
Trichloroethylene			106.3		%		70-130	19-OCT-20
Trichlorofluoromethane			96.6		%		60-140	19-OCT-20
Vinyl chloride			111.0		%		60-140	19-OCT-20
WG3427039-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	19-OCT-20
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	19-OCT-20
1,1,1-Trichloroethane			<0.50		ug/L		0.5	19-OCT-20
1,1,2-Trichloroethane			<0.50		ug/L		0.5	19-OCT-20
1,1-Dichloroethane			<0.50		ug/L		0.5	19-OCT-20
1,1-Dichloroethylene			<0.50		ug/L		0.5	19-OCT-20
1,2-Dibromoethane			<0.20		ug/L		0.2	19-OCT-20
1,2-Dichlorobenzene			<0.50		ug/L		0.5	19-OCT-20
1,2-Dichloroethane			<0.50		ug/L		0.5	19-OCT-20
1,2-Dichloropropane			<0.50		ug/L		0.5	19-OCT-20
1,3-Dichlorobenzene			<0.50		ug/L		0.5	19-OCT-20
1,4-Dichlorobenzene			<0.50		ug/L		0.5	19-OCT-20
Acetone			<30		ug/L		30	19-OCT-20
Benzene			<0.50		ug/L		0.5	19-OCT-20
Bromodichloromethane			<2.0		ug/L		2	19-OCT-20
Bromoform			<5.0		ug/L		5	19-OCT-20
Bromomethane			<0.50		ug/L		0.5	19-OCT-20
Carbon tetrachloride			<0.20		ug/L		0.2	19-OCT-20
Chlorobenzene			<0.50		ug/L		0.5	19-OCT-20
Chloroform			<1.0		ug/L		1	19-OCT-20
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	19-OCT-20
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	19-OCT-20
Dibromochloromethane			<2.0		ug/L		2	19-OCT-20
Dichlorodifluoromethane			<2.0		ug/L		2	19-OCT-20
Ethylbenzene			<0.50		ug/L		0.5	19-OCT-20
n-Hexane			<0.50		ug/L		0.5	19-OCT-20
m+p-Xylenes			<0.40		ug/L		0.4	19-OCT-20
Methyl Ethyl Ketone			<20		ug/L		20	19-OCT-20
Methyl Isobutyl Ketone			<20		ug/L		20	19-OCT-20
Methylene Chloride			<5.0		ug/L		5	19-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5256715								
WG3427039-2 MB								
MTBE			<2.0		ug/L		2	19-OCT-20
o-Xylene			<0.30		ug/L		0.3	19-OCT-20
Styrene			<0.50		ug/L		0.5	19-OCT-20
Tetrachloroethylene			<0.50		ug/L		0.5	19-OCT-20
Toluene			<0.50		ug/L		0.5	19-OCT-20
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	19-OCT-20
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	19-OCT-20
Trichloroethylene			<0.50		ug/L		0.5	19-OCT-20
Trichlorofluoromethane			<5.0		ug/L		5	19-OCT-20
Vinyl chloride			<0.50		ug/L		0.5	19-OCT-20
Surrogate: 1,4-Difluorobenzene			100.0		%		70-130	19-OCT-20
Surrogate: 4-Bromofluorobenzene			87.7		%		70-130	19-OCT-20
WG3427039-5 MS		**WG3427039-3**						
1,1,1,2-Tetrachloroethane			93.7		%		50-140	20-OCT-20
1,1,2,2-Tetrachloroethane			124.5		%		50-140	20-OCT-20
1,1,1-Trichloroethane			105.1		%		50-140	20-OCT-20
1,1,2-Trichloroethane			92.8		%		50-140	20-OCT-20
1,1-Dichloroethane			87.5		%		50-140	20-OCT-20
1,1-Dichloroethylene			98.1		%		50-140	20-OCT-20
1,2-Dibromoethane			90.5		%		50-140	20-OCT-20
1,2-Dichlorobenzene			99.8		%		50-140	20-OCT-20
1,2-Dichloroethane			101.1		%		50-140	20-OCT-20
1,2-Dichloropropane			104.1		%		50-140	20-OCT-20
1,3-Dichlorobenzene			102.3		%		50-140	20-OCT-20
1,4-Dichlorobenzene			102.6		%		50-140	20-OCT-20
Acetone			102.6		%		50-140	20-OCT-20
Benzene			104.5		%		50-140	20-OCT-20
Bromodichloromethane			116.7		%		50-140	20-OCT-20
Bromoform			106.6		%		50-140	20-OCT-20
Bromomethane			126.2		%		50-140	20-OCT-20
Carbon tetrachloride			103.9		%		50-140	20-OCT-20
Chlorobenzene			95.4		%		50-140	20-OCT-20
Chloroform			106.7		%		50-140	20-OCT-20
cis-1,2-Dichloroethylene			109.1		%		50-140	20-OCT-20

Quality Control Report

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R5256715								
WG3427039-5 MS		**WG3427039-3**						
cis-1,3-Dichloropropene			96.1		%		50-140	20-OCT-20
Dibromochloromethane			88.4		%		50-140	20-OCT-20
Dichlorodifluoromethane			79.4		%		50-140	20-OCT-20
Ethylbenzene			98.2		%		50-140	20-OCT-20
n-Hexane			100.5		%		50-140	20-OCT-20
m+p-Xylenes			98.1		%		50-140	20-OCT-20
Methyl Ethyl Ketone			98.0		%		50-140	20-OCT-20
Methyl Isobutyl Ketone			100.5		%		50-140	20-OCT-20
Methylene Chloride			104.0		%		50-140	20-OCT-20
MTBE			108.6		%		50-140	20-OCT-20
o-Xylene			103.7		%		50-140	20-OCT-20
Styrene			91.9		%		50-140	20-OCT-20
Tetrachloroethylene			99.4		%		50-140	20-OCT-20
Toluene			99.7		%		50-140	20-OCT-20
trans-1,2-Dichloroethylene			99.2		%		50-140	20-OCT-20
trans-1,3-Dichloropropene			91.9		%		50-140	20-OCT-20
Trichloroethylene			106.7		%		50-140	20-OCT-20
Trichlorofluoromethane			94.0		%		50-140	20-OCT-20
Vinyl chloride			102.7		%		50-140	20-OCT-20

Quality Control Report

Workorder: L2517204 Report Date: 22-OCT-20

Client: LANDTEK LIMITED
205 NEBO ROAD, UNIT 3
HAMILTON ON L8W 2E1
Contact: PAUL BLUNT

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
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
SURQC	Surrogate recovery marginally exceeded DQO in QC sample (MB, LCS, RM, or MS). Surrogates are less important for QC samples than for test samples. Refer to regular (non-surrogate) analyte results in affected QC sample for assessment of potential impacts to those analytes.

Hold Time Exceedances:

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

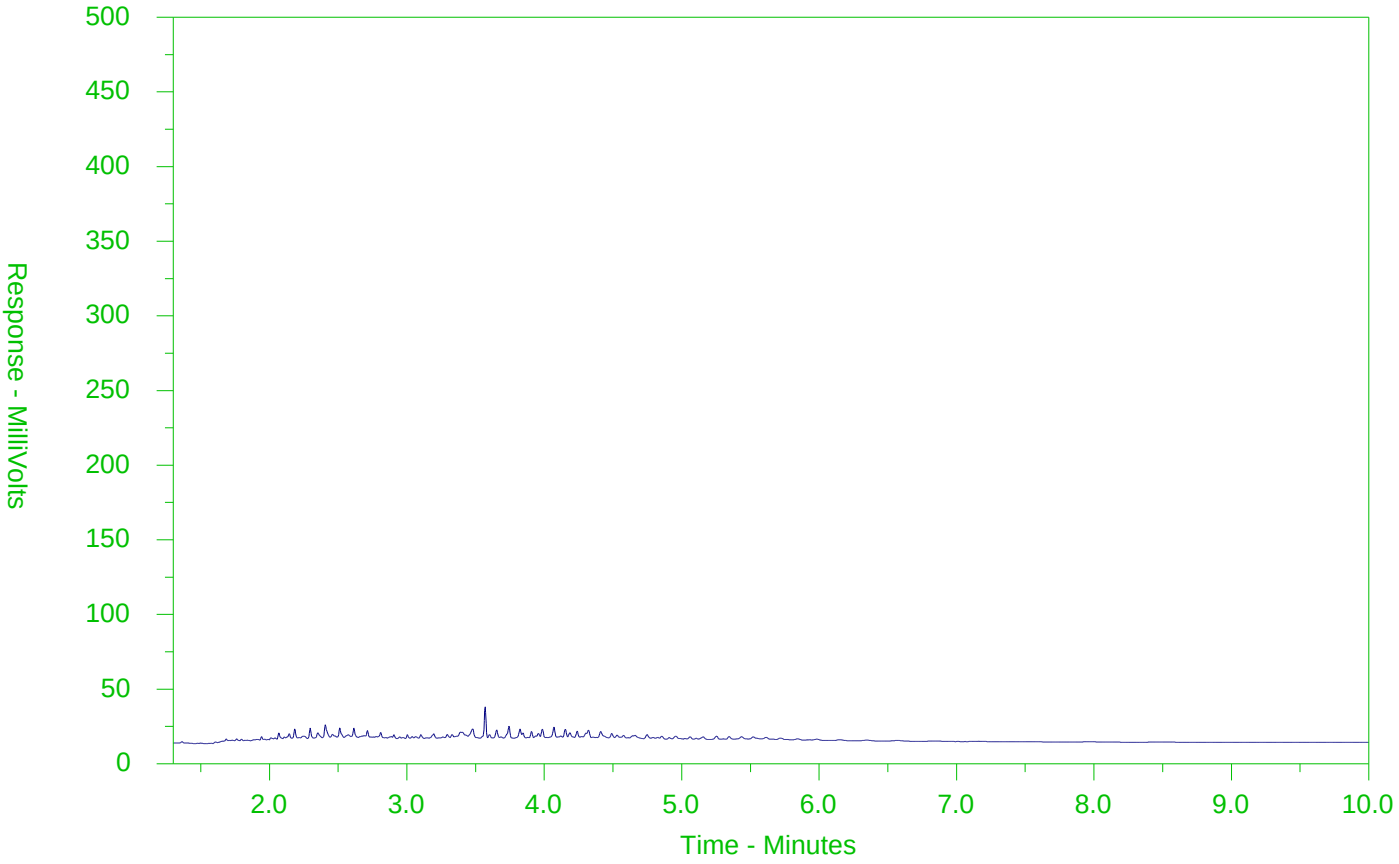
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where 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: L2517204-1
Client Sample ID: MW4



←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.

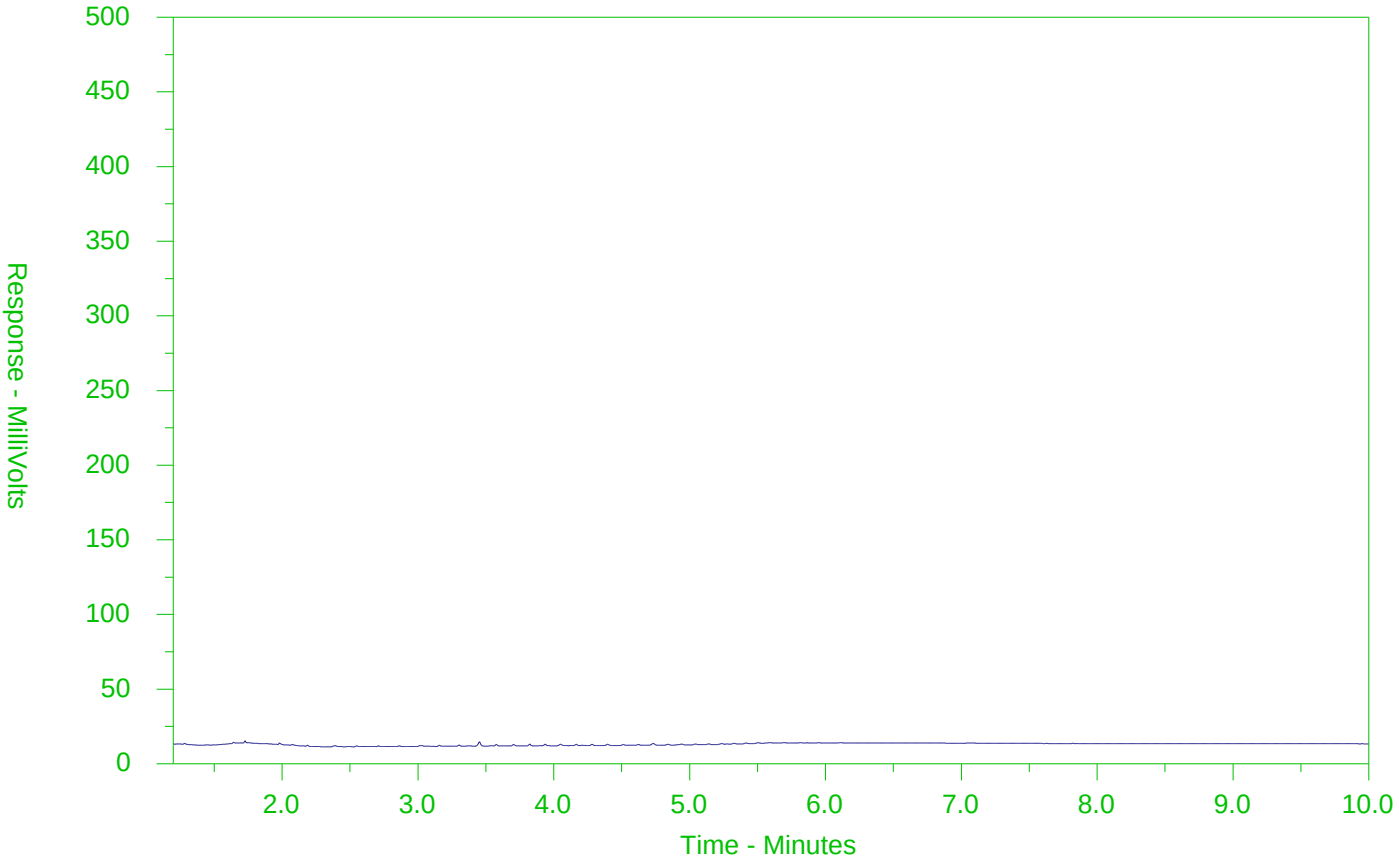
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: L2517204-2
Client Sample ID: MW2



←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.