Phase II Environmental Site Assessment

191 – 219 Main Street, Winnipeg, Manitoba
WX1911101

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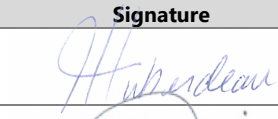
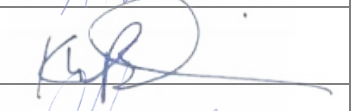
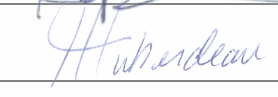
Environment & Infrastructure Solutions
440 Dovercourt Drive, Winnipeg Manitoba, Canada R3Y 1N4
Phone: (204) 488-2997
www.woodplc.com

Phase II Environmental Site Assessment
191 – 219 Main Street, Winnipeg, Manitoba
Wood Project Number – WX1911101

Prepared for:	Earl's Restaurants Ltd. 200-425 Carrall Street Vancouver, BC		
Contact:	Sharilyn Mason		
Report Distribution:			
Red River Co-operative Limited:	Electronic Copy		
Wood:	Electronic Copy		
	Name	**Job Title**	**Signature**
Prepared by:	Justin Huberdeau C.E.T.	Senior Environmental Technologist	
Reviewed by:	Kevin Beechinor BSc.	Senior Environmental Scientist	
Project Manager:	Justin Huberdeau C.E.T.	Senior Environmental Technologist	
Other Technical Contributors			

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0	7 Aug 2020	DRAFT
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Executive Summary

Wood Environment & Infrastructure Solutions, a division of Wood Canada Limited (Wood), was retained by Earls Restaurants Ltd. ("Client") to conduct a Phase II Environmental Site Assessment (ESA) of the properties with the civic addresses of 191,211 and 219 Main Street in Winnipeg, Manitoba (herein referred to as "the Site").

The objective of the Phase II ESA was to assess the current soil and groundwater conditions at the Site, based on areas of potential and actual environmental concerns (APECs) identified through a previous Phase I ESA completed by Wood in August 2020. The Phase I ESA identified five APECs: A historical garage located within the northern portion of the Site, a historical laundry/dry-cleaning operation located within the southern portion of the Site, the reported historical presence of four fuel underground storage tanks (USTs) and one fuel oil UST located within the southern portion of the Site, a historical gas station with three USTs located within the central portion of the Site and historical and current CN rail lines and yard located adjacent to the east of the Site.

The Phase II ESA drilling program was conducted on 16 July 2020 and consisted of advancing eight test holes (TH20-01 to TH20-08). The test holes were completed to depths ranging from 6.1 m to 12.2 m bgl with a GeoProbe drill rig supplied and operated by Maple Leaf Drilling Ltd. of Winnipeg, Manitoba. Three of the eight test holes were completed as monitoring wells. A total of 12 soil samples and three groundwater samples were submitted for chemical laboratory analysis.

Results of the Phase II ESA indicate that PHC impacts were identified in soil samples collected from test holes TH20-03, TH20-04 and TH20-05, all centrally located within the Site, in the area of the former gas station location. Additionally, PHC impacts were identified in groundwater samples collected from monitoring wells TH20-05 and TH20-08. Monitoring well TH20-05 is located east/southeast of the former gas station location and monitoring well TH20-08 is located within the northeastern portion of the Site.

VOC and PAH constituent concentrations from soil and groundwater samples collected from the Site were all less than the applicable guideline values. It should also be noted that the hexane concentration in the groundwater sample collected from monitoring well TH20-05 was greater than the MCC reporting standard.

PHC impacts are inferred to be associated with the historical presence and operations of the gas/service station located on-Site between approximately 1925 - 1980.

Based on the current configuration of the Site, the identified PHC impacts do not pose an immediate threat to human health as no buildings currently exist in these areas of the Site where impacts have been identified. However, if the Site configuration were to change, and a building be planned for construction in these areas of the Site, the risks should be re-evaluated, and further assessment and/or appropriate risk mitigation measures be implemented.

If there is a requirement for a quantifiable description of the PHC impacted soils at the Site, Wood recommends additional drilling south of test holes TH20-03 and TH20-05 in order to achieve full delineation in a southerly direction.

As exceedances of the applicable guidelines and Reporting Standards were identified, the report is required to be submitted to MCC for review and a remedial action plan will need to be prepared.

APEC 1 – Historical Garage located in the Northern Portion of the Site.

Results of the Phase II ESA indicated that groundwater within the northeastern portion of the Site, within monitoring well TH20-08, appears to have been negatively impacted by historical off-Site activities. Soil impacts were not identified with TH20-08 nor was there evidence of impacts noted during the drilling program.

It is unclear if the groundwater impacts are a result of the historical garage located in the northern portion of the Site (APEC 1) or related to the historical CN fuel UST located east of the northern portion of the Site (APEC 5).

The groundwater concentrations exceed applicable criterial protective of human health and indoor vapour inhalation. In Woods opinion, as no buildings currently exist in this area of the Site, the risk associated with the groundwater PHC impacts identified in monitoring well TH20-08, during the current Phase II ESA are currently low. However, if the Site configuration were to change, and a building be planned for construction in this area of the Site, the risk should be re-evaluated.

APEC 2 – Historical Laundry/Dry-Cleaning operation located on-Site.

Based on the results of the Phase II ESA, it does not appear the historical presence and operation of the former on-Site laundry/dry-cleaning business has negatively affected the soil or groundwater at the Site.

The majority of the VOC constituent concentrations from soil and groundwater samples submitted from test holes TH20-01 and TH20-02, including common dry-cleaning chemicals tetrachloroethylene (perchloroethylene - PCE) and trichloroethene (TCE) were found to be below the laboratory detection limits.

APEC 3 – Historical Underground Fuel Storage Tanks (USTs).

Based on the results of the Phase II ESA, it does not appear the reported presence of historical fuel and fuel oil tanks within the southern portion of the Site have negatively affected the soil or groundwater at the Site.

Although detectable concentrations of select PHC constituents were identified in soil and groundwater samples submitted from test holes TH20-01 and TH20-02, concentrations were found to be well below the applicable guideline values.

APEC 4 – Historical Gas Station located on-Site.

Results of the Phase II ESA indicate that soil and groundwater within the central portion of the Site has been negatively impacted by the historical on-Site gas station. PHC constituent concentrations greater than the applicable guideline values were identified in test holes TH20-03, TH20-04 and TH20-05 at depths of 0.9 m bgl, 3.4 m bgl and 2.4 m bgl respectfully. The test holes were located east and south of the former gas station location.

It appears that delineation of the PHC impacts has been achieved north of the former gas station location as PHC constituent concentrations in samples submitted from TH20-06 and TH20-07 were less than the laboratory detection limits or below the applicable guideline values. Additionally, it appears impacts extend east/southeast of the former gas station location up to the eastern Site boundary as PHC constituent concentrations greater than the applicable guideline values were identified in soil and groundwater samples collected from TH20-04 and TH20-05. Delineation to the south of the former gas station location has not been achieved as PHC constituent concentrations greater that the applicable

guideline values were identified in soil samples collected from TH20-03. Although, a soil sample submitted from BH-11, approximately 30 m southeast of TH20-03, completed during the 1993 Phase II ESA, had BTEX concentrations less than the current applicable guidelines. It is also inferred, based on the location of TH20-03 and from results of historical investigations, that PHC impacts extend close to or beyond the western Site boundary adjacent to the former gas station location.

APEC 5 – Historical and Current CN Rail Lines and Yard.

Based on the results of the Phase II ESA, it is possible that historical activities along the CN rail lines, potentially related to the historical CN UST, have impacted the Site. Although PHC and PAH constituent concentrations from soil samples collected from TH20-06 and TH20-08 were below the applicable guidelines, the PHC F2 fraction concentration from a groundwater sample collected from monitoring well TH20-08 was greater than the applicable guideline. As well elevated concentrations of PHC F3 fraction (no guideline) were also detected. The groundwater impacts may also be a result of the historical garage located in the northern portion of the Site (APEC 1), however additional off-Site investigations would be needed to further define the contaminant plume and determine the source.

The groundwater concentrations exceed applicable criterial protective of human health and indoor vapour inhalation. In Woods opinion, as no buildings currently exist in this area of the Site, the risk associated with the groundwater PHC impacts identified in monitoring well TH20-08, during the current Phase II ESA are currently low. However, if the Site configuration were to change, and a building be planned for construction in this area of the Site, the risk should be re-evaluated.

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1.0 Introduction

Ms. Sharilyn Mason of Earls Restaurants Ltd. ("Client") authorized Wood Environment & Infrastructure Solutions, a division of Wood Canada (Wood) to conduct a Phase II Environmental Site Assessment (ESA) of the properties with the municipal addresses of 191, 211 and 219 Main Street in Winnipeg, Manitoba (herein referred to as "the Site"). The location of the Site is shown on Figure 1.

The objective of the Phase II ESA was to assess the current soil and groundwater conditions at the Site in support of a possible property transaction.

2.0 Background

2.1 Site Location and Surrounding Land Use

The Site is located at the northeast corner of Main Street and York Avenue in the Fort Rouge-East Fort Garry ward of Winnipeg, Manitoba. The Site was occupied by an Earls Restaurant and associated parking lots at the time of the Site visit. Surrounding land use consists of commercial land use to the north, industrial land use to the east, commercial and residential land use to the west and commercial land use to the south. Summaries of the Site and surrounding land uses are included in Table 1.

2.2 Previous Investigations

Several Phase I and II ESAs have been completed at the Site or portions of the Site between 1993 and 2020. The test hole locations associated with the historical subsurface investigations are shown on Figure 2.

The most recent Phase I ESA was completed by Wood for the Site in Aug 2020 with the results provided in the report entitled: "Phase I Environmental Site Assessment, 191,211 and 219 Main Street, Winnipeg, Manitoba". The Wood 2020 Phase I ESA summarized the previous investigations in order to provide a summary of all previous investigations. Summaries are provided in the Phase I ESA, and based on the results of the Phase I ESA the following areas of potential or actual environmental concerns (APECs) were identified.

APEC 1 – Historical Garage located in the Northern Portion of the Site.

The 1927 Fire Insurance Plan shows two fuel storage tanks were once located within a building occupying the property north of the Site. The building was labelled as a garage and the tanks were approximately 20 m and 70 m north of the north Site boundary. The building also extended over the northern Site boundary and on to the Site (15 m). Additionally, elevated petroleum hydrocarbon (PHC) soil vapours and soil staining were identified in a test hole (TH13-01) advanced along the northern Site boundary as part of a Phase I/II ESA completed in 2014 at the Site. Impacts to the Site as a result of the historical operations of the garage and the presence of the historical fuel storage tanks cannot be discounted.

APEC 2 – Historical Laundry/Dry-Cleaning operation located on-Site.

The Henderson Street Directories and Fire Insurance Plans indicate that a laundry/dry-cleaning operation was located at 181/191 Main Street, within the southern portion of the Site from between approximately 1910 to at least 1955. Historical laundry operations routinely employed various volatile organic compounds (VOC) and petroleum-based cleaners in the cleaning process, including tetrachloroethylene, kerosene and white gasoline. The assessments completed to date have not directly assessed soil and/groundwater conditions on the 181/191 Main Street portion of the Site due to accessibility of

potential test hole locations in and around the Site building. Therefore, potential impacts associated with the historical laundry operations (possible dry-cleaning chemicals) has not been fully investigated.

APEC 3 – Historical Underground Fuel Storage Tanks (USTs).

Previous environmental site assessment reports for the Site indicate the historical presence of four fuel USTs and a fuel oil UST located within the southern portion of the Site, in the vicinity of the current Earls restaurant building. No other information was available for Woods review regarding these USTs, and it is unclear what historical operation these USTs were associated with. The 1993 Phase II ESA completed by NTL does not mention the presence of these tanks.

APEC 4 – Historical Gas Station located on-Site.

The Henderson Street Directories and Fire Insurance Plans indicated that a gas station with three USTs was located within the northcentral (211 Main Street) portion of the Site from approximately 1925 to 1980. There have been three subsurface environmental site assessments that have been completed at the 211 Main Street portion of the Site and all have identified some level of PHC impacted soils. The impacts were inferred to be associated with the former Gas station. However, the full extent of the impacts has not been determined.

APEC 5 – Historical and Current CN Rail Lines and Yard.

Fire Insurance Plans indicated that several CN rail lines and freight storage sheds were located east of the Site since prior to 1918. Based on aerial photographs, the freight storage sheds were removed sometime between 1988 and 1997 along with several rail lines. As well, a historical fuel UST with associated fuel lines and dispenser was once located approximately 30 m east of the northern portion of the Site, within the CN yard (This tank was later removed in 1998). The use and duration of service of the UST and infrastructure was not known. Confirmatory soil sample laboratory results were reported to be have PHC constituent concentrations below the applicable industrial guidelines of the time. It was noted that samples with the highest vapour concentrations were not submitted for analysis and it was indicated in the report that lateral migration of hydrocarbons in a southwest direction was evident. Additionally, elevated PHC soil vapours and soil staining were identified in a test hole (TH13-03) advanced along the eastern Site boundary as part of the 2014 Phase I/II ESA. Impacts to the Site as a result of the historical rail operations and presence of the historical fuel UST east of the Site cannot be discounted.

3.0 Scope of Work

Upon review of the July 2020 Phase I ESA, the Client requested a scope of work for a Phase II ESA. Wood proposed the following scope of work for the Phase II ESA at the Site:

- Wood was to arrange for the location of underground public utilities in advance of test hole drilling. Wood was also to arrange for a private utility locator, in addition to public utility locators for the area.
- Conducted a test hole drilling program, including the advancement of eight test holes to depths ranging from 6.1 to 12.2 meters below grade level (m bgl).
  - Three test holes (6.1 m – 12.2 m bgl) were to be advanced around the existing Earl's restaurant building (former laundry operation/fuel USTs).
  - Three test holes (6.1 m bgl) were to be advanced around the former on-Site gasoline station and related infrastructure in the central portion of the Site. The test holes were to be placed to help

delineate the already identified PHC impacts in the area of the former pump islands.
  - Two test holes (6.1 m bgl) were to be advanced along the northern Site boundary to address potential on-Site impacts as a result of the former garage and off-Site fuel tanks.
- Three of the selected test holes were to be completed as groundwater monitoring wells.
- Soil samples were to be recovered during test hole drilling at approximately 0.8 m intervals to the maximum depth of the test holes. Each soil sample was to be field measured for combustible vapour concentrations.
- Soil samples with the highest field-measured combustible vapour concentration for each test hole were to be submitted for laboratory analysis of benzene, toluene, ethylbenzene, xylenes (BTEX) and petroleum hydrocarbon (PHC) fractions F1 to F4 (8 in total). Up to three soil samples will also be submitted for laboratory analysis of volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs).
- Two soil samples collected from the Site were also to be selected for grain size analysis to confirm the grain size designation of the Site.
- A GPS survey of the test hole/monitoring well locations was to be conducted using a survey grade Trimble GPS unit.
- Approximately two weeks following drilling, a monitoring program of the newly installed monitoring wells was conducted consisting of the following:
  - Measurement of monitoring well vapour concentrations.
  - Determination of the presence and thickness of non-aqueous phase liquid (NAPL).
  - Measurement of groundwater levels.
  - Measurement of groundwater vapour concentrations.
  - Collection of three groundwater samples for laboratory analysis of BTEX and PHC fractions F1 to F4. Two of the samples were also to be analysed for VOC and PAH concentrations.
- An electronic report, summarizing the methodology and findings of the Phase II ESA, was to be prepared.

The investigation was completed as per the scope of work with the exception that the placement of select test holes was modified:

- Two test holes were advanced along the north exterior wall of the existing Site building. A test hole could not be placed to the west, south or east of the Site building due to underground utilities and Site infrastructure.
- One test hole was advanced along the northern Site boundary.
- Two test holes were advanced centrally along the eastern Site boundary.

4.0 Investigative Methodology

4.1 Hazard Assessment and Service Locations

Prior to the start of the intrusive investigation, Wood completed a site-specific health and safety plan to identify hazards, project health and safety requirements, work site classification, and personal protective equipment requirements.

The locations of buried and overhead services were obtained prior to the intrusive investigation. The Manitoba Click Before You Dig program was contacted, which notified Manitoba Hydro and Bell Manitoba Telecommunications System (BellMTS) in order to determine the location of underground and overhead utilities that may conflict with proposed drilling locations. The public utilities visited the Site and marked their respective underground utility locations. The City of Winnipeg, Rogers Communications Inc., Telus Communications Company, Zayo Canada Inc. and Shaw were also contacted to determine the location of their underground utilities. McCain Electric, private utility locators, were contacted to identify and mark private underground utility/facility locations.

A pre-job safety meeting was conducted with the subcontractors and Wood staff at the commencement of the field activities.

4.2 Test Hole Drilling and Soil Sample Collection

The Phase II ESA drilling program was conducted on 16 July 2020 and consisted of advancing eight test holes (TH20-01 through TH20-08). The test holes were completed to depths ranging from 6.1 m bgl to 12.2 m bgl with a GeoProbe drill rig supplied and operated by Maple Leaf Drilling Ltd. of Winnipeg, Manitoba. Three of the test holes were completed as groundwater monitoring wells. The location of the test holes was as follows:

- Two test holes (TH20-01 and TH20-02) were advanced (12.2 m bgl) immediately northeast and northwest of the existing Site building in the area of the former laundry and USTs (APECs 2 and 3);
- Three test holes (TH20-03, TH20-04 and TH20-07) were advanced (6.1 m bgl) centrally within the Site, in the area of the former gas station operation (APEC 4);
- Two test holes (TH20-05 and TH20-06) were advanced (6.1 m bgl) centrally near the eastern Site boundary in the area of the former gas station and off-Site CN rail property (APECs 4 and 5); and
- One test hole (TH20-08) was advanced (6.1 m bgl) at the northeast corner of the Site in order to assess the historical garage to the north and the off-Site CN property (APECs 1 & 5).

The test hole locations are shown on Figure 2.

During drilling, soil samples were collected at 0.8 m intervals and classified according to the Modified Unified Soil Classification System and visually assessed for evidence of impacts. Soil samples were collected and split into three portions: one portion was placed in disposable sampling bags (for field screening), a second portion was placed in laboratory prepared glass jars (for moisture analyses), and a third portion of the soil sample was placed into 40 mL vials, which were pre-charged with methanol solution (for possible laboratory analyses). Soil samples were field screened for combustible organic vapours using ambient temperature headspace (ATH) techniques and an RKI™ Eagle flame ionization detector (FID) set in the no methane response mode.

The ATH method involved partially filling and sealing a disposable sampling bag with soil and allowing the vapours to accumulate for approximately 20 minutes prior to analyzing the headspace. Accumulated

vapours were measured in parts per million total organic vapours (ppm_v). Soil samples were retained in laboratory prepared sample jars for possible laboratory analyses. Soil samples were stored in an insulated cooler while on-Site and during transport to the laboratory. The field protocols and quality assurance/quality control (QA/QC) procedures utilized by Wood were in accordance with standard industry protocols.

4.3 Monitoring Well Installation and Sampling

As part of the Phase II ESA, three test holes were completed as groundwater monitoring wells in order to measure subsurface vapour levels, establish groundwater conditions at the Site, and to allow for groundwater sampling. The monitoring wells were constructed with 50 mm diameter Schedule 40 PVC, No. 10 slot well screen and 50 mm diameter Schedule 40 PVC solid riser pipe to the ground surface. The monitoring well construction details are shown on the applicable test hole logs (Appendix A).

The groundwater monitoring program was conducted on 24 July 2020 and included the following:

- Measurement of monitoring well vapour concentrations.
- Determination of the presence and thickness of NAPL.
- Determination of groundwater levels.
- Collection of groundwater samples.

Monitoring well vapour concentrations were measured with an FID and groundwater levels were measured with an electronic interface probe.

The monitoring wells were partially purged, and groundwater samples were collected using a disposable bailer. Due to the unknown groundwater recovery in the monitoring wells a complete purge of the monitoring wells was not completed. The collected groundwater samples were placed in clean, certified bottles provided by the laboratory, stored in an insulated cooler with ice while on-Site and during transport to the laboratory. The field protocols and QA/QC procedures utilized by Wood during Site monitoring were in accordance with standard industry protocols.

4.4 Laboratory Analysis

A total of 12 soil samples and three groundwater samples were submitted for laboratory chemical analysis. Two soil sample were also submitted for grain size analysis. The soil samples were selected for analysis based on field observations, field headspace screening results, and stratigraphic relationship to the potential zone(s) of impact.

Samples were submitted for laboratory analysis to ALS Environmental in Winnipeg, Manitoba which is accredited by the Canadian Association Laboratory Accreditation Inc. (CALA) for testing in accordance with the International Standard ISO/IEC 17025. The laboratory QA/QC is provided in Appendix B.

5.0 Assessment Criteria

5.1 Applicable Guidelines

Manitoba Conservation and Climate (MCC) has adopted the principles established by Canadian Council of Ministers of the Environment (CCME) for environmental management and assessment of sites in Manitoba, in addition to the requirements of the Manitoba Contaminated Sites Remediation Act (CSRA) and the Manitoba Contaminated Sites Remediation Regulation M.R. 105/97 (CSRR). The ESA process in Manitoba is outlined in the MCC June 2016 Guideline document "Environmental Site Assessments in

Manitoba" which discusses the derivation process to determine the applicable Assessment Guidelines and CSRR Reporting Standards for potentially contaminated soil, groundwater, surface water or sediment.

The Assessment Guidelines for the Site are used to determine the significance of risk to human health and the environment associated with the contamination discovered by an ESA and what future action is recommended to address the risk for the site. The Assessment Guidelines can be derived primarily from the Environmental Quality Guidelines (EQGs) published by CCME; however, should the CCME not provide adequate information or guidance, documents from other jurisdictions may be used, provided they are supported as the most scientifically valid Assessment Guidelines for the Site.

The following documents produced by CCME were selected as being applicable for assessment of the Site dependant on the contaminants of concern, pathways, and receptors:

- CCME 1999 (updates to 2018). Canadian Environmental Quality Guidelines (EQGs).
- CCME 2001 (revised 2008). Canada-Wide Standards (CWS) for Petroleum Hydrocarbons in Soil.

The EQGs for water are for specific uses or exposure scenarios: recreational use, protection of aquatic life, and protection of agricultural use, while Health Canada's February 2017 Guidelines for Canadian Drinking Water Quality (GCDWQ's) apply to potable water. As groundwater can be present with no appreciable use or not subjected to the specific exposure scenarios listed, groundwater assessment may default to other guidelines for comparison purposes. The Federal Contaminated Sites Action Plan (FCSAP), established to help federal departments and agencies to address federal contaminated sites, has devised the following document for groundwater assessment:

- FCSAP (2016). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQGs) for Federal Contaminated Sites, Version 4.

The FCSAP document is based on criteria developed by CCME and the Provinces of Alberta, Ontario, and British Columbia. It should be noted that CCME is currently developing groundwater quality guidelines, and as such, FCSAP is not planning to update its document in the interim period before the CCME publishes the new guidelines and recommended that users employ the sources listed in the FIGQG document to verify their groundwater quality values to ensure accuracy and the most up-to-date information. The Province of Alberta has updated their guidelines (January 2019), which is not reflected in the FCSAP document. Therefore, any FCSAP guideline which are based on the Province of Alberta criteria will be revised according to the Alberta Tier 1 Soil and Groundwater Remediation Guidelines (February 2019).

As determined by CCME (A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines 2006), a tiered framework can be employed for the screening and assessment of contaminated sites. The framework relies on generic guidelines (Tier 1) and site-specific objectives (Tiers 2 and 3). The generic guidelines are simple numerical values, based on generic scenarios developed for different land uses, and employ conservative assumptions. Generic guidelines help evaluate the relative risk posed by contaminants at a site but may not always be an appropriate indication of actual risk based on site conditions. Site-specific remediation objectives may be developed, either by modifying (within limits) the generic remediation objectives based on site-specific conditions (Tier 2), or by conducting a human health and/or ecological risk assessment (Tier 3).

The most common assessment guideline approach used in Manitoba is the Tier 2 protocol employing published individual guidelines based on the pathways and/or receptors that could be applicable to the Site. Adequate information must be acquired during the investigation to justify the inclusion or exclusion

of each of the exposure pathways. The published guidelines (CCME) provide guidance as to what information is needed to determine if a pathway and/or receptor is applicable to a site or if it can be excluded.

Based on the listed published guideline documents (and their precursors), Wood conducted an evaluation of the applicable exposure pathways, land uses, key receptors and a visual evaluation of the predominant soil texture at the Site. The evaluation was conducted in accordance with CCME 2006 protocols and did not include the modification or recalculation of the formulas used to derive the Assessment Guideline values. The most stringent of the applicable exposure pathway guideline values was employed for assessment of each contaminant in soil and groundwater.

5.1.1 Land Use

CCME has developed four generic land uses that have been adopted for use, where applicable, within the above noted guidelines. A generic land use scenario is envisioned for each category based on the normal activities on these lands. The four land uses as defined by CCME are:

Agricultural lands: Agricultural land encompasses a wide range of activities including dairy, livestock and/or crop production. Most farms include a homestead, so the possible presence of an on-site residence (similar to those specified for residential/parkland sites, below) is considered in the default scenario. Agricultural lands are generally accessible by the farmer and his/her family members, including children, which represent the more sensitive human receptor category. Therefore, the critical human receptor in the agricultural land use category is assumed to be a toddler who receives 100% of his/her daily intake of soil and drinking water (groundwater) from the property.

Residential/Parkland: The generic residential property is a typical detached, single family home with a backyard where children, particularly toddlers, play. The critical receptor assumed on a residential property is a toddler who receives 100% of his/her daily intake of soil, drinking water (groundwater), and air (indoors) from the property. Separate guidelines have been developed for two house foundation construction styles: below grade concrete foundation wall and floor slab (basement) and concrete slab-on-grade foundation. Parks may serve as areas for children's play and other family activities and are therefore also included in the residential land use category.

Commercial: Commercial properties span a wide variety of uses with varying degrees of public access. For purposes of criteria, the generic commercial property is assumed to contain a day-care facility, a sensitive commercial property use that is permitted in many municipal jurisdictions in Canada. It is assumed that the critical receptor (toddler) spends a substantial portion of the weekdays at a day-care. In particular, it is assumed that the toddler spends 10 hours per day, 5 days per week for 48 weeks per year at the day-care. The toddler thereby receives an amount of his/her daily intake of drinking water (groundwater), and air (indoors) from the commercial property proportional to the number of hours per day, days per week and weeks per year spent at the facility. Intake via direct contact with soil (soil ingestion and dermal contact) is proportional to the days per week and weeks per year spent at the facility. Most commercial buildings are constructed with concrete slab-on-grade foundations.

Industrial: Industrial properties span a wide variety of uses but generally do not permit direct public access and therefore, children are not likely or frequently present. For purposes of deriving criteria, the generic industrial property is assumed to be a site with a building frequented by an adult worker who spends 10 hours per day, 5 days per week for 48 weeks per year on the property. The adult receptor thereby receives an amount of his/her daily intake of drinking water (groundwater), and air (indoors) from

the industrial property proportional to the number of hours per day, days per week and weeks per year spent at the facility. Intake via direct contact with soil (soil ingestion and dermal contact) is proportional to the days per week and weeks per year spent at the facility. Most industrial buildings are constructed with concrete slab-on-grade foundations.

The Site is currently occupied by a commercial restaurant building and therefore a commercial land use as defined by CCME will be applied to the Site.

5.1.2 Grain Size Analysis

The applicable CCME soil quality guidelines are selected based on soil grain size (coarse-grained vs. fine-grained soils). Fine-grained soils are defined as having a median grain size of less than or equal to 75 µm; coarse-grained soils have a median grain size of greater than 75 µm. Where both fine and coarse-grained strata are present, the dominant soil particle size is determined by the stratum governing horizontal and vertical migration to a receptor. Grain size analysis was completed on two samples as follows:

- Sample from test hole TH20-02 @ 8' (2.6 m) m had <1.0 % of the material greater than 75 µm, indicating a fine-grained soil; and
- Sample from test hole TH20-06 @ 11' (3.4 m) m had <1.0 % of the material greater than 75 µm, indicating a fine-grained soil.

Based on the results of the grain size analysis, as well as observations made during test hole drilling, the soils underlying the Site are considered fine-grained for the purposes of this assessment.

5.1.3 Soil Horizons

CCME recognizes two soil horizons: surface soil and subsoils for PHC assessments. As indicated in the MCC Information Bulletin dated June 2016 (Manitoba Criteria for BTEX in Investigation Results), surface soil is inclusive of all unconsolidated regolith material from the surface to 1.5 m (≤ 1.5 m depth) and subsoils includes the unconsolidated regolith material located below 1.5 m (>1.5 m depth). Exposure pathways are assessed individually for both horizons.

5.1.4 Applicable Assessment Guidelines

5.1.4.1 Human Exposure Pathways

Potential human exposure pathways include the following: direct contact (soil ingestion, dermal contact, and soil inhalation), indoor vapour inhalation, and the protection of potable groundwater. The applicability of each of these potential exposure pathways are discussed in the following sections.

Direct Contact Pathway

Currently, the surface of the Site which is not occupied by the Site building is covered by a combination of asphalt, gravel and manicured landscaping, which does not provide a suitable barrier to direct human contact). As such the direct contact (through soil ingestion and dermal contact) pathways would be considered applicable to the surface soil horizon.

The direct contact pathway is not considered applicable for the subsoil as the surface soil creates a suitable barrier to avoid contact. It is assumed that any ground disturbance in which soils at depth previously not accessible are brought to ground surface would result in short term exposure and not be considered applicable to the exposure models for which the CCME guidelines were derived.

Vapour Inhalation Pathway

The indoor vapour inhalation (slab on grade) pathway would be considered applicable to both the surface and subsoil horizons at the Site to be protective of the risk of vapour intrusion and human exposure through vapour inhalation within the current Site building.

Protection of Potable Groundwater Pathway

CCME considers all water bearing units as a potential potable groundwater resource; however, CCME defines a water bearing unit as having a hydraulic conductivity of greater than 10^{-4} cm/s. Furthermore, MCC recognizes the division between contaminated soil and groundwater that is not hydraulically connected to an underlying aquifer. A 5 m thickness of massive unfractured saturated fine-grained material, with a bulk hydraulic conductivity less than 10^{-5} cm/s is considered sufficient isolation of groundwater aquifers.

Based on the stratigraphic observations at the Site, a substantial thickness (> 5 m) of fine-grained soil exists over the underlying aquifer, providing a sufficient confining layer as verified during test hole drilling. Considering the present land use of the Site and surrounding properties, and that potable water is supplied by the City of Winnipeg from a source over 100 km from the city, it is unlikely that there would be usage of groundwater for potable purposes.

As such, the potable groundwater pathway is not considered to be applicable for the Site.

5.1.4.2 Ecological Exposure Pathways

Potential ecological exposure pathways include the ecological soil contact and freshwater aquatic life pathways. The applicability of each of these potential exposure pathways are discussed in the following sections.

Ecological Soil Contact Pathway

The ecological soil contact pathway is protective of potential ecological receptor exposure, from terrestrial and subterranean organisms and plant root systems, to soils in the surface soil horizon. Landscaped areas and natural vegetation is present around the periphery of the Site. As such, the ecological soil contact pathway is considered applicable to the Site.

Ecological receptor direct contact exposure to soils in the subsoil horizon is not considered applicable as the surface soil creates a suitable barrier to avoid subsoil ecological contact from organisms at the ground surface and the subsoil horizon is not typically suitable to support invertebrates or burrowing mammals.

Freshwater Aquatic Life Pathway

CCME states that the freshwater aquatic life pathway may be excluded in cases where there is no surface water body within 10 m of a site classified as fine grained and 500 m of a site classified as coarse grain for BTEX components. The freshwater aquatic life pathway is excluded in cases where there is no surface water body within 500 m for other parameters. If a surface water body is within 500 m it must be assessed to determine whether the freshwater aquatic life pathway is applicable.

The closest surface water body is the Red River, located approximately 430 m east of the Site. Based on this distance and the expected low permeability of the subsurface soil in the area of the Site, the freshwater aquatic life pathway is not considered applicable for the Site.

5.1.4.3 Miscellaneous Criteria

Off-Site Migration Check

The off-Site migration pathway provides protection of migration of soil through wind and water erosion, to surrounding properties with a more sensitive land use. As the surrounding properties include only commercial or industrial land use the off-site migration check does apply to the Site.

Management Limit

The management limits for PHCs applies for soils in the surface soil and subsoil horizon.

5.1.5 Summary of Applicable Assessment Guidelines

Given the commercial land use designation of the Site, the fine-grained nature of the soil, and the applicable exposure pathways as outlined in the previous sections, Wood determined assessment guidelines for each potential contaminant of concern. The most stringent of the applicable exposure pathway guideline values for both the surface soil and subsoil horizons as produced by CCME was used as the assessment guideline for each contaminant.

Applicable guideline values are summarized in Table 2.

PHC Assessment Guidelines

Soil guidelines at or above 1.5 m grade:

Commercial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Indoor Vapour Inhalation (slab on grade) exposure pathway for benzene; and
- Ecological Soil Contact exposure pathway for toluene, ethylbenzene, xylenes and PHC fractions F1 to F4.

Soil guidelines below 1.5 m grade:

Commercial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Indoor Vapour Inhalation (slab on grade) exposure pathway for benzene, toluene, ethylbenzene, and xylenes; and
- Management Limits for PHC fractions F1 to F4.

Groundwater guidelines

FCSAP Commercial/Industrial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Inhalation exposure pathway for benzene; and
- Eco Soil Contact exposure for toluene, ethylbenzene, xylenes, PHC fraction F1 – F2.

VOC Assessment Guidelines

Soil Guidelines

Commercial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Indoor Vapour Inhalation exposure pathway for trichloroethylene (TCE) and tetrachloroethylene (PCE); and
- Interim Soil Quality Criterion for carbon tetrachloride, chlorobenzene, chloroform, 1,2-

dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichoroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, dichloromethane, 1,2-dichloropropane, styrene, 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, and 1,1,2-trichloroethane.

Groundwater guidelines

FCSAP Commercial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Inhalation exposure pathway for acetone, bromoform, bromomethane, carbon tetrachloride, chlorobenzene, dibromochloromethane, ethylene dibromide, 1,4-dichlorobenzene, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis 1,2-dichloroethene, trans 1,2-dichloroethene, dichloromethane, 1,2-dichloropropane, 1,3-dichloropropene, hexachlorobutadiene, methyl butyl ketone, MEK, MIBK, MTBE, 1,1,1,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-Trichloroethane, trichloroethene (TCE), and vinyl chloride.

PAH Assessment Guidelines

Soil Guidelines

Commercial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Direct Contact for B(a)P TPE;
- Ecological Soil Contact for anthracene, benzo(a)pyrene and fluoranthene;
- Provisional SQG for naphthalene; and
- Interim Criteria for benzo(a)anthracene, benzo(b+J)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene.

Groundwater guidelines

FCSAP Commercial values for fine-grained soil in a non-potable groundwater situation as limited by the:

- Inhalation exposure pathway for 2-methylnaphthalene; and
- Eco Soil Contact exposure pathway for anthracene, benzo(a)pyrene and fluoranthene.

5.2 Summary of Applicable Reporting Standards

As previously stated, the reporting threshold outlined in the CSRA and CSRR includes the CCME guideline values as the primary values, augmented by the MOE Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, 2011 for parameters that do not have guidelines under CCME.

The applicable reporting standards are included in Table 2, as well as with the analytical results.

6.0 Assessment Results

6.1 Soil Conditions

6.1.1 Regional and Local Geology

Based on available geological maps, the subsurface stratigraphy in this area of Winnipeg normally consists of topsoil and fill materials underlain by glacio-lacustrine silt and clay to a depth of approximately 15 to

18 m from grade. A deposit of silty till, typically a few metres or more in thickness, occurs between the clay and the underlying bedrock. The bedrock in this area consists of dolomite and limestone and is of the Lower Fort Garry member (Baracos et al., 1983). Bedrock is estimated to occur between about 18 to 21 m below grade.

Fractured zones in the bedrock comprise the major aquifer in the area. There are no aquifers above the bedrock. Given the substantial clay thickness, the potential for impacts to the aquifer, from on or off-site sources is considered to be low.

6.1.2 Site Stratigraphy

The soil profiles encountered at the test hole locations (TH20-01 through TH20-05) generally consisted of the following soil strata, in descending order from grade level:

- Asphalt Surface;
- Gravel Fill;
- Sand;
- Clay Fill; and
- Clay.

A brief description of each of the soil strata is presented in the following paragraphs. More detailed depths and descriptions are included in the test hole logs in Appendix A.

Asphalt

Asphalt was encountered at the ground surface at test holes TH20-01, TH20-02 and TH20-03 and was approximately 75 mm in thickness.

Gravel Fill

Gravel fill was encountered at the surface of test holes TH20-04 to TH20-08 and below the asphalt in test holes TH20-01 to TH20-03. The gravel fill extended to an average depth of approximately 0.23 m bgl. The gravel fill contained some sand, trace silt, and was generally poorly graded, coarse grained, medium dense, dry and brown in color.

Sand

Sand was encountered below the gravel fill in test hole TH20-04 and extended to a depth of 0.9 m bgl. The sand was poorly graded, coarse grained, loose, damp and brown in color.

Clay Fill

Clay fill was encountered below the granular fill in all the test holes and extended to depth ranging from 0.9 m bgl in TH20-07 to 3.4 m bgl in TH20-05. The clay fill was generally silty, contained some sand and gravel, was medium plastic, damp, firm and brown/dark grey or black in colour. Glass debris was noted in TH20-04, roots and general debris was noted in TH20-05 and general debris was noted in TH20-06 and TH20-08.

Clay

High plastic clay was present beneath the clay fill and was observed to extend to the maximum depth of the test holes (12.2 m bgl). The clay was generally silty, damp to moist, soft to firm, brown/grey in colour and contained occasional sulphate inclusions.

6.2 Sampling Results

6.2.1 Soil Vapour Screening and Field Observations

Soil vapour concentrations and field observations made during the test hole drilling and soil sampling investigation are summarized in Table 3 and detailed on the test hole logs in Appendix A.

A maximum combustible vapour concentration of 4,650 ppm_v was detected in TH20-03 at 0.9 m bgl.

6.2.2 Soil Laboratory Results

6.2.2.1 Petroleum Hydrocarbons

Eight soil samples were submitted for laboratory analysis of PHCs. Soil samples were selected for analysis based on field observations, field headspace screening results, and stratigraphic relationship to the potential zone(s) of impact.

The results of the soil sample laboratory analysis indicated that select PHC constituent concentrations in samples submitted from TH20-03, TH20-04 and TH20-05, were greater than the applicable guideline values as summarized below.

- TH20-03 (S2) @ 0.9 m bgl had a benzene, PHC F1 and F2 concentrations of 24.4 mg/kg, 2,660 mg/kg and 355 mg/kg respectfully, exceeding the guideline values of 2.9 mg/kg, 320 mg/kg and 260 mg/kg respectively; and
- TH20-04 (S5) @ 3.4 m bgl had a PHC F1 concentration of 1,120 mg/kg, exceeding the guideline value of 800 mg/kg; and
- TH20-05 (S4) @ 2.4 m bgl had a PHC F1 concentration of 1,080 mg/kg, exceeding the guideline value of 800 mg/kg.

The analytical soil results are summarized in Table 4 and on Figure 3. Laboratory Certificates of Analysis for the submitted soil samples which includes the laboratory QA/QC, is included in Appendix B.

6.2.2.2 Volatile Organic Compounds

Three soil samples were submitted for laboratory analysis of VOCs based on field observations, field headspace screening results, and stratigraphic relationship to the potential zone(s) of impact.

The results of the soil sample laboratory analysis indicated that all VOC constituent concentrations were less than the applicable guideline values.

The analytical soil results are summarized in Table 5 and on Figure 4. Laboratory Certificates of Analysis for the submitted soil samples which includes the laboratory QA/QC, is included in Appendix B.

6.2.2.3 Polycyclic Aromatic Hydrocarbons

Three soil samples were submitted for laboratory analysis of PAHs based on field observations, field headspace screening results, and stratigraphic relationship to the potential zone(s) of impact.

The results of the soil sample laboratory analysis indicated that all PAH constituent concentrations were less than the applicable guideline values.

The analytical soil results are summarized in Table 6 and on Figure 5. Laboratory Certificates of Analysis for the submitted soil samples which includes the laboratory QA/QC, is included in Appendix B.

6.2.3 Groundwater Monitoring

The groundwater monitoring wells installed at the Site were measured for groundwater levels and headspace vapour concentrations on 24 July 2020. The headspace vapour concentrations were 350 ppm in TH20-01, >7,000 ppm in TH20-05 and 35 ppm in TH20-08. Based on the large variation in groundwater elevations which ranged from 227.57 m above sea level (asl) in TH20-01 to 230.55 m asl in TH20-08, the groundwater flow direction is inconclusive. Groundwater elevations are noted on Figure 6.

Groundwater monitoring results are summarized in Table 7.

6.2.4 Groundwater Laboratory Results

6.2.4.1 Petroleum Hydrocarbons

Three groundwater samples were submitted for PHC analysis. The results of the groundwater laboratory analysis indicated that select PHC constituent concentrations in samples submitted from monitoring wells TH20-05 and TH20-08, were greater than the applicable guideline values as summarized below.

- TH20-05 had a PHC F1 concentration of 37.5 mg/L, exceeding the applicable guideline value of 9.9 mg/L; and
- TH20-08 had a PHC F2 concentration of 31.8 mg/L, exceeding the applicable guideline value of 3.1 mg/L.

Groundwater analytical results are summarized in Table 8 and shown on Figure 7. Laboratory Certificates of Analysis for the submitted groundwater samples which includes the laboratory QA/QC, are in Appendix B.

6.2.4.2 Volatile Organic Compounds

Two groundwater samples were submitted for laboratory analysis of VOCs. The results of the groundwater laboratory analysis indicated that there are some VOC parameters with measurable concentrations, however all constituent concentrations were less than the applicable guideline values. It should also be noted that the hexane concentration in the sample collected from monitoring well TH20-05 was greater than the MCC reporting standard.

The analytical results are summarized in Table 9 and on Figure 7. Laboratory Certificates of Analysis for the submitted groundwater samples which includes the laboratory QA/QC, is included in Appendix B.

6.2.4.3 Polycyclic Aromatic Hydrocarbons

Two groundwater samples were submitted for laboratory analysis of PAHs. The results of the groundwater laboratory analysis indicated that all PAH constituent concentrations were less than the applicable guideline values.

The analytical results are summarized in Table 10 and on Figure 7. Laboratory Certificates of Analysis for the submitted groundwater samples which includes the laboratory QA/QC, is included in Appendix B.

6.3 Quality Assurance

6.3.1 Accreditation

The Canadian Association Laboratory Accreditation Inc. (CALA) has accredited ALS's laboratory for testing in accordance with the International Standard ISO/IEC 17025.

6.3.2 Data Validation

The laboratory incorporates various QA/QC procedures to ensure the accuracy of the laboratory results and assess the possibility of false positives attributable to analytical equipment contributions and laboratory control samples. The laboratory QA/QC includes the completion of laboratory blanks, blank spikes and blank spike recovery. A summary of laboratory QA/QC findings is present below:

- Samples/sample extracts were analyzed within their applicable hold times using approved analytical methods;
- Agreement between the corresponding datasets for the reference material samples, where applicable, and recoveries reported for spiked samples/blanks, where applicable, were within acceptable range; and
- Several parameters had their detection limit raised or adjusted due to a high concentration of test analyte or low sample volume.

Field QA/QC

The relative percent difference (RPD) approach can be used as a means of assessing the accuracy of the duplicate analytical results. The RPD is calculated for specific parameters using the following equation:

$$Field\ Duplicate\ RPD\ (\%) = \frac{|C_1 - C_2|}{(C_1 + C_2)/2} \times 100$$

where: RPD = relative percent difference

C1= first of two observed values from the field duplicate analysis

C2 = second of two observed values from the field duplicate analysis

RPD values can be calculated for parameters that contain detectable concentrations at least five times greater than the laboratory method detection limit. The RPD was calculated for several parameters and ranged between 0.9% and 19%, within acceptable range.

The results of the QA/QC analyses are detailed on the laboratory Certificates of Analyses presented in Appendix B.

Based on the soil laboratory analysis, sample collection, sample storage, sample bottles and transportation of the samples to the laboratory, had no material effect on the quality of the data collected as part of this assessment. The laboratory results for soil and groundwater samples obtained during Wood's investigation are acceptable.

7.0 Discussion

APEC 1 – Historical Garage located in the Northern Portion of the Site.

Results of the Phase II ESA indicated that groundwater within the northeastern portion of the Site, within monitoring well TH20-08, appears to have been negatively impacted by historical off-Site activities. Soil impacts were not identified with TH20-08 nor was there evidence of impacts noted during the drilling program.

It is unclear if the groundwater impacts are a result of the historical garage located in the northern portion of the Site (APEC 1) or related to the historical CN fuel UST located east of the northern portion of the Site (APEC 5).

The groundwater concentrations exceed applicable criterial protective of human health and indoor vapour inhalation. In Woods opinion, as no buildings currently exist in this area of the Site, the risk associated with the groundwater PHC impacts identified in monitoring well TH20-08, during the current Phase II ESA are currently low. However, if the Site configuration were to change, and a building be planned for construction in this area of the Site, the risk should be re-evaluated.

APEC 2 – Historical Laundry/Dry-Cleaning operation located on-Site.

Based on the results of the Phase II ESA, it does not appear the historical presence and operation of the former on-Site laundry/dry-cleaning business has negatively affected the soil or groundwater at the Site.

The majority of the VOC constituent concentrations from soil and groundwater samples submitted from test holes TH20-01 and TH20-02, including common dry-cleaning chemicals tetrachloroethylene (perchloroethylene - PCE) and trichloroethene (TCE) were found to be below the laboratory detection limits.

APEC 3 – Historical Underground Fuel Storage Tanks (USTs).

Based on the results of the Phase II ESA, it does not appear the reported presence of historical fuel and fuel oil tanks within the southern portion of the Site have negatively affected the soil or groundwater at the Site.

Although detectable concentrations of select PHC constituents were identified in soil and groundwater samples submitted from test holes TH20-01 and TH20-02, concentrations were found to be well below the applicable guideline values.

APEC 4 – Historical Gas Station located on-Site.

Results of the Phase II ESA indicate that soil and groundwater within the central portion of the Site has been negatively impacted by the historical on-Site gas station. PHC constituent concentrations greater than the applicable guideline values were identified in test holes TH20-03, TH20-04 and TH20-05 at depths of 0.9 m bgl, 3.4 m bgl and 2.4 m bgl respectfully. The test holes were located east and south of the former gas station location.

It appears that delineation of the PHC impacts has been achieved north of the former gas station location as PHC constituent concentrations in samples submitted from TH20-06 and TH20-07 were less than the laboratory detection limits or below the applicable guideline values. Additionally, it appears impacts extend east/southeast of the former gas station location up to the eastern Site boundary as PHC constituent concentrations greater than the applicable guideline values were identified in soil and

groundwater samples collected from TH20-04 and TH20-05. Delineation to the south of the former gas station location has not been achieved as PHC constituent concentrations greater that the applicable guideline values were identified in soil samples collected from TH20-03. Although, a soil sample submitted from BH-11, approximately 30 m southeast of TH20-03, completed during the 1993 Phase II ESA, had BTEX concentrations less than the current applicable guidelines. It is also inferred, based on the location of TH20-03 and from results of historical investigations, that PHC impacts extend close to or beyond the western Site boundary adjacent to the former gas station location.

APEC 5 – Historical and Current CN Rail Lines and Yard.

Based on the results of the Phase II ESA, it is possible that historical activities along the CN rail lines, potentially related to the historical CN UST, have impacted the Site. Although PHC and PAH constituent concentrations from soil samples collected from TH20-06 and TH20-08 were below the applicable guidelines, the PHC F2 fraction concentration from a groundwater sample collected from monitoring well TH20-08 was greater than the applicable guideline. As well elevated concentrations of PHC F3 fraction (no guideline) were also detected. The groundwater impacts may also be a result of the historical garage located in the northern portion of the Site (APEC 1), however additional off-Site investigations would be needed to further define the contaminant plume and determine the source.

The groundwater concentrations exceed applicable criterial protective of human health and indoor vapour inhalation. In Woods opinion, as no buildings currently exist in this area of the Site, the risk associated with the groundwater PHC impacts identified in monitoring well TH20-08, during the current Phase II ESA are currently low. However, if the Site configuration were to change, and a building be planned for construction in this area of the Site, the risk should be re-evaluated.

8.0 Conclusions

Results of the Phase II ESA indicate that PHC impacts were identified in soil samples collected from test holes TH20-03, TH20-04 and TH20-05, all centrally located within the Site, in the area of the former gas station location. Additionally, PHC impacts were identified in groundwater samples collected from monitoring wells TH20-05 and TH20-08. Monitoring well TH20-05 is located east/southeast of the former gas station location and monitoring well TH20-08 is located within the northeastern portion of the Site.

VOC and PAH constituent concentrations from soil and groundwater samples collected from the Site were all less than the applicable guideline values. It should also be noted that the hexane concentration in the groundwater sample collected from monitoring well TH20-05 was greater than the MCC reporting standard.

PHC impacts are inferred to be associated with the historical presence and operations of the gas/service station located on-Site between approximately 1925 - 1980.

Based on the current configuration of the Site, the identified PHC impacts do not pose an immediate threat to human health as no buildings currently exist in these areas of the Site where impacts have been identified. However, if the Site configuration were to change, and a building be planned for construction in these areas of the Site, the risks should be re-evaluated, and further assessment and/or appropriate risk mitigation measures be implemented.

If there is a requirement for a quantifiable description of the PHC impacted soils at the Site, Wood recommends additional drilling south of test holes TH20-03 and TH20-05 in order to achieve full delineation in a southerly direction.

As exceedances of the applicable guidelines and Reporting Standards were identified, the report is required to be submitted to MCC for review and a remedial action plan will need to be prepared.

9.0 References

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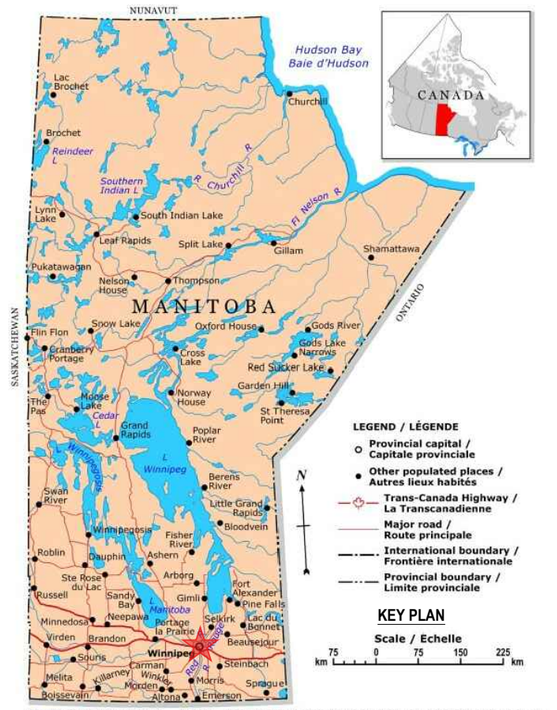
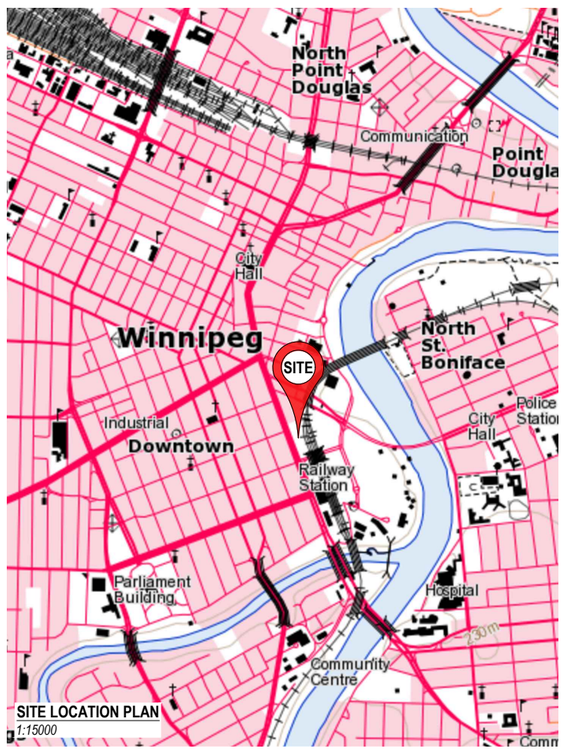
Figures





wood.
440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

EARL'S - JUST FOR THE HALIBUT

LEGEND:
APPROXIMATE PROPERTY LINE

NOTE:
- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
- IMAGES FROM AUTODESK IMAGERY AND TOPO MAP.

NO.	REVISION	DATE	BY

PHASE ENVIRONMENTAL SITE ASSESSMENT

191-219 MAIN STREET
WINNIPEG, MANITOBA

SITE LOCATION PLAN

SCALE:	AS SHOWN
DATE:	AUGUST 2020
DRAWN BY:	MD
PROJECT NO.:	WX1911101

FIGURE 1

wood.
440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

EARL'S - JUST FOR THE HALIBUT

LEGEND:

- APPROXIMATE PROPERTY LINE
- TEST HOLE (NATIONAL TESTING, 1993)
- TEST HOLE (AGRA, 1995)
- TEST HOLE (AMEC, 2014)
- TEST HOLE (WOOD, 2020)
- MONITORING WELL (WOOD, 2020)
- HISTORICAL VALUES BELOW APPLICABLE DAY GUIDELINES
- HISTORICAL VALUES ABOVE APPLICABLE DAY GUIDELINES

NOTE:
- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
- IMAGES FROM AUTODESK IMAGERY.

NO.	REVISION	DATE	BY

PHASE ENVIRONMENTAL SITE ASSESSMENT

191-219 MAIN STREET
WINNIPEG, MANITOBA

TEST HOLE/MONITORING WELL LOCATION PLAN

SCALE:	AS SHOWN
DATE:	AUGUST 2020
DRAWN BY:	MD
PROJECT NO.:	WX1911101

FIGURE 2

TH20-08		
Depth	(m)	4.9
V.L.	(ppm)	60
B	(mg/kg)	<0.005
T	(mg/kg)	<0.05
E	(mg/kg)	<0.015
X	(mg/kg)	<0.071
PHC F1	(mg/kg)	<10
PHC F2	(mg/kg)	<25
PHC F3	(mg/kg)	<50
PHC F4	(mg/kg)	<50

TH20-06		
Depth	(m)	1.8
V.L.	(ppm)	110
B	(mg/kg)	0.0278
T	(mg/kg)	<0.05
E	(mg/kg)	<0.015
X	(mg/kg)	<0.071
PHC F1	(mg/kg)	21
PHC F2	(mg/kg)	<25
PHC F3	(mg/kg)	<50
PHC F4	(mg/kg)	<50

TH20-04		
Depth	(m)	3.4
V.L.	(ppm)	430
B	(mg/kg)	0.114
T	(mg/kg)	<0.05
E	(mg/kg)	10.5
X	(mg/kg)	1.34
PHC F1	(mg/kg)	**1120**
PHC F2	(mg/kg)	80
PHC F3	(mg/kg)	<50
PHC F4	(mg/kg)	<50

TH20-05		
Depth	(m)	2.4
V.L.	(ppm)	2450
B	(mg/kg)	**28.1**
T	(mg/kg)	130
E	(mg/kg)	36.2
X	(mg/kg)	130
PHC F1	(mg/kg)	**1080**
PHC F2	(mg/kg)	79
PHC F3	(mg/kg)	62
PHC F4	(mg/kg)	<50

TH20-01		
Depth	(m)	2.4
V.L.	(ppm)	210
B	(mg/kg)	0.0176
T	(mg/kg)	0.074
E	(mg/kg)	<0.015
X	(mg/kg)	<0.071
PHC F1	(mg/kg)	72
PHC F2	(mg/kg)	<25
PHC F3	(mg/kg)	<50
PHC F4	(mg/kg)	<50

TH20-07		
Depth	(m)	0.6
V.L.	(ppm)	50
B	(mg/kg)	<0.005
T	(mg/kg)	<0.05
E	(mg/kg)	<0.015
X	(mg/kg)	<0.071
PHC F1	(mg/kg)	<10
PHC F2	(mg/kg)	<25
PHC F3	(mg/kg)	145
PHC F4	(mg/kg)	121

TH20-03		
Depth	(m)	0.9
V.L.	(ppm)	4650
B	(mg/kg)	**24.4**
T	(mg/kg)	30
E	(mg/kg)	56.2
X	(mg/kg)	135
PHC F1	(mg/kg)	**2660**
PHC F2	(mg/kg)	**355**
PHC F3	(mg/kg)	86
PHC F4	(mg/kg)	<50

TH20-02		
Depth	(m)	11.7
V.L.	(ppm)	370
B	(mg/kg)	<0.005
T	(mg/kg)	<0.05
E	(mg/kg)	<0.015
X	(mg/kg)	<0.071
PHC F1	(mg/kg)	<10
PHC F2	(mg/kg)	<25
PHC F3	(mg/kg)	<50
PHC F4	(mg/kg)	<50

wood.
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WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

EARL'S - JUST FOR THE HALIBUT

LEGEND:

- APPROXIMATE PROPERTY LINE
- TEST HOLE (NATIONAL TESTING, 1993)
- TEST HOLE (AGRA, 1995)
- TEST HOLE (AMEC, 2014)
- TEST HOLE (WOOD, 2020)
- MONITORING WELL (WOOD, 2020)
- BELOW GUIDELINES
- ABOVE GUIDELINES
- HISTORICAL VALUES BELOW APPLICABLE DAY GUIDELINES
- HISTORICAL VALUES ABOVE APPLICABLE DAY GUIDELINES

Assement Guidelines/ MCC Reporting Standard			
Depth	(m)	<1.5	>1.5
B	(mg/kg)	2.8	2.9
T	(mg/kg)	330	13000
E	(mg/kg)	430	6700
X	(mg/kg)	230	1600
PHC F1	(mg/kg)	320	800
PHC F2	(mg/kg)	260	1000
PHC F3	(mg/kg)	2500	5000
PHC F4	(mg/kg)	6600	10000

NOTE:
- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
- IMAGES FROM AUTODESK IMAGERY.

NO.	REVISION	DATE	BY

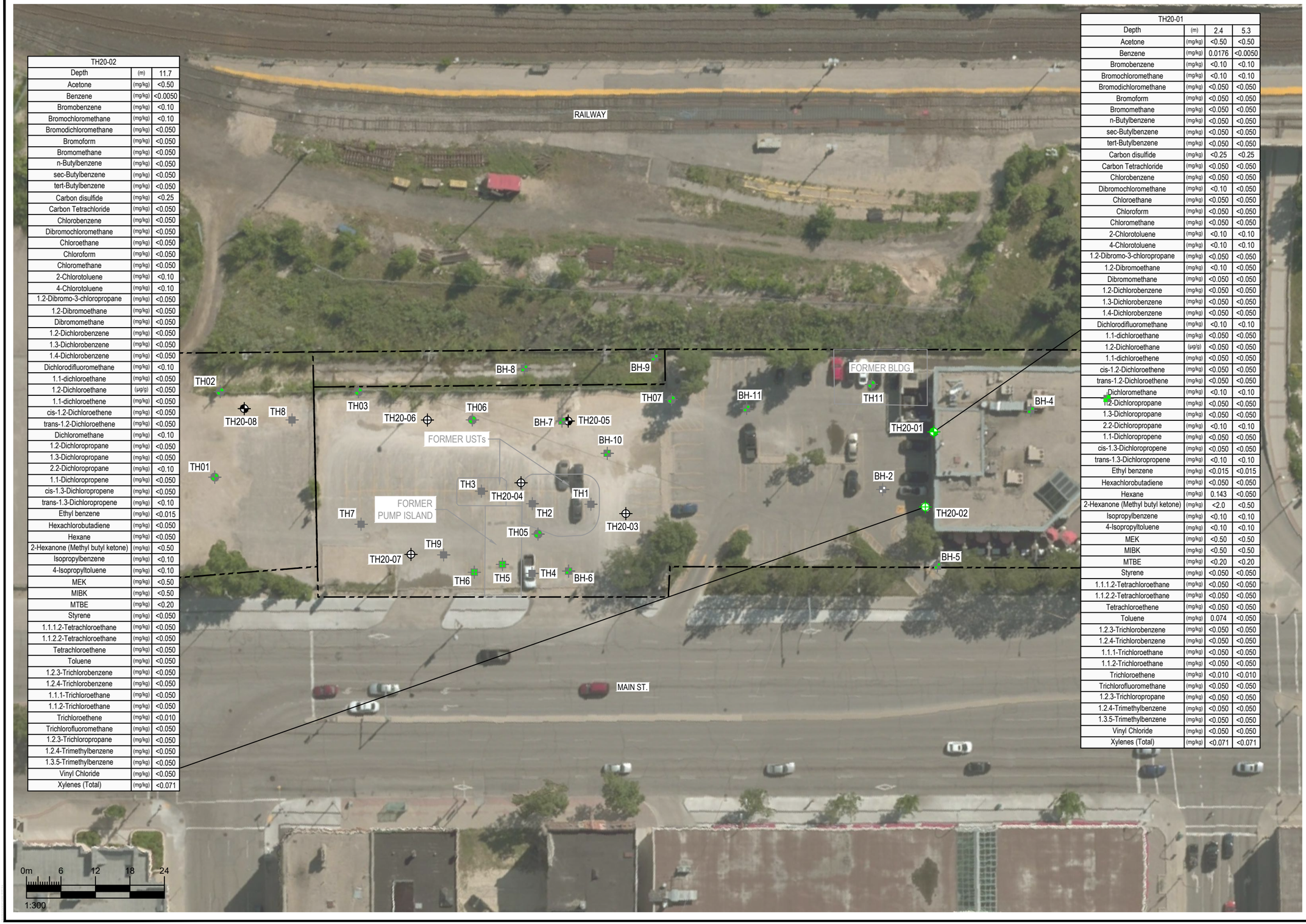
PHASE ENVIRONMENTAL SITE ASSESSMENT

191-219 MAIN STREET
WINNIPEG, MANITOBA

SOIL ANALYTICAL RESULTS - PHCs

SCALE:	AS SHOWN
DATE:	AUGUST 2020
DRAWN BY:	MD
PROJECT NO.:	WX1911101

FIGURE 3



TH20-02		
Depth	(m)	11.7
Acetone	(mg/kg)	<0.50
Benzene	(mg/kg)	<0.0050
Bromobenzene	(mg/kg)	<0.10
Bromochloromethane	(mg/kg)	<0.10
Bromodichloromethane	(mg/kg)	<0.050
Bromoform	(mg/kg)	<0.050
Bromomethane	(mg/kg)	<0.050
n-Butylbenzene	(mg/kg)	<0.050
sec-Butylbenzene	(mg/kg)	<0.050
tert-Butylbenzene	(mg/kg)	<0.050
Carbon disulfide	(mg/kg)	<0.25
Carbon Tetrachloride	(mg/kg)	<0.050
Chlorobenzene	(mg/kg)	<0.050
Dibromochloromethane	(mg/kg)	<0.050
Chloroethane	(mg/kg)	<0.050
Chloroform	(mg/kg)	<0.050
Chloromethane	(mg/kg)	<0.050
2-Chlorotoluene	(mg/kg)	<0.10
4-Chlorotoluene	(mg/kg)	<0.10
1.2-Dibromo-3-chloropropane	(mg/kg)	<0.050
1.2-Dibromoethane	(mg/kg)	<0.050
Dibromomethane	(mg/kg)	<0.050
1.2-Dichlorobenzene	(mg/kg)	<0.050
1.3-Dichlorobenzene	(mg/kg)	<0.050
1.4-Dichlorobenzene	(mg/kg)	<0.050
Dichlorodifluoromethane	(mg/kg)	<0.10
1.1-dichloroethane	(mg/kg)	<0.050
1.2-Dichloroethane	(µg/g)	<0.050
1.1-dichloroethene	(mg/kg)	<0.050
cis-1.2-Dichloroethene	(mg/kg)	<0.050
trans-1.2-Dichloroethene	(mg/kg)	<0.050
Dichloromethane	(mg/kg)	<0.10
1.2-Dichloropropane	(mg/kg)	<0.050
1.3-Dichloropropane	(mg/kg)	<0.050
2.2-Dichloropropane	(mg/kg)	<0.10
1.1-Dichloropropene	(mg/kg)	<0.050
cis-1.3-Dichloropropene	(mg/kg)	<0.050
trans-1.3-Dichloropropene	(mg/kg)	<0.10
Ethyl benzene	(mg/kg)	<0.015
Hexachlorobutadiene	(mg/kg)	<0.050
Hexane	(mg/kg)	<0.050
2-Hexanone (Methyl butyl ketone)	(mg/kg)	<0.50
Isopropylbenzene	(mg/kg)	<0.10
4-Isopropyltoluene	(mg/kg)	<0.10
MEK	(mg/kg)	<0.50
MIBK	(mg/kg)	<0.50
MTBE	(mg/kg)	<0.20
Styrene	(mg/kg)	<0.050
1.1.1.2-Tetrachloroethane	(mg/kg)	<0.050
1.1.2.2-Tetrachloroethane	(mg/kg)	<0.050
Tetrachloroethene	(mg/kg)	<0.050
Toluene	(mg/kg)	<0.050
1.2.3-Trichlorobenzene	(mg/kg)	<0.050
1.2.4-Trichlorobenzene	(mg/kg)	<0.050
1.1.1-Trichloroethane	(mg/kg)	<0.050
1.1.2-Trichloroethane	(mg/kg)	<0.050
Trichloroethene	(mg/kg)	<0.010
Trichlorofluoromethane	(mg/kg)	<0.050
1.2.3-Trichloropropane	(mg/kg)	<0.050
1.2.4-Trimethylbenzene	(mg/kg)	<0.050
1.3.5-Trimethylbenzene	(mg/kg)	<0.050
Vinyl Chloride	(mg/kg)	<0.050
Xylenes (Total)	(mg/kg)	<0.071

TH20-01			
Depth	(m)	2.4	5.3
Acetone	(mg/kg)	<0.50	<0.50
Benzene	(mg/kg)	0.0176	<0.0050
Bromobenzene	(mg/kg)	<0.10	<0.10
Bromochloromethane	(mg/kg)	<0.10	<0.10
Bromodichloromethane	(mg/kg)	<0.050	<0.050
Bromoform	(mg/kg)	<0.050	<0.050
Bromomethane	(mg/kg)	<0.050	<0.050
n-Butylbenzene	(mg/kg)	<0.050	<0.050
sec-Butylbenzene	(mg/kg)	<0.050	<0.050
tert-Butylbenzene	(mg/kg)	<0.050	<0.050
Carbon disulfide	(mg/kg)	<0.25	<0.25
Carbon Tetrachloride	(mg/kg)	<0.050	<0.050
Chlorobenzene	(mg/kg)	<0.050	<0.050
Dibromochloromethane	(mg/kg)	<0.10	<0.050
Chloroethane	(mg/kg)	<0.050	<0.050
Chloroform	(mg/kg)	<0.050	<0.050
Chloromethane	(mg/kg)	<0.050	<0.050
2-Chlorotoluene	(mg/kg)	<0.10	<0.10
4-Chlorotoluene	(mg/kg)	<0.10	<0.10
1.2-Dibromo-3-chloropropane	(mg/kg)	<0.050	<0.050
1.2-Dibromoethane	(mg/kg)	<0.10	<0.050
Dibromomethane	(mg/kg)	<0.050	<0.050
1.2-Dichlorobenzene	(mg/kg)	<0.050	<0.050
1.3-Dichlorobenzene	(mg/kg)	<0.050	<0.050
1.4-Dichlorobenzene	(mg/kg)	<0.050	<0.050
Dichlorodifluoromethane	(mg/kg)	<0.10	<0.10
1.1-dichloroethane	(mg/kg)	<0.050	<0.050
1.2-Dichloroethane	(µg/g)	<0.050	<0.050
1.1-dichloroethene	(mg/kg)	<0.050	<0.050
cis-1.2-Dichloroethene	(mg/kg)	<0.050	<0.050
trans-1.2-Dichloroethene	(mg/kg)	<0.050	<0.050
Dichloromethane	(mg/kg)	<0.10	<0.10
1.2-Dichloropropane	(mg/kg)	<0.050	<0.050
1.3-Dichloropropane	(mg/kg)	<0.050	<0.050
2.2-Dichloropropane	(mg/kg)	<0.10	<0.10
1.1-Dichloropropene	(mg/kg)	<0.050	<0.050
cis-1.3-Dichloropropene	(mg/kg)	<0.050	<0.050
trans-1.3-Dichloropropene	(mg/kg)	<0.10	<0.10
Ethyl benzene	(mg/kg)	<0.015	<0.015
Hexachlorobutadiene	(mg/kg)	<0.050	<0.050
Hexane	(mg/kg)	0.143	<0.050
2-Hexanone (Methyl butyl ketone)	(mg/kg)	<2.0	<0.50
Isopropylbenzene	(mg/kg)	<0.10	<0.10
4-Isopropyltoluene	(mg/kg)	<0.10	<0.10
MEK	(mg/kg)	<0.50	<0.50
MIBK	(mg/kg)	<0.50	<0.50
MTBE	(mg/kg)	<0.20	<0.20
Styrene	(mg/kg)	<0.050	<0.050
1.1.1.2-Tetrachloroethane	(mg/kg)	<0.050	<0.050
1.1.2.2-Tetrachloroethane	(mg/kg)	<0.050	<0.050
Tetrachloroethene	(mg/kg)	<0.050	<0.050
Toluene	(mg/kg)	0.074	<0.050
1.2.3-Trichlorobenzene	(mg/kg)	<0.050	<0.050
1.2.4-Trichlorobenzene	(mg/kg)	<0.050	<0.050
1.1.1-Trichloroethane	(mg/kg)	<0.050	<0.050
1.1.2-Trichloroethane	(mg/kg)	<0.050	<0.050
Trichloroethene	(mg/kg)	<0.010	<0.010
Trichlorofluoromethane	(mg/kg)	<0.050	<0.050
1.2.3-Trichloropropane	(mg/kg)	<0.050	<0.050
1.2.4-Trimethylbenzene	(mg/kg)	<0.050	<0.050
1.3.5-Trimethylbenzene	(mg/kg)	<0.050	<0.050
Vinyl Chloride	(mg/kg)	<0.050	<0.050
Xylenes (Total)	(mg/kg)	<0.071	<0.071

wood.
440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
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EARL'S - JUST FOR THE HALIBUT

LEGEND:

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- TEST HOLE (NATIONAL TESTING, 1993)
- TEST HOLE (AGRA, 1995)
- TEST HOLE (AMEC, 2014)
- TEST HOLE (WOOD, 2020)
- MONITORING WELL (WOOD, 2020)
- BELOW GUIDELINES
- ABOVE GUIDELINES
- HISTORICAL VALUES BELOW APPLICABLE DAY GUIDELINES
- HISTORICAL VALUES ABOVE APPLICABLE DAY GUIDELINES

Assessment Guideline	MSD	Assessment Guideline	MSD
Acetone	NG	29 [1]	1.2-Dichloropropane	50	50
Benzene	2.9	2.9	1.3-Dichloropropane	NG	NG
Bromobenzene	NG	NG	2.2-Dichloropropane	NG	NG
Bromochloromethane	NG	18 [1]	1.1-Dichloropropene	NG	NG
Bromodichloromethane	NG	18 [1]	cis-1.3-Dichloropropene	NG	0.21 [1]
Bromoform	NG	1.7 [1]	trans-1.3-Dichloropropene	NG	0.21 [1]
Bromomethane	NG	0.05 [1]	Ethyl benzene	0.7/0.5	0.7/0
n-Butylbenzene	NG	NG	Hexachlorobutadiene	NG	0.056 [1]
sec-Butylbenzene	NG	NG	Hexane	NG	NG
tert-Butylbenzene	NG	NG	2-Hexanone (Methyl butyl ketone)	NG	NG
Carbon disulfide	NG	NG	Isopropylbenzene	NG	NG
Carbon Tetrachloride	50	50	4-Isopropyltoluene	NG	NG
Chlorobenzene	10	10	MEK	NG	88 [1]
Dibromochloromethane	NG	13 [1]	MIBK	NG	210 [1]
Chloroethane	NG	NG	MTBE	NG	3.2 [1]
Chloroform	50	50	Styrene	50	50
Chloromethane	NG	NG	1.1.1.2-Tetrachloroethane	NG	0.11 [1]
2-Chlorotoluene	NG	NG	1.1.2.2-Tetrachloroethane	50	50
4-Chlorotoluene	NG	NG	Tetrachloroethene	0.5	0.5
1.2-Dibromo-3-chloropropane	NG	NG	Toluene	13000	13000
1.2-Dibromoethane	NG	0.05 [1]	1.2.3-Trichlorobenzene	10	10
Dibromomethane	NG	NG	1.2.4-Trichlorobenzene	10	10
1.2-Dichlorobenzene	10	10	1.1.1-Trichloroethane	50	50
1.3-Dichlorobenzene	10	10	1.1.2-Trichloroethane	50	50
1.4-Dichlorobenzene	10	10	Trichloroethene	0.92	0.92
Dichlorodifluoromethane	NG	25 [1]	Trichlorofluoromethane	NG	5.8 [1]
1.1-dichloroethane	50	50	1.2.3-Trichloropropane	NG	NG
1.2-Dichloroethane	50	50	1.2.4-Trimethylbenzene	NG	NG
1.1-dichloroethene	50	50	1.3.5-Trimethylbenzene	NG	NG
cis-1.2-Dichloroethene	50	50	Vinyl Chloride	NG	0.25 [1]
trans-1.2-Dichloroethene	50	50	Xylenes (Total)	1600	1600
Dichloromethane	50	50			

NOTE:
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- IMAGES FROM AUTODESK IMAGERY.
- [2] STANDARDS SELECTED FROM THE ONTARIO MINISTRY OF ENVIRONMENT'S FULL DEPTH GENERIC SITE CONDITIONS STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION. TABLE 3. 2011.

NO.	REVISION	DATE	BY

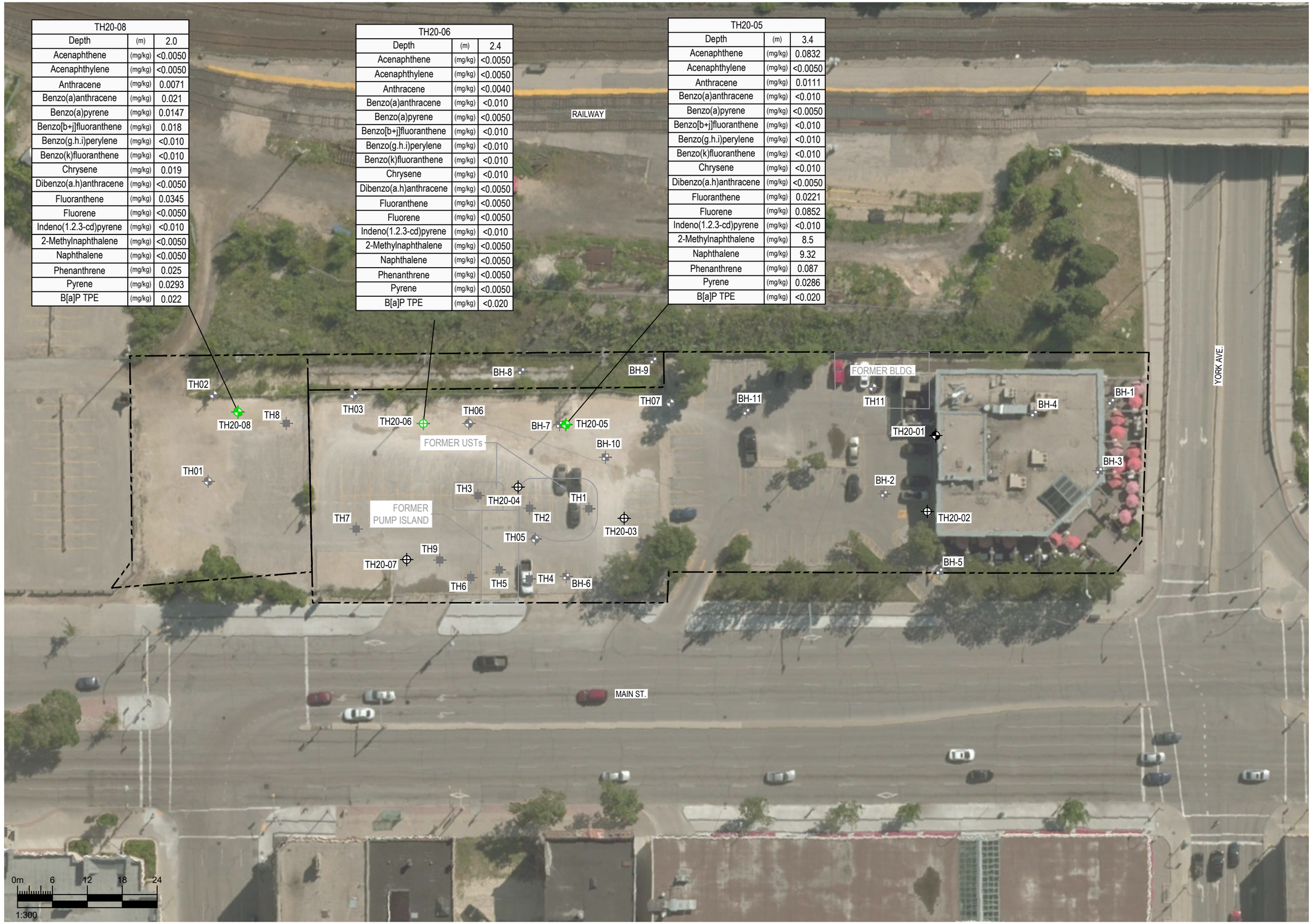
PHASE ENVIRONMENTAL SITE ASSESSMENT

191-219 MAIN STREET
WINNIPEG, MANITOBA

SOIL ANALYTICAL RESULTS - VOCs

SCALE:	AS SHOWN
DATE:	AUGUST 2020
DRAWN BY:	MD
PROJECT NO.:	WX1911101

FIGURE 4



TH20-08		
Depth	(m)	2.0
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	0.0071
Benzo(a)anthracene	(mg/kg)	0.021
Benzo(a)pyrene	(mg/kg)	0.0147
Benzo[b+j]fluoranthene	(mg/kg)	0.018
Benzo(g.h.i)perylene	(mg/kg)	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010
Chrysene	(mg/kg)	0.019
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	0.0345
Fluorene	(mg/kg)	<0.0050
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010
2-Methylnaphthalene	(mg/kg)	<0.0050
Naphthalene	(mg/kg)	<0.0050
Phenanthrene	(mg/kg)	0.025
Pyrene	(mg/kg)	0.0293
B[a]P TPE	(mg/kg)	0.022

TH20-06		
Depth	(m)	2.4
Acenaphthene	(mg/kg)	<0.0050
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	<0.0040
Benzo(a)anthracene	(mg/kg)	<0.010
Benzo(a)pyrene	(mg/kg)	<0.0050
Benzo[b+j]fluoranthene	(mg/kg)	<0.010
Benzo(g.h.i)perylene	(mg/kg)	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010
Chrysene	(mg/kg)	<0.010
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	<0.0050
Fluorene	(mg/kg)	<0.0050
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010
2-Methylnaphthalene	(mg/kg)	<0.0050
Naphthalene	(mg/kg)	<0.0050
Phenanthrene	(mg/kg)	<0.0050
Pyrene	(mg/kg)	<0.0050
B[a]P TPE	(mg/kg)	<0.020

TH20-05		
Depth	(m)	3.4
Acenaphthene	(mg/kg)	0.0832
Acenaphthylene	(mg/kg)	<0.0050
Anthracene	(mg/kg)	0.0111
Benzo(a)anthracene	(mg/kg)	<0.010
Benzo(a)pyrene	(mg/kg)	<0.0050
Benzo[b+j]fluoranthene	(mg/kg)	<0.010
Benzo(g.h.i)perylene	(mg/kg)	<0.010
Benzo(k)fluoranthene	(mg/kg)	<0.010
Chrysene	(mg/kg)	<0.010
Dibenzo(a.h)anthracene	(mg/kg)	<0.0050
Fluoranthene	(mg/kg)	0.0221
Fluorene	(mg/kg)	0.0852
Indeno(1.2.3-cd)pyrene	(mg/kg)	<0.010
2-Methylnaphthalene	(mg/kg)	8.5
Naphthalene	(mg/kg)	9.32
Phenanthrene	(mg/kg)	0.087
Pyrene	(mg/kg)	0.0286
B[a]P TPE	(mg/kg)	<0.020

wood.
440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

EARL'S - JUST FOR THE HALIBUT

LEGEND:
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- TEST HOLE (AGRA, 1995)
- TEST HOLE (AMEC, 2014)
- TEST HOLE (WOOD, 2020)
- MONITORING WELL (WOOD, 2020)
- BELOW GUIDELINES
- ABOVE GUIDELINES

Guideline		MSD
Acenaphthene	NG	NG
Acenaphthylene	NG	NG
Anthracene	32	32
Benzo(a)anthracene	10	10
Benzo(a)pyrene	72	72
Benzo[b+j]fluoranthene	10	10
Benzo(g.h.i)perylene	NG	NG
Benzo(k)fluoranthene	10	10
Chrysene	NG	NG
Dibenzo(a.h)anthracene	10	10
Fluoranthene	180	180
Fluorene	NG	NG
Indeno(1.2.3-cd)pyrene	10	10
2-Methylnaphthalene	NG	85
Naphthalene	22	22
Phenanthrene	50	50
Pyrene	10	10
B[a]P TPE	5.3	5.3

NOTE:
- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
- IMAGES FROM AUTODESK IMAGERY.

NO.	REVISION	DATE	BY

PHASE ENVIRONMENTAL SITE ASSESSMENT

191-219 MAIN STREET
WINNIPEG, MANITOBA

SOIL ANALYTICAL RESULTS - PAHs

SCALE:	AS SHOWN
DATE:	AUGUST 2020
DRAWN BY:	MD
PROJECT NO.:	WX1911101

FIGURE 5

wood.
440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

EARL'S - JUST FOR THE HALIBUT

LEGEND:

- APPROXIMATE PROPERTY LINE
- TEST HOLE (NATIONAL TESTING, 1993)
- TEST HOLE (AGRA, 1995)
- TEST HOLE (AMEC, 2014)
- TEST HOLE (WOOD, 2020)
- MONITORING WELL (WOOD, 2020)
- GROUNDWATER ELEVATION (m) (227.57m)
- GROUNDWATER FLOW DIRECTION

NOTE:
- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
- IMAGES FROM AUTODESK IMAGERY.

NO.	REVISION	DATE	BY

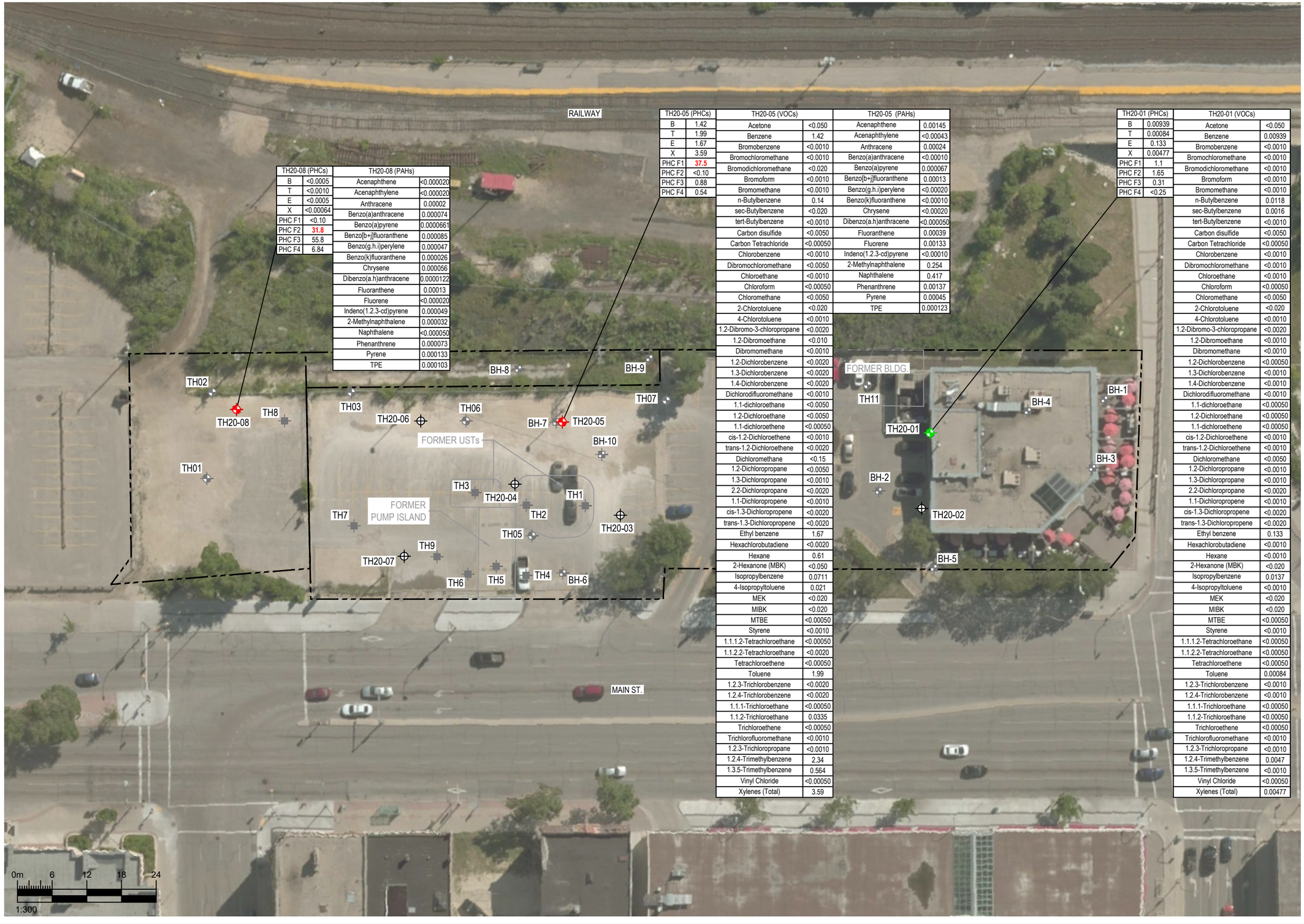
PHASE ENVIRONMENTAL SITE ASSESSMENT

191-219 MAIN STREET
WINNIPEG, MANITOBA

GROUNDWATER ELEVATION AND FLOW DIRECTION

SCALE:	AS SHOWN
DATE:	AUGUST 2020
DRAWN BY:	MD
PROJECT NO.:	WX1911101

FIGURE 6



TH20-08 (PHCs)	
B	<0.0005
T	<0.0010
E	<0.0005
X	<0.00064
PHC F1	<0.10
PHC F2	31.8
PHC F3	55.8
PHC F4	6.84

TH20-08 (PAHs)	
Acenaphthene	<0.000020
Acenaphthylene	<0.000020
Anthracene	0.00002
Benzo(a)anthracene	0.000074
Benzo(a)pyrene	0.0000661
Benzo[b+j]fluoranthene	0.000085
Benzo(g.h.i)perylene	0.000047
Benzo(k)fluoranthene	0.000026
Chrysene	0.000056
Dibenzo(a.h)anthracene	0.0000122
Fluoranthene	0.00013
Fluorene	<0.000020
Indeno(1.2.3-cd)pyrene	0.000049
2-Methylnaphthalene	0.000032
Naphthalene	<0.000050
Phenanthrene	0.000073
Pyrene	0.000133
TPE	0.000103

TH20-05 (PHCs)	
B	1.42
T	1.99
E	1.67
X	3.59
PHC F1	37.5
PHC F2	<0.10
PHC F3	0.88
PHC F4	0.54

TH20-05 (VOCs)	
Acetone	<0.050
Benzene	1.42
Bromobenzene	<0.0010
Bromochloromethane	<0.0010
Bromodichloromethane	<0.020
Bromoform	<0.0010
Bromomethane	<0.0010
n-Butylbenzene	0.14
sec-Butylbenzene	<0.020
tert-Butylbenzene	<0.0010
Carbon disulfide	<0.0050
Carbon Tetrachloride	<0.00050
Chlorobenzene	<0.0010
Dibromochloromethane	<0.0050
Chloroethane	<0.0010
Chloroform	<0.00050
Chloromethane	<0.0050
2-Chlorotoluene	<0.020
4-Chlorotoluene	<0.0010
1.2-Dibromo-3-chloropropane	<0.0020
1.2-Dibromoethane	<0.010
Dibromomethane	<0.0010
1.2-Dichlorobenzene	<0.0020
1.3-Dichlorobenzene	<0.0020
1.4-Dichlorobenzene	<0.0020
Dichlorodifluoromethane	<0.0010
1.1-dichloroethane	<0.0050
1.2-Dichloroethane	<0.0050
1.1-dichloroethene	<0.00050
cis-1.2-Dichloroethene	<0.0010
trans-1.2-Dichloroethene	<0.0020
Dichloromethane	<0.15
1.2-Dichloropropane	<0.0050
1.3-Dichloropropane	<0.0010
2.2-Dichloropropane	<0.0020
1.1-Dichloropropene	<0.0010
cis-1.3-Dichloropropene	<0.0020
trans-1.3-Dichloropropene	<0.0020
Ethyl benzene	1.67
Hexachlorobutadiene	<0.0020
Hexane	0.61
2-Hexanone (MBK)	<0.050
Isopropylbenzene	0.0711
4-Isopropyltoluene	0.021
MEK	<0.020
MIBK	<0.020
MTBE	<0.00050
Styrene	<0.0010
1.1.1.2-Tetrachloroethane	<0.00050
1.1.2.2-Tetrachloroethane	<0.0020
Tetrachloroethene	<0.00050
Toluene	1.99
1.2.3-Trichlorobenzene	<0.0020
1.2.4-Trichlorobenzene	<0.0020
1.1.1-Trichloroethane	<0.00050
1.1.2-Trichloroethane	0.0335
Trichloroethene	<0.00050
Trichlorofluoromethane	<0.0010
1.2.3-Trichloropropane	<0.0010
1.2.4-Trimethylbenzene	2.34
1.3.5-Trimethylbenzene	0.564
Vinyl Chloride	<0.00050
Xylenes (Total)	3.59

TH20-05 (PAHs)	
Acenaphthene	0.00145
Acenaphthylene	<0.00043
Anthracene	0.00024
Benzo(a)anthracene	<0.00010
Benzo(a)pyrene	0.000067
Benzo[b+j]fluoranthene	0.00013
Benzo(g.h.i)perylene	<0.00020
Benzo(k)fluoranthene	<0.00010
Chrysene	<0.00020
Dibenzo(a.h)anthracene	<0.000050
Fluoranthene	0.00039
Fluorene	0.00133
Indeno(1.2.3-cd)pyrene	<0.00010
2-Methylnaphthalene	0.254
Naphthalene	0.417
Phenanthrene	0.00137
Pyrene	0.00045
TPE	0.000123

TH20-01 (PHCs)	
B	0.00939
T	0.00084
E	0.133
X	0.00477
PHC F1	1.1
PHC F2	1.65
PHC F3	0.31
PHC F4	<0.25

TH20-01 (VOCs)	
Acetone	<0.050
Benzene	0.00939
Bromobenzene	<0.0010
Bromochloromethane	<0.0010
Bromodichloromethane	<0.0010
Bromoform	<0.0010
Bromomethane	<0.0010
n-Butylbenzene	0.0118
sec-Butylbenzene	0.0016
tert-Butylbenzene	<0.0010
Carbon disulfide	<0.0050
Carbon Tetrachloride	<0.00050
Chlorobenzene	<0.0010
Dibromochloromethane	<0.0010
Chloroethane	<0.0010
Chloroform	<0.00050
Chloromethane	<0.0050
2-Chlorotoluene	<0.020
4-Chlorotoluene	<0.0010
1.2-Dibromo-3-chloropropane	<0.0020
1.2-Dibromoethane	<0.0010
Dibromomethane	<0.0010
1.2-Dichlorobenzene	<0.00050
1.3-Dichlorobenzene	<0.0010
1.4-Dichlorobenzene	<0.0010
Dichlorodifluoromethane	<0.0010
1.1-dichloroethane	<0.00050
1.2-Dichloroethane	<0.00050
1.1-dichloroethene	<0.00050
cis-1.2-Dichloroethene	<0.0010
trans-1.2-Dichloroethene	<0.0010
Dichloromethane	<0.0050
1.2-Dichloropropane	<0.0010
1.3-Dichloropropane	<0.0010
2.2-Dichloropropane	<0.0020
1.1-Dichloropropene	<0.0010
cis-1.3-Dichloropropene	<0.0020
trans-1.3-Dichloropropene	<0.0020
Ethyl benzene	0.133
Hexachlorobutadiene	<0.0010
Hexane	<0.0010
2-Hexanone (MBK)	<0.020
Isopropylbenzene	0.0137
4-Isopropyltoluene	<0.0010
MEK	<0.020
MIBK	<0.020
MTBE	<0.00050
Styrene	<0.0010
1.1.1.2-Tetrachloroethane	<0.00050
1.1.2.2-Tetrachloroethane	<0.00050
Tetrachloroethene	<0.00050
Toluene	0.00084
1.2.3-Trichlorobenzene	<0.0010
1.2.4-Trichlorobenzene	<0.0010
1.1.1-Trichloroethane	<0.00050
1.1.2-Trichloroethane	<0.00050
Trichloroethene	<0.00050
Trichlorofluoromethane	<0.0010
1.2.3-Trichloropropane	<0.0010
1.2.4-Trimethylbenzene	0.0047
1.3.5-Trimethylbenzene	<0.0010
Vinyl Chloride	<0.00050
Xylenes (Total)	0.00477

wood.
440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

EARL'S - JUST FOR THE HALIBUT

LEGEND:
- APPROXIMATE PROPERTY LINE
- TEST HOLE (NATIONAL TESTING, 1993)
- TEST HOLE (AGRA, 1995)
- TEST HOLE (AMEC, 2014)
- TEST HOLE (WOOD, 2020)
- MONITORING WELL (WOOD, 2020)
- BELOW GUIDELINES
- ABOVE GUIDELINES

NOTE:
- SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
- IMAGES FROM AUTODESK IMAGERY.
- SEE REPORT FOR GUIDELINES.

NO.	REVISION	DATE	BY

PHASE ENVIRONMENTAL SITE ASSESSMENT

191-219 MAIN STREET
WINNIPEG, MANITOBA

GROUNDWATER ANALYTICAL RESULTS - PHCs, VOCs, PAHs

SCALE:	AS SHOWN
DATE:	AUGUST 2020
DRAWN BY:	MD
PROJECT NO.:	WX1911101

FIGURE 7

Tables

TABLE 1: SITE AND SURROUNDING LAND USE		
Direction	Land Use	Closest Approx. Distance (m) from areas of investigation.
Site	Commmercial land use (Restaurant with parking areas)	Site
West	Main Street followed by commercial and residential land use.	Adjacent/ 40
North	Parking lot followed by commercial building. Commercial land use.	Adjacent / 30
East	Canadian National (CN) rail lines.	Adjacent
South	York Avenue followed by parking lots associated with Union Station (130 Main Street).	Adjacent / 30

TABLE 2: ASSESSMENT GUIDELINES

Land Use	Exposure Pathway	Fine Grained Soil Guidelines (mg/kg) (PHCs)							
		Benzene[1]	Toluene	Ethylbenzene	Xylenes	PHC (F1)	PHC (F2)	PHC (F3)	PHC (F4)
Commercial (≤ 1.5 m depth)	Vapour Inhalation (slab on grade)	**2.8**	13000	6500	1600	4600	23000	NA	NA
	Soil Ingestion	110	82000	36000	560000	19000	10000	23000	RES
	Soil Dermal Contact	250	790000	210000	NA				
	Ecological Soil Contact	310	**330**	**430**	**230**	**320**	**260**	**2500**	**6600**
	Off-Site Migration	NG	NG	NG	NG	NA	NA	19000	RES
	Management Limits	NG	NG	NG	NG	800	1000	5000	10000
	MCC Reporting Standard [2]	***2.8***	***330***	***430***	***230***	***320***	***260***	***2500***	***6600***
Commercial (> 1.5 m depth)	Vapour Inhalation (slab on grade)	**2.9**	**13000**	**6700**	**1600**	4600	23000	NA	NA
	Off-Site Migration	NG	NG	NG	NG	NA	NA	19000	RES
	Management Limits	NG	NG	NG	NG	**800**	**1000**	**5000**	**10000**
	MCC Reporting Standard [2]	***2.9***	***13000***	***6700***	***1600***	***800***	***1000***	***5000***	***10000***

Land Use	Exposure Pathway	Fine Grained Soil Guidelines (µg/g) (VOCs)									
		Acetone	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon disulfide
Commercial	Interim Soil Quality Criterion [4]	--	--	--	--	--	--	--	--	--	--
	MCC Report Standard [2]	***28 [5]***	***NG***	***18 [5]***	***18 [5]***	***1.7 [5]***	***0.05 [5]***	***NG***	***NG***	***NG***	***NG***
Land Use	Exposure Pathway	Carbon Tetrachloride	Chlorobenzene	Dibromochloromethane	Chloroethane	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane (Ethylene dibromide)
Commercial	Interim Soil Quality Criterion [4]	**50**	**10**	NG	--	**50**	--	--	--	--	--
	MCC Report Standard [2]	***50***	***10***	***13 [5]***	***NG***	***50***	***NG***	***NG***	***NG***	***NG***	***0.05 [5]***
Land Use	Exposure Pathway	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-dichloroethane	1,2-Dichloroethane	1,1-dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
Commercial	Interim Soil Quality Criterion [4]	--	**10**	**10**	**10**	--	**50**	**50**	**50**	**50**	**50**
	MCC Report Standard [2]	***NG***	***10***	***10***	***10***	***25 [5]***	***50***	***50***	***50***	***50***	***50***
Land Use	Exposure Pathway	Dichloromethane	1,2-Dichloropropane	1,3-Dichloropropane	2,2-Dichloropropane	1,1-Dichloropropene	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Hexachlorobutadiene	Hexane	2-Hexanone (Methyl butyl ketone)
Commercial	Interim Soil Quality Criterion [4]	**50**	**50**	--	--	--	--	--	*NG*	--	--
	MCC Report Standard [2]	***50***	***50***	***NG***	***NG***	***NG***	***0.21 [5]***	***0.21 [5]***	***0.095 [5]***	***NG***	***NG***
Land Use	Exposure Pathway	Isopropylbenzene	4-Isopropyltoluene	MEK	MIBK	MTBE	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene
Commercial	Interim Soil Quality Criterion [4]	--	--	--	--	NG	**50**	--	**50**	**10**	**10**
	MCC Report Standard [2]	***NG***	***NG***	***88 [5]***	***210 [5]***	***3.2 [5]***	***50***	***0.11 [5]***	***50***	***10***	***10***
Land Use	Exposure Pathway	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl Chloride			
Commercial	Interim Soil Quality Criterion [4]	**50**	**50**	--	--	--	--	--			
	MCC Report Standard [2]	***50***	***50***	***5.8 [5]***	***NG***	***NG***	***NG***	***0.25 [5]***			

Land Use	Exposure Pathway	Tetrachloroethene (PCE)	Trichloroethene (TCE)
Commerical	Direct contact [6]	NG	100
	Inhalation of Indoor Air Check	**0.5**	**0.92**
	Off-Site Migration	NG	NG
	Interim Soil Quality Criterion [4]	50	50
	Ecological Soil Contact (Provisional SQG)	34	50
	MCC Report Standard [2]	***0.5***	***0.92***

TABLE 2: ASSESSMENT GUIDELINES. Continued

Land Use	Exposure Pathway	Soil Guidelines (ug/g) (PAHs) [3]								
		Acenaphthene	Acenaphthylene	Anthracene	Benzo[a] anthracene	Benzo[a] pyrene	Benzo [b+j] fluoranthene	Benzo (g,h,i)perylene	Benzo[k] fluoranthene	Chrysene
Commercial	Direct Contact[6]	NC	NC	NC	NC	NC	NC	NC	NG	NC
	Ecological Soil Contact	NC	NC	**32**	NC	**72**	NC	NC	NG	NC
	Provisional SQG	NG	NG	NG	NG	1.4	NG	NG	NG	NG
	Interim Criteria [4]	NG	NG	NG	**10**	NG	**10**	NG	**10**	NG
	MSD Reporting Standard [2]	*NG*	*NG*	*32*	*10*	*72*	*10*	*NG*	*10*	*NG*
Land Use	**Exposure Pathway**	**Dibenzo[a,h] anthracene**	**Fluoranthene**	**Fluorene**	**Indeno[1,2,3-cd]pyrene**	**2-Methylnaphthalene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**B(a)p TPE [1]**
Commercial	Direct Contact [6]	NG	NC	NC	NG	NG	NC	NG	NG	**5.3**
	Ecological Soil Contact	NG	**180**	NC	NG	NG	NC	NG	NG	NG
	Provisional SQG	NG	NG	NG	NG	NG	**22**	NG	NG	NG
	Interim Criteria [4]	**10**	NG	NG	**10**	NG	NG	**50**	**10**	NG
	MSD Reporting Standard [2]	*10*	*180*	*NG*	*10*	*85 [5]*	*22*	*50*	*10*	*5.3*

Notes:

[1] Benzene and B(a)P TPE guidelines were selected based on the 10^{-5} incremental risk for human health

[2] As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . Standards are based on CCME standards unless otherwise noted

[3] Metals and PAHs are independent of soil grain size or sample depth.

[4] Interim Criteria based on non-scientific rational. In the case where a scientific defensible value established for an exposure pathway is greater than the interim criteria value, the scientific defensible value will be considered applicable.

[5] Standards Selected from the Ontario Ministry of Environment's Full Depth Generic Site Conditions Standards in a Non-Potable Groundwater Condition. Table 3. 2011.

[6] Direct contact may be a combination and/or lowest of soil injestion, soil dermal contact, and particulate inhalation

[7] Data are insufficient and adequate to calculate only a soil quality guideline for human health. The interim soil quality criterion is retained.

- PHC (F1) - volatile petroleum hydrocarbons (C_6 – C_{10})
- PHC (F2) - extractable petroleum hydrocarbons (C_{10} – C_{16})
- PHC (F3) - extractable petroleum hydrocarbons (C_{16} – C_{34})
- PHC (F4) - extractable petroleum hydrocarbons (C_{34} – C_{50})
- mg/kg - concentration in milligrams per kilogram equivlanet to ug/g - micro gram per gram
- **BOLD** – selected guideline
- *Italics* – MSD Reporting Standard
- NA - not applicable, calculated value exceeds 1,000,000 mg/kg
- "--" CCME does not evaluate parameter
- NC - not calculated
- NG - no guideline available
- CCME EQG Guideline – commercial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines 1999 (updates to 2018).
- CCME CWS PHC Guideline - commercial land use criteria as outlined in the Canadian Council of the Ministers of the Environment (CCME) Canada-Wide Standards for Hydrocarbons in Soil 2001, revised 2008.

TABLE 2: ASSESSMENT GUIDELINES Continued..

Land Use	Exposure Pathway	Fine Grained Groundwater Guidelines (mg/L) (PHCs)							
		Benzene	Toluene	Ethylbenzene	Xylenes	PHC (F1)	PHC (F2)	PHC (F3)	PHC (F4)
Commercial	FCSAP - Inhalation	**19**	NG	NG	NG	NG	NG	NG	NG
	FSCAP - EcoSoil Contact	**540**	**240**	**150**	**74**	**9.9**	**3.1**	NG	NG
	MSD Reporting Standard [1]	*19*	*240*	*150*	*74*	*9.9*	*3.1*	*NG*	*NG*

Land Use	Exposure Pathway	Fine Grained Groundwater Guidelines (mg/L) (VOCs)									
		Acetone	Bromobenzene	Bromochloro-methane	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon disulfide
Commercial	FCSAP - Inhalation	**110000**	NG	NG	NG	**13**	**0.23**	NG	NG	NG	NG
	FCSAP - Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	MSD Reporting Standard [1]	*110000*	*NG*	*NG*	*85* [2]	*13*	*0.23*	*NG*	*NG*	*NG*	*NG*
Land Use	Exposure Pathway	Carbon Tetrachloride	Chlorobenzene	Dibromochloro-methane	Chloroethane	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane (Ethylene dibromide)
Commercial	FCSAP - Inhalation	**0.078**	**2.2**	**250**	NG	NG	NG	NG	NG	NG	**0.012**
	FCSAP - Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	MSD Reporting Standard [1]	*0.078*	*2.2*	*250*	*NG*	*0.022* [2]	*NG*	*NG*	*NG*	*NG*	*0.012*
Land Use	Exposure Pathway	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoro-methane	1,1-dichloroethane	1,2-Dichloroethane	1,1-dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
Commercial	FCSAP - Inhalation	NG	NGR	NG	**32**	NG	**44**	**1.2**	**4.5**	**0.23**	**0.23**
	FCSAP - Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	MSD Reporting Standard [1]	*NG*	*9.6* [2]	*9.6* [2]	*32*	*4.4* [2]	*44*	*1.2*	*4.5*	*0.17*	*0.17*
Land Use	Exposure Pathway	Dichloromethane	1,2-Dichloropropane	1,3-Dichloropropene	2,2-Dichloropropane	1,1-Dichloropropene	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Hexachlorobutadiene	Hexane	2-Hexanone (Methyl butyl ketone)
Commercial	FCSAP - Inhalation	**410**	**2**	**0.61**	NG	NG	NG	NG	**0.22**	NG	NG
	FCSAP - Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	MSD Reporting Standard [1]	*410*	*2*	*0.61*	*NG*	*NG*	*NG*	*NG*	*0.22*	*0.52* [2]	*NG*
Land Use	Exposure Pathway	Isopropylbenzene	4-Isopropyltoluene	MEK	MIBK	MTBE	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Tetrachloroethene (PCE)	1,2,3-Trichlorobenzene
Commercial	FCSAP - Inhalation	*NG*	*NG*	**7200**	**2500**	**40**	NGR	**0.38**	**0.21**	NG	**6.9**
	FCSAP - Eco Soil Contact	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	MSD Reporting Standard [1]	*NG*	*NG*	*7200*	*2500*	*40*	*0.0015* [2]	*0.38*	*0.21*	*0.017*	*6.9*
Land Use	Exposure Pathway	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene (TCE)	Trichlorofluoro-methane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl Chloride	
Commercial	FCSAP - Inhalation	**6.1**	**95**	**0.41**	**2.8**	NG	NG	NG	NG	**0.12**	
	FCSAP - Eco Soil Contact	NG	NG	NG	73	NG	NG	NG	NG	NG	
	MSD Reporting Standard [1]	*6.1*	*95*	*0.41*	*2.8*	*2.5* [2]	*NG*	*NG*	*NG*	*0.12*	

Land Use	Exposure Pathway	Fine Grained Groundwater Guidelines (mg/L) (PAHs)								
		Acenaphthene	Acenaphthylene	Anthracene	Benzo[a] anthracene	Benzo[a] pyrene	Benzo [b+j] fluoranthene	Benzo (g,h,i)perylene	Benzo[k] fluoranthene	Chrysene
Commercial	FCSAP - Inhalation	NGR	NG	NGR	NG	NC	NG	NG	NG	NG
	FCSAP - Eco Soil Contact	NG	NG	**0.32**	NG	**0.0066**	NG	NG	NG	NG
	MSD Reporting Standard [1]	*1.7* [2]	*0.0018* [2]	*0.32*	*0.0047* [2]	*0.0066*	*0.00075* [2]	*0.0002* [2]	*0.0004* [2]	*0.001* [2]
Land Use	Exposure Pathway	Dibenzo[a,h] anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene	B(a)p TPE [1]
Commercial	FCSAP - Inhalation	NG	NC	NG	NG	**150**	NGR	NG	NGR	NG
	FCSAP - Eco Soil Contact	NG	**0.86**	NG	NG	NG	NG	NG	NGR	NG
	MSD Reporting Standard [1]	*0.00052* [2]	*0.86*	*0.4* [2]	*0.0002* [2]	*150*	*6.4* [2]	*0.58* [2]	*0.068* [2]	*NG*

Notes:

[1] As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . Criteria are based on CCME standards unless otherwise noted

[2] MOE - Ontario Ministry of the Environment - Soil, Groundwater and Sediment Standards - Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition.2011

- mg/L - concentration in milligrams per kilogram
- **BOLD** – selected guideline
- ***Italics*** – MSD Reporting Standard
- NG - no guideline available
- NGR - no guideline required; calculated guideline exceeds solubility limit
- FCSAP - Commercial/Industrial land use guidelines as outlined in the Federal Contaminated Sites Action Plan (FCSAP) "Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGWQGs) for Federal Contaminated Sites", 2010, revised 2016.

TABLE 3: FIELD OBSERVATIONS AND SOIL VAPOUR TESTING					
Test Hole	Converted to well	Total Depth (m bgl)	Suspect Staining Encountered (m)		
				Level (ppm_v)	Depth (m)
TH20-01	Yes	12.2	0.9 - 2.3	210	2.4
TH20-02	No	12.2	None	370	11.7
TH20-03	No	6.1	None	4650	0.9
TH20-04	No	6.1	None	430	3.4
TH20-05	Yes	6.1	None	2450	2.4
TH20-06	No	6.1	None	110	1.8
TH20-07	No	6.1	None	50	0.6
TH20-08	Yes	6.1	None	60	4.9

Notes:

- ppm_v – parts per million combustible vapour
- m - metres
- m bgl - metres below grade level

wood.

TABLE 4: SOIL ANALYTICAL RESULTS - PHCs

Sample ID	Approximate Depth (m)	Soil Vapour Concentration (ppm_v)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	PHC F1 (mg/kg)	PHC F2 (mg/kg)	PHC F3 (mg/kg)	PHC F4 (mg/kg)
TH20-03 @ S2	0.9	4650	**24.4**	30	56.2	135	**2660**	**355**	86	<50
TH20-07 @ S1	0.6	50	<0.005	<0.05	<0.015	<0.071	<10	<25	145	121
Assement Guidelines/ MCC Reporting Standard (≤1.5 m)			2.8	330	430	230	320	260	2500	6600
TH20-01 @ S4	2.4	210	0.0176	0.074	<0.015	<0.071	72	<25	<50	<50
TH20-02 @ S16	11.7	370	<0.005	<0.05	<0.015	<0.071	<10	<25	<50	<50
TH20-04 @ S5	3.4	430	0.114	<0.05	10.5	1.34	**1120**	80	<50	<50
TH20-05 @ S4	2.4	2450	**28.1**	130	36.2	130	**1080**	79	62	<50
TH20-06 @ S3	1.8	110	0.0278	<0.05	<0.015	<0.071	21	<25	<50	<50
TH20-08 @ S7	4.9	60	<0.005	<0.05	<0.015	<0.071	<10	<25	<50	<50
Assement Guidelines/ MCC Reporting Standard (>1.5 m)			2.9	13000	6700	1600	800	1000	5000	10000

Notes:

- ppm_v – parts per million organic vapour
- mg/kg - concentration in miligrams per kilogram
- **BOLD** – exceeds the referenced Guideline and Reporting Standard
- PHC F1 - volatile petroleum hydrocarbons ($C_6 – C_{10}$)
- PHC F2 – extractable petroleum hydrocarbons (C_{10}-C_{16})
- PHC F3 – extractable petroleum hydrocarbon (C_{16}-C_{34})
- PHC F4 – extractable petroleum hydrocarbons (C_{34}-C_{50})
- < - less than the method detection limit
- CCME EQG – commercial land use guidelines as outlined in the Canadian Council of the Ministers of the Environment (CCME) " Canadian Environmental Quality Guidelines", 1999 (updates to 2018). The benzene concentration is based on one million (10^{-5}) incremental risk of cancer.
- CCME CWS PHC - commercial land use guidelines as outlined in the Canadian Council of the Ministers of the Environment (CCME) "Canada-Wide Standards for Hydrocarbons in Soil", 2001, revised 2008.
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Environmental's Laboratory in Winnipeg.

[1] As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) . In this instance the reporting standards are equal to the guidelines and as such are not represented as a separate line.

TABLE 5: SOIL ANALYTICAL RESULTS - VOCs						
Parameter	**Units**	**TH20-01 @ S4 (2.4 m)**	**TH20-01 @ S8 (5.3 m)**	**TH20-02 @ S16 (11.7 m)**	**Assessment Guideline**	***MSD Reporting Standard***
Acetone	mg/kg (ppm)	<0.50	<0.50	<0.50	NG	*28* [2]
Benzene	mg/kg (ppm)	0.0176	<0.0050	<0.0050	2.9	*2.9*
Bromobenzene	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	*NG*
Bromochloromethane	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	*18* [2]
Bromodichloromethane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*18* [2]
Bromoform	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*1.7* [2]
Bromomethane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*0.05* [2]
n-Butylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*NG*
sec-Butylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*NG*
tert-Butylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*NG*
Carbon disulfide	mg/kg (ppm)	<0.25	<0.25	<0.25	NG	*NG*
Carbon Tetrachloride	mg/kg (ppm)	<0.050	<0.050	<0.050	50	*50*
Chlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	10	*10*
Dibromochloromethane	mg/kg (ppm)	<0.10	<0.050	<0.050	NG	*13* [2]
Chloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*NG*
Chloroform	mg/kg (ppm)	<0.050	<0.050	<0.050	50	*50*
Chloromethane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*NG*
2-Chlorotoluene	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	*NG*
4-Chlorotoluene	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	*NG*
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*NG*
1,2-Dibromoethane	mg/kg (ppm)	<0.10	<0.050	<0.050	NG	*0.05* [2]
Dibromomethane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	*NG*
1,2-Dichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	10	*10*
1,3-Dichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	10	*10*
1,4-Dichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	10	*10*
Dichlorodifluoromethane	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	*25* [2]
1,1-dichloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	50	*50*
1,2-Dichloroethane	µg/g (ppm)	<0.050	<0.050	<0.050	50	*50*
1,1-dichloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	50	*50*
cis-1,2-Dichloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	50	*50*
trans-1,2-Dichloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	50	*50*
Dichloromethane	mg/kg (ppm)	<0.10	<0.10	<0.10	50	*50*
1,2-Dichloropropane	mg/kg (ppm)	<0.050	<0.050	<0.050	50	50
1,3-Dichloropropane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	NG
2,2-Dichloropropane	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	NG
1,1-Dichloropropene	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	NG
cis-1,3-Dichloropropene	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	0.21 [2]
trans-1,3-Dichloropropene	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	0.21 [2]
Ethyl benzene	mg/kg (ppm)	<0.015	<0.015	<0.015	6700	6700
Hexachlorobutadiene	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	0.095 [2]
Hexane	mg/kg (ppm)	0.143	<0.050	<0.050	NG	NG
2-Hexanone (Methyl butyl keton	mg/kg (ppm)	<2.0	<0.50	<0.50	NG	NG
Isopropylbenzene	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	NG
4-Isopropyltoluene	mg/kg (ppm)	<0.10	<0.10	<0.10	NG	NG
MEK	mg/kg (ppm)	<0.50	<0.50	<0.50	NG	88 [2]
MIBK	mg/kg (ppm)	<0.50	<0.50	<0.50	NG	210 [2]
MTBE	mg/kg (ppm)	<0.20	<0.20	<0.20	NG	3.2 [2]
Styrene	mg/kg (ppm)	<0.050	<0.050	<0.050	50	50
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	0.11 [2]
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	50	50
Tetrachloroethene	mg/kg (ppm)	<0.050	<0.050	<0.050	0.5	0.5
Toluene	mg/kg (ppm)	0.074	<0.050	<0.050	13000	13000
1,2,3-Trichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	10	10
1,2,4-Trichlorobenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	10	10
1,1,1-Trichloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	50	50
1,1,2-Trichloroethane	mg/kg (ppm)	<0.050	<0.050	<0.050	50	50
Trichloroethene	mg/kg (ppm)	<0.010	<0.010	<0.010	0.92	0.92
Trichlorofluoromethane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	5.8 [2]
1,2,3-Trichloropropane	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	NG
1,2,4-Trimethylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	NG
1,3,5-Trimethylbenzene	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	NG
Vinyl Chloride	mg/kg (ppm)	<0.050	<0.050	<0.050	NG	0.25 [2]
Xylenes (Total)	mg/kg (ppm)	<0.071	<0.071	<0.071	1600	1600

Notes:

- mg/kg - concentration in milligrams per kilogram
- **BOLD** – exceeds the referenced Guideline
- **BOLD** – exceeds the Reporting Standard
- < - less than the method detection limit
- NG - No Guideline
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Environmental's Laboratory in Winnipeg.
- Guideline - CCME EQG commercial land use guidelines as outlined in the Canadian Council of the Ministers of the Environment (CCME) "Canadian Environmental Quality Guidelines", 1999 (updates to 2018)

[1] As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR). In this instance the reporting standards are equal to the

[2] Standards Selected from the Ontario Ministry of Environment's Full Depth Generic Site Conditions Standards in a Non-Potable Groundwater Condition. Table 3. 2011.

wood.

TABLE 6 : SOIL ANALYTICAL RESULTS - PAHs						
Parameter	**Units**	**TH20-05 @ S5 (3.4 m)**	**TH20-06 @ S4 (2.4 m)**	**TH20-08 @ S3 (2.0 m)**	**Guideline**	***MSD Reporting Standard*** [1]
Acenaphthene	mg/kg (ppm)	0.0832	<0.0050	<0.0050	NG	*NG*
Acenaphthylene	mg/kg (ppm)	<0.0050	<0.0050	<0.0050	NG	*NG*
Anthracene	mg/kg (ppm)	0.0111	<0.0040	0.0071	32	*32*
Benzo(a)anthracene	mg/kg (ppm)	<0.010	<0.010	0.021	10	*10*
Benzo(a)pyrene	mg/kg (ppm)	<0.0050	<0.0050	0.0147	72	*72*
Benzo[b+j]fluoranthene	mg/kg (ppm)	<0.010	<0.010	0.018	10	*10*
Benzo(g,h,i)perylene	mg/kg (ppm)	<0.010	<0.010	<0.010	NG	*NG*
Benzo(k)fluoranthene	mg/kg (ppm)	<0.010	<0.010	<0.010	10	*10*
Chrysene	mg/kg (ppm)	<0.010	<0.010	0.019	NG	*NG*
Dibenzo(a,h)anthracene	mg/kg (ppm)	<0.0050	<0.0050	<0.0050	10	*10*
Fluoranthene	mg/kg (ppm)	0.0221	<0.0050	0.0345	180	*180*
Fluorene	mg/kg (ppm)	0.0852	<0.0050	<0.0050	NG	*NG*
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	<0.010	<0.010	<0.010	10	*10*
2-Methylnaphthalene	mg/kg (ppm)	8.5	<0.0050	<0.0050	NG	*85*
Naphthalene	mg/kg (ppm)	9.32	<0.0050	<0.0050	22	*22*
Phenanthrene	mg/kg (ppm)	0.087	<0.0050	0.025	50	*50*
Pyrene	mg/kg (ppm)	0.0286	<0.0050	0.0293	10	*10*
B[a]P Total Potency Equivalent	mg/kg (ppm)	<0.020	<0.020	0.022	5.3	*5.3*

Notes:

- < - less than the method detection limit
- NG – not applicable/no guideline criteria established.
- mg/kg - concentration in milligrams per kilogram equivlanet to µg/g - micro gram per gram
- **BOLD**
- CCME EQG – commercial land use guidelines as outlined in the Canadian Council of the Ministers of the Environment (CCME) “Canadian Environmental Quality Guidelines”, 1999 (updates to 2018). The B[a]P Total Potency Equivalent concentration is based on one in one hundred thousand (10-5) incremental risk of cancer
- See laboratory report for detection limits, testing protocols and QA/QC procedures.

See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Laboratory in Winnipeg.

[1] As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR) .

TABLE 7: MONITORING WELL DATA

Monitor Well No.	Depth to Water (m B.TOP)	Ground Elevation (m asl)	Depth to Water (m bgl)	Screened Interval (m bgl)	Groundwater Elevation (m asl)	Full Depth (m b TOP)	LNAPL Thickness (mm)	Combustible Vapours Well Headsapce ppm_v
TH20-01	4.23	231.91	4.35	1.5-11.3	227.57	11.30	Sheen	350
TH20-05	3.12	232.00	3.29	1.5-6.1	228.71	6.10	Sheen	>7000
TH20-08	1.247	231.96	1.41	1.5-5.95	230.55	5.95	ND	35

Notes:

- m - meters
- m B.TOP - meters below top of pipe
- m bgl - meters below grade level
- ppm_v - parts per million organic vapour
- ND - not detected

TABLE 8: GROUNDWATER ANALYTICAL RESULTS - PHCs

Sample ID	Sample Date	Monitoring Well Vapour Concentration (ppm_v)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	PHC F1 (mg/L)	PHC F2 (mg/L)	PHC F3 (mg/L)	PHC F4 (mg/L)
TH20-01	24-Jul-20	350	0.00939	0.00084	0.133	0.00477	1.1	1.65	0.31	<0.25
TH20-05	24-Jul-20	>7000	1.42	1.99	1.67	3.59	**37.5**	<0.10	0.88	0.54
TH20-08	24-Jul-20	35	<0.00050	<0.0010	<0.00050	<0.00064	<0.10	**31.8**	55.8	6.84
Assement Guidelines/ MCC Reporting Standard			**19**	**240**	**150**	**74**	**9.9**	**3.1**	**NG**	**NG**

Notes:

- ppm_v – parts per million organic vapour
- mg/L - concentration in miligrams per litre
- **BOLD** – exceeds the referenced Guideline
- **BOLD** – exceeds the Reporting Standard
- PHC F1 - volatile petroleum hydrocarbons (C_6 – C_{10})
- PHC F2 – extractable petroleum hydrocarbons (C_{10}-C_{16})
- PHC F3 – extractable petroleum hydrocarbon (C_{16}-C_{34})
- PHC F4 – extractable petroleum hydrocarbons (C_{34}-C_{50})
- < - less than the method detection limit
- NG - No Guideline
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Environmental's Laboratory in Winnipeg.
- Guidelines - FCSAP - Federal Contaminated Sites Action Plan 2010. (Updated 2016)

[1] As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR).

TABLE 9: GROUNDWATER ANALYTICAL RESULTS - VOCs

Parameter	Units	TH20-01	TH20-05	Assesment Guidelines	MCC Reporting Standard	Parameter	Units	TH20-01	TH20-05	Assesment Guidelines	MCC Reporting Standard
Acetone	mg/L	<0.050	<0.050	**110000**	**110000**	1,2-Dichloropropane	mg/L	<0.0010	<0.0050	**2**	**2**
Benzene	mg/L	0.00939	1.42	**19**	**19**	1,3-Dichloropropane	mg/L	<0.0010	<0.0010	**0.61**	**0.61**
Bromobenzene	mg/L	<0.0010	<0.0010	**NG**	**NG**	2,2-Dichloropropane	mg/L	<0.0020	<0.0020	**NG**	**NG**
Bromochloromethane	mg/L	<0.0010	<0.0010	**NG**	**NG**	1,1-Dichloropropene	mg/L	<0.0010	<0.0010	**NG**	**NG**
Bromodichloromethane	mg/L	<0.0010	<0.020	**NG**	**85** [2]	cis-1,3-Dichloropropene	mg/L	<0.0020	<0.0020	**NG**	**NG**
Bromoform	mg/L	<0.0010	<0.0010	**13**	**13**	trans-1,3-Dichloropropene	mg/L	<0.0020	<0.0020	**NG**	**NG**
Bromomethane	mg/L	<0.0010	<0.0010	**0.23**	**0.23**	Ethyl benzene	mg/L	0.133	1.67	**150**	**150**
n-Butylbenzene	mg/L	0.0118	0.14	**NG**	**NG**	Hexachlorobutadiene	mg/L	<0.0010	<0.0020	**0.22**	**0.22**
sec-Butylbenzene	mg/L	0.0016	<0.020	**NG**	**NG**	Hexane	mg/L	<0.0010	**0.61**	**NG**	**0.52** [2]
tert-Butylbenzene	mg/L	<0.0010	<0.0010	**NG**	**NG**	2-Hexanone (Methyl butyl ketone)	mg/L	<0.020	<0.050	**NG**	**NG**
Carbon disulfide	mg/L	<0.0050	<0.0050	**NG**	**NG**	Isopropylbenzene	mg/L	0.0137	0.0711	**NG**	**NG**
Carbon Tetrachloride	mg/L	<0.00050	<0.00050	**0.078**	**0.078**	4-Isopropyltoluene	mg/L	<0.0010	0.021	**NG**	**NG**
Chlorobenzene	mg/L	<0.0010	<0.0010	**2.2**	**2.2**	MEK	mg/L	<0.020	<0.020	**7200**	**7200**
Dibromochloromethane	mg/L	<0.0010	<0.0050	**250**	**250**	MIBK	mg/L	<0.020	<0.020	**2500**	**2500**
Chloroethane	mg/L	<0.0010	<0.0010	**NG**	**NG**	MTBE	mg/L	<0.00050	<0.00050	**40**	**40**
Chloroform	mg/L	<0.00050	<0.00050	**NG**	**0.022** [2]	Styrene	mg/L	<0.0010	<0.0010	**NG**	**0.0015** [2]
Chloromethane	mg/L	<0.0050	<0.0050	**NG**	**NG**	1,1,1,2-Tetrachloroethane	mg/L	<0.00050	<0.00050	**0.38**	**0.38**
2-Chlorotoluene	mg/L	<0.020	<0.020	**NG**	**NG**	1,1,2,2-Tetrachloroethane	mg/L	<0.00050	<0.0020	**0.21**	**0.21**
4-Chlorotoluene	mg/L	<0.0010	<0.0010	**NG**	**NG**	Tetrachloroethene	mg/L	<0.00050	<0.00050	**0.017**	**0.017**
1,2-Dibromo-3-chloropropane	mg/L	<0.0020	<0.0020	**NG**	**NG**	Toluene	mg/L	0.00084	1.99	**240**	**240**
1,2-Dibromoethane	mg/L	<0.0010	<0.010	**0.012**	**0.012**	1,2,3-Trichlorobenzene	mg/L	<0.0010	<0.0020	**6.9**	**6.9**
Dibromomethane	mg/L	<0.0010	<0.0010	**NG**	**NG**	1,2,4-Trichlorobenzene	mg/L	<0.0010	<0.0020	**6.1**	**6.1**
1,2-Dichlorobenzene	mg/L	<0.00050	<0.0020	**NG**	**9.6** [2]	1,1,1-Trichloroethane	mg/L	<0.00050	<0.00050	**95**	**95**
1,3-Dichlorobenzene	mg/L	<0.0010	<0.0020	**NG**	**9.6** [2]	1,1,2-Trichloroethane	mg/L	<0.00050	0.0335	**0.41**	**0.41**
1,4-Dichlorobenzene	mg/L	<0.0010	<0.0020	**32**	**32**	Trichloroethene	mg/L	<0.00050	<0.00050	**2.8**	**2.8**
Dichlorodifluoromethane	mg/L	<0.0010	<0.0010	**NG**	**4.4** [2]	Trichlorofluoromethane	mg/L	<0.0010	<0.0010	**NG**	**2.5** [2]
1,1-dichloroethane	mg/L	<0.00050	<0.0050	**44**	**44**	1,2,3-Trichloropropane	mg/L	<0.0010	<0.0010	**NG**	**NG**
1,2-Dichloroethane	mg/L	<0.00050	<0.0050	**1.2**	**1.2**	1,2,4-Trimethylbenzene	mg/L	0.0047	2.34	**NG**	**NG**
1,1-dichloroethene	mg/L	<0.00050	<0.00050	**4.5**	**4.5**	1,3,5-Trimethylbenzene	mg/L	<0.0010	0.564	**NG**	**NG**
cis-1,2-Dichloroethene	mg/L	<0.0010	<0.0010	**0.17**	**0.17**	Vinyl Chloride	mg/L	<0.00050	<0.00050	**0.12**	**0.12**
trans-1,2-Dichloroethene	mg/L	<0.0010	<0.0020	**0.17**	**0.17**	Xylenes (Total)	mg/L	0.00477	3.59	**74**	**74**
Dichloromethane	mg/L	<0.0050	<0.15	**410**	**410**						

Notes:

- mg/L - concentration in miligrams per litre
- **BOLD** – exceeds the referenced Guideline
- **BOLD** – exceeds the Reporting Standard
- < - less than the method detection limit
- NG - No Guideline
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Environmental's Laboratory in Winnipeg.
- Guidelines - FCSAP - Federal Contaminated Sites Action Plan 2010. (Updated 2016)

[1] As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR).

[2] Standards Selected from the Ontario Ministry of Environment's Full Depth Generic Site Conditions Standards in a Non-Potable

wood.

TABLE 10: GROUNDWATER ANALYTICAL RESULTS - PAHs					
Parameter	**Units**	**TH20-05**	**TH20-08**	**Guideline**	***MSD Reporting Standard*** [1]
Acenaphthene	mg/L	0.00145	<0.000020	NG	*1.7* [2]
Acenaphthylene	mg/L	<0.00043	<0.000020	NG	*0.0018* [2]
Anthracene	mg/L	0.00024	0.00002	0.32	*0.32*
Benzo(a)anthracene	mg/L	<0.00010	0.000074	NG	*0.0047* [2]
Benzo(a)pyrene	mg/L	0.000067	0.0000661	0.0066	*0.0066*
Benzo[b+j]fluoranthene	mg/L	0.00013	0.000085	NG	*0.00075* [2]
Benzo(g,h,i)perylene	mg/L	<0.00020	0.000047	NG	*0.0002* [2]
Benzo(k)fluoranthene	mg/L	<0.00010	0.000026	NG	*0.0004* [2]
Chrysene	mg/L	<0.00020	0.000056	NG	*0.001* [2]
Dibenzo(a,h)anthracene	mg/L	<0.000050	0.0000122	NG	*0.00052* [2]
Fluoranthene	mg/L	0.00039	0.00013	0.86	*0.86*
Fluorene	mg/L	0.00133	<0.000020	NG	*0.4* [2]
Indeno(1,2,3-cd)pyrene	mg/L	<0.00010	0.000049	NG	*0.0002* [2]
2-Methylnaphthalene	mg/L	0.254	0.000032	150	*150*
Naphthalene	mg/L	0.417	<0.000050	NG	*6.4* [2]
Phenanthrene	mg/L	0.00137	0.000073	NG	*0.58* [2]
Pyrene	mg/L	0.00045	0.000133	NG	*0.068* [2]
B[a]P Total Potency Equivalent	mg/L	0.000123	0.000103	NG	*NG*

Notes:

- mg/L - concentration in miligrams per litre
- **BOLD** – exceeds the referenced Guideline
- **BOLD** – exceeds the Reporting Standard
- < - less than the method detection limit
- NG - No Guideline
- See laboratory report for detection limits, testing protocols and QA/QC procedures. Laboratory analysis was performed by ALS Environmental's Laboratory in W
- Guidelines - FCSAP - Federal Contaminated Sites Action Plan 2010. (Updated 2016)

[1] As per the Contaminated Sites Remediation Act (CSRA) and the standards for reporting established by regulation (CSRR).

[2] Standards Selected from the Ontario Ministry of Environment's Full Depth Generic Site Conditions Standards in a Non-Potable Groundwater Condition. Table 3. 2011.

Appendix A

Test Hole Logs

PROJECT: Phase II ESA	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20-01**
CLIENT: Earls Restaurants	DRILL RIG: Geoprobe 7822BT	PROJECT No: WX1911101
LOCATION: 191-219 Main St. WPG, MB	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

POCKET PENETROMETER (kPa): 100 200 300 400

COMBUSTIBLE VAPOUR (ppmv): 2000 4000 6000 8000

DEPTH (m)	SOIL SYMBOL	USCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	SLOTTED PIEZOMETER TH20-01	COMMENTS	DEPTH (m)
0	SPH		ASPHALT - 75mm thick						0
	GP		SAND AND GRAVEL (FILL) - 150mm thick						
1		CI	CLAY (FILL) -silty, medium plastic, moist, soft, black/grey, rust inclusions		1				1
2					2				2
					3				
3			CLAY - medium plastic, damp, soft to firm, black/grey		4				3
4		CI			5				4
					6				
5					7				5
			CLAY - silty, high plastic, damp, soft, brown		8				
6									6
					9				
7					10				7
8			- below 8.2m, wet, grey		11				8
		CH			12				
9									9
10					13				10
					14				
11			- below 10.7m, moist		15				11
12					16				12
			END OF HOLE AT 12.2m BELOW EXISTING GRADE						
13			Notes:						13
			- No sloughing was observed during drilling.						
14			- Seepage was observed from 7.6m to 10.7m during drilling.						14
			- Test hole remained open to 12.2m below grade with no accumulation of water prior to monitoring well installation.						
15			- Monitoring well installed.						

WX1911101 - PHASE II ESA (191-219 MAIN STREET).GPJ 20/08/05 04:02 PM (WPG - ENVIRO LOG 1)

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LOGGED BY: AF/KF	COMPLETION DEPTH: 12.2 m
REVIEWED BY: JH	COMPLETION DATE: July 16, 2020
Figure No.	Sheet 1 of 1

PROJECT: Phase II ESA	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20-02**
CLIENT: Earls Restaurants	DRILL RIG: Geoprobe 7822BT	PROJECT No: WX1911101
LOCATION: 191-219 Main St. WPG, MB	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

POCKET PENETROMETER (kPa) 100 200 300 400

COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		SPH	ASPHALT - 75mm thick					0
		GP	SAND AND GRAVEL (FILL) - 150mm thick		1			
1			CLAY (FILL) - silty, some gravel and sand, low to medium plastic, moist, firm, brown/black		2			1
		CI						
2					3			2
					4			
3			CLAY - silty, high plastic, moist, soft, brown					3
					5			
4					6			4
5					7			5
					8			
6								6
					9			
7		CH			10			7
8					11			8
					12			
9								9
10					13			10
					14			
11					15			11
12			END OF HOLE AT 12.2m BELOW EXISTING GRADE		16			12
13			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 12.2m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.					13
14								14
15								

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LOGGED BY: AF/KF	COMPLETION DEPTH: 12.2 m
REVIEWED BY: JH	COMPLETION DATE: July 16, 2020
Figure No.	Sheet 1 of 1

WX1911101 - PHASE II ESA (191-219 MAIN STREET).GPJ 20/08/05 04:02 PM (WPG - ENVIRO LOG 1)

PROJECT: Phase II ESA	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20-03**
CLIENT: Earls Restaurants	DRILL RIG: Geoprobe 7822BT	PROJECT No: WX1911101
LOCATION: 191-219 Main St. WPG, MB	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

POCKET PENETROMETER (kPa): 100 200 300 400

COMBUSTIBLE VAPOUR (ppmv): 2000 4000 6000 8000

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		ASPH	ASPHALT - 25mm thick					0
		GP	SAND AND GRAVEL (FILL) - 150mm thick					
			CLAY (FILL) - silty, some sand and gravel, damp, firm, black/brown		1			
1		CI			2			1
2					3			2
			CLAY - silty, high plastic, moist, soft, brown		4			
3					5			3
4		CH			6			4
5					7			5
6					8			6
			END OF HOLE AT 6.1m BELOW EXISTING GRADE					
7			Notes:					7
			- No sloughing was observed during drilling.					
			- No seepage was observed during drilling.					
			- Test hole remained open to 6.1m below grade with no accumulation of water prior to backfilling.					
			- Test hole was backfilled with auger cuttings and bentonite.					
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15								

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LOGGED BY: AF/KF	COMPLETION DEPTH: 6.1 m
REVIEWED BY: JH	COMPLETION DATE: July 16, 2020
Figure No.	Sheet 1 of 1

WX1911101 - PHASE II ESA (191-219 MAIN STREET).GPJ 20/08/05 04:02 PM (WPG - ENVIRO LOG 1)

PROJECT: Phase II ESA	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20-04**
CLIENT: Earls Restaurants	DRILL RIG: Geoprobe 7822BT	PROJECT No: WX1911101
LOCATION: 191-219 Main St. WPG, MB	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

POCKET PENETROMETER (kPa): 100 200 300 400

COMBUSTIBLE VAPOUR (ppmv): 2000 4000 6000 8000

DEPTH (m)	SOIL SYMBOL	USCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRAVEL (FILL) - 150mm thick					0
		SP	SAND (FILL) - poorly graded, coarse grained, damp, loose, brown		1			
1			CLAY (FILL) - silty, some sand and gravel, medium plastic, damp, firm, black/grey, occasional glass debris		2			1
2		CI			3			2
			CLAY - silty, medium plastic, damp, firm, grey		4			
3		CI			5			3
4			CLAY - silty, high plastic, moist, soft, brown		6			4
5		CH			7			5
6					8			6
			END OF HOLE AT 6.1m BELOW EXISTING GRADE					
7			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 6.1m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.					7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15								

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LOGGED BY: AF/KF	COMPLETION DEPTH: 6.1 m
REVIEWED BY: JH	COMPLETION DATE: July 16, 2020
Figure No.	Sheet 1 of 1

WX1911101 - PHASE II ESA (191-219 MAIN STREET).GPJ 20/08/05 04:02 PM (WPG - ENVIRO LOG 1)

PROJECT: Phase II ESA	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20-05**
CLIENT: Earls Restaurants	DRILL RIG: Geoprobe 7822BT	PROJECT No: WX1911101
LOCATION: 191-219 Main St. WPG, MB	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

POCKET PENETROMETER (kPa) 100 200 300 400

COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000

DEPTH (m)	SOIL SYMBOL	USCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	SLOTTED PIEZOMETER TH20-05	COMMENTS	DEPTH (m)
0		SP-GP	SAND AND GRAVEL (FILL) - well graded, coarse grained						0
1			CLAY (FILL) - silty, some sand and gravel, medium plastic, damp, firm, black/grey, occasional roots, occasional debris		1				1
2					2				2
3		CI			3				3
4					4				4
5			CLAY - silty, high plastic, damp, firm, grey, PHC-like odour		5				5
6			- below 4.0m, soft		6				6
7		CH			7				7
8					8				8
9			END OF HOLE AT 6.1m BELOW EXISTING GRADE						9
10			Notes:						10
11			- No sloughing was observed during drilling.						11
12			- No seepage was observed during drilling.						12
13			- Test hole remained open to 6.1m below grade with no accumulation of water prior to monitoring well installation.						13
14			- Monitoring well installed.						14
15									

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LOGGED BY: AF/KF	COMPLETION DEPTH: 6.1 m
REVIEWED BY: JH	COMPLETION DATE: July 16, 2020
Figure No.	Sheet 1 of 1

WX1911101 - PHASE II ESA (191-219 MAIN STREET).GPJ 20/08/05 04:02 PM (WPG - ENVIRO LOG 1)

PROJECT: Phase II ESA	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20-06**
CLIENT: Earls Restaurants	DRILL RIG: Geoprobe 7822BT	PROJECT No: WX1911101
LOCATION: 191-219 Main St. WPG, MB	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

POCKET PENETROMETER (kPa) 100 200 300 400

COMBUSTIBLE VAPOUR (ppmv) 2000 4000 6000 8000

DEPTH (m)	SOIL SYMBOL	USCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		SW	SAND AND GRAVEL (FILL) - well graded, coarse grained,					0
			CLAY (FILL) - silty, some sand and gravel, medium plastic, damp, firm, black, occasional debris		1			
1					2			1
2		CI			3			2
					4			
3			CLAY - silty, high plastic, moist, firm, grey					3
					5			
4			- below 4.0m, brown		6			4
		CH						
5					7			5
					8			
6			END OF HOLE AT 6.1m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 6.1m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.					6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15								

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LOGGED BY: AF/KF	COMPLETION DEPTH: 6.1 m
REVIEWED BY: JH	COMPLETION DATE: July 16, 2020
Figure No.	Sheet 1 of 1

WX1911101 - PHASE II ESA (191-219 MAIN STREET).GPJ 20/08/05 04:02 PM (WPG - ENVIRO LOG 1)

PROJECT: Phase II ESA	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20-07**
CLIENT: Earls Restaurants	DRILL RIG: Geoprobe 7822BT	PROJECT No: WX1911101
LOCATION: 191-219 Main St. WPG, MB	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

POCKET PENETROMETER (kPa) ■ 100 200 300 400

COMBUSTIBLE VAPOUR (ppmv) ▲ 2000 4000 6000 8000

DEPTH (m)	SOIL SYMBOL	USCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		SP-GP	SAND AND GRAVEL (FILL) - 300mm thick					0
		CI	CLAY (FILL) - silty, sand and gravel, medium plastic, damp, soft, black		1			
1			CLAY - silty, medium plastic, damp, stiff, grey		2			1
2					3			2
		CI			4			
3					5			3
4			CLAY - silty, high plastic, damp, stiff, brown		6			4
5		CH			7			5
			- below 5.5m, occasional sulphate inclusions		8			
6			END OF HOLE AT 6.1m BELOW EXISTING GRADE					6
7			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 6.1m below grade with no accumulation of water prior to backfilling. - Test hole was backfilled with auger cuttings and bentonite.					7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15								

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LOGGED BY: AF/KF	COMPLETION DEPTH: 6.1 m
REVIEWED BY: JH	COMPLETION DATE: July 16, 2020
Figure No.	Sheet 1 of 1

WX1911101 - PHASE II ESA (191-219 MAIN STREET).GPJ 20/08/05 04:02 PM (WPG - ENVIRO LOG 1)

PROJECT: Phase II ESA	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20-08**
CLIENT: Earls Restaurants	DRILL RIG: Geoprobe 7822BT	PROJECT No: WX1911101
LOCATION: 191-219 Main St. WPG, MB	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

POCKET PENETROMETER (kPa): 100 200 300 400

COMBUSTIBLE VAPOUR (ppmv): 2000 4000 6000 8000

DEPTH (m)	SOIL SYMBOL	USCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	SLOTTED PIEZOMETER TH20-08	COMMENTS	DEPTH (m)
0		SP-GP	SAND AND GRAVEL (FILL) - 300mm thick						0
1		CI	CLAY (FILL) - silty, some sand and gravel, low to medium plastic, moist, soft, black/grey, occasional debris		1				1
2		CH	CLAY - silty, high plastic, moist, soft, brown		2				2
3		MH	SILT - clayey, high plastic, moist, very soft, light brown		3				3
4		CH	CLAY - silty, high plastic, moist, soft, brown		4				4
5					5				5
6					6				6
7					7				7
8					8				8
9									9
10									10
11									11
12									12
13									13
14									14
15									

END OF HOLE AT 6.1m BELOW EXISTING GRADE

Notes:
- No sloughing was observed during drilling.
- Seepage was observed from 1.8m to 2.4m during drilling.
- Test hole remained open to 6.1m below grade with no accumulation of water prior to monitoring well installation backfilling.
- Monitoring well installed.

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LOGGED BY: AF/KF	COMPLETION DEPTH: 6.1 m
REVIEWED BY: JH	COMPLETION DATE: July 16, 2020
Figure No.	Sheet 1 of 1

Appendix B

Laboratory Reports

Wood Environment & Infrastructure Solutions (Winnipeg)
ATTN: JUSTIN HUBERDEAU
440 Dovercourt Drive
Winnipeg MB R3Y 1G4

Date Received: 21-JUL-20
Report Date: 29-JUL-20 10:50 (MT)
Version: FINAL

Client Phone: 204-488-2997

Certificate of Analysis

Lab Work Order #: L2476948

Project P.O. #: NOT SUBMITTED
Job Reference: WX1911101 MAIN STREET EARLS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-1 TH20-01 @ S4							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
Miscellaneous Parameters							
Moisture	31.3		0.10	%		22-JUL-20	R5164979
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	23-JUL-20	23-JUL-20	R5166240
F3 (C16-C34)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
F4 (C34-C50)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
Surrogate: 2-Bromobenzotrifluoride	103.4		60-140	%	23-JUL-20	23-JUL-20	R5166240
Chrom. to baseline at nC50	YES				23-JUL-20	23-JUL-20	R5166240
CCME Total Hydrocarbons							
F1-BTEX	72		10	mg/kg		24-JUL-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		24-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		24-JUL-20	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
Benzene	0.0176	EMPC	0.0050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromobenzene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromochloromethane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromodichloromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromoform	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromomethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
n-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
sec-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
tert-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Carbon disulfide	<0.25		0.25	mg/kg	16-JUL-20	23-JUL-20	R5166321
Carbon Tetrachloride	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chloroform	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chloromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2-Chlorotoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
4-Chlorotoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dibromochloromethane	<0.10	DLCI	0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dibromoethane	<0.10	DLCI	0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dibromomethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dichlorodifluoromethane	<0.10	DLM	0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-dichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dichloromethane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3-Dichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2,2-Dichloropropane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-Dichloropropene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
trans-1,3-Dichloropropene	<0.10	DLM	0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-1 TH20-01 @ S4							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
VOC plus F1 by GCMS							
Ethylbenzene	<0.015		0.015	mg/kg	16-JUL-20	23-JUL-20	R5166321
F1	72		10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Hexachlorobutadiene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Hexane	0.143		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2-Hexanone (Methyl butyl ketone)	<2.0	DLCI	2.0	mg/kg	16-JUL-20	23-JUL-20	R5166321
Isopropylbenzene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
4-Isopropyltoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
MEK	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
MIBK	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
MTBE	<0.20		0.20	mg/kg	16-JUL-20	23-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,1,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,2,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Tetrachloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Toluene	0.074		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,3-Trichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,4-Trichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,1-Trichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,2-Trichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Trichloroethene	<0.010		0.010	mg/kg	16-JUL-20	23-JUL-20	R5166321
Trichlorofluoromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,3-Trichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,4-Trimethylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3,5-Trimethylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Vinyl Chloride	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
M+P-Xylenes	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
o-Xylene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Surrogate: 1,4-Difluorobenzene (SS)	114.2		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	105.1		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	100.2		70-130	%	16-JUL-20	23-JUL-20	R5166321
L2476948-2 TH20-01 @ S8							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
Miscellaneous Parameters							
Moisture	27.9		0.10	%		22-JUL-20	R5164979
Xylenes (Total)	<0.071		0.071	mg/kg		24-JUL-20	
Total THMs	<0.10		0.10	mg/kg		24-JUL-20	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
Benzene	<0.0050		0.0050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromobenzene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromochloromethane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromodichloromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromoform	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromomethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
n-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
sec-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
tert-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Carbon disulfide	<0.25		0.25	mg/kg	16-JUL-20	23-JUL-20	R5166321
Carbon Tetrachloride	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-2 TH20-01 @ S8							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
VOC plus F1 by GCMS							
Chloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chloroform	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chloromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2-Chlorotoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
4-Chlorotoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dibromochloromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dibromoethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dibromomethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dichlorodifluoromethane	<0.10	DLM	0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-dichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dichloromethane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3-Dichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2,2-Dichloropropane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-Dichloropropene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
trans-1,3-Dichloropropene	<0.10	DLM	0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Ethylbenzene	<0.015		0.015	mg/kg	16-JUL-20	23-JUL-20	R5166321
F1	11		10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Hexachlorobutadiene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Hexane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
Isopropylbenzene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
4-Isopropyltoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
MEK	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
MIBK	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
MTBE	<0.20		0.20	mg/kg	16-JUL-20	23-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,1,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,2,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Tetrachloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Toluene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,3-Trichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,4-Trichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,1-Trichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,2-Trichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Trichloroethene	<0.010		0.010	mg/kg	16-JUL-20	23-JUL-20	R5166321
Trichlorofluoromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,3-Trichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,4-Trimethylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3,5-Trimethylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Vinyl Chloride	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
M+P-Xylenes	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-2 TH20-01 @ S8							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
VOC plus F1 by GCMS							
o-Xylene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Surrogate: 1,4-Difluorobenzene (SS)	113.4		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	105.8		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	99.6		70-130	%	16-JUL-20	23-JUL-20	R5166321
L2476948-3 TH20-02 @ S4							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
% Particles > 75um (Coarse/Fine)							
MUST PSA % > 75um	<1.0		1.0	%	27-JUL-20	27-JUL-20	R5167774
General Texture Class	Fine				27-JUL-20	27-JUL-20	R5167774
L2476948-4 TH20-02 @ S16							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
Miscellaneous Parameters							
Moisture	31.2		0.10	%		22-JUL-20	R5164979
VOC plus F1-F4 by Tumbler							
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	23-JUL-20	23-JUL-20	R5166240
F3 (C16-C34)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
F4 (C34-C50)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
Surrogate: 2-Bromobenzotrifluoride	101.6		60-140	%	23-JUL-20	23-JUL-20	R5166240
Chrom. to baseline at nC50	YES				23-JUL-20	23-JUL-20	R5166240
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		24-JUL-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		24-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		24-JUL-20	
VOC plus F1 by GCMS							
Acetone	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
Benzene	<0.0050		0.0050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromobenzene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromochloromethane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromodichloromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromoform	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Bromomethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
n-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
sec-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
tert-Butylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Carbon disulfide	<0.25		0.25	mg/kg	16-JUL-20	23-JUL-20	R5166321
Carbon Tetrachloride	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chloroform	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Chloromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2-Chlorotoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
4-Chlorotoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dibromochloromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dibromo-3-chloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dibromoethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dibromomethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-4 TH20-02 @ S16							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
VOC plus F1 by GCMS							
1,2-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,4-Dichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dichlorodifluoromethane	<0.10	DLM	0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-dichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
cis-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
trans-1,2-Dichloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Dichloromethane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2-Dichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3-Dichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2,2-Dichloropropane	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1-Dichloropropene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
cis-1,3-Dichloropropene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
trans-1,3-Dichloropropene	<0.10	DLM	0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Ethylbenzene	<0.015		0.015	mg/kg	16-JUL-20	23-JUL-20	R5166321
F1	<10		10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Hexachlorobutadiene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Hexane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
2-Hexanone (Methyl butyl ketone)	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
Isopropylbenzene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
4-Isopropyltoluene	<0.10		0.10	mg/kg	16-JUL-20	23-JUL-20	R5166321
MEK	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
MIBK	<0.50		0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
MTBE	<0.20		0.20	mg/kg	16-JUL-20	23-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,1,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,2,2-Tetrachloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Tetrachloroethene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Toluene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,3-Trichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,4-Trichlorobenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,1-Trichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,1,2-Trichloroethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Trichloroethene	<0.010		0.010	mg/kg	16-JUL-20	23-JUL-20	R5166321
Trichlorofluoromethane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,3-Trichloropropane	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,2,4-Trimethylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
1,3,5-Trimethylbenzene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Vinyl Chloride	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
M+P-Xylenes	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
o-Xylene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Surrogate: 1,4-Difluorobenzene (SS)	115.7		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	97.6		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	98.2		70-130	%	16-JUL-20	23-JUL-20	R5166321
L2476948-5 TH20-03 @ S2							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
BTEX and F1-F4 by Tumbler Method							
BTX plus F1 by GCMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-5 TH20-03 @ S2							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
BTX plus F1 by GCMS							
Benzene	24.4	DLHC	0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Toluene	30.0	DLHC	0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
Ethyl benzene	56.2	DLHC	0.15	mg/kg	16-JUL-20	23-JUL-20	R5166321
o-Xylene	40.5	DLHC	0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
m+p-Xylenes	94.9	DLHC	0.50	mg/kg	16-JUL-20	23-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
F1 (C6-C10)	2900	DLHC	100	mg/kg	16-JUL-20	23-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	107.3		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	139.7	SOL:MI	70-130	%	16-JUL-20	23-JUL-20	R5166321
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	355		25	mg/kg	23-JUL-20	23-JUL-20	R5166240
F3 (C16-C34)	86		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
F4 (C34-C50)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
Surrogate: 2-Bromobenzotrifluoride	107.8		60-140	%	23-JUL-20	23-JUL-20	R5166240
Chrom. to baseline at nC50	YES				23-JUL-20	23-JUL-20	R5166240
CCME Total Hydrocarbons							
F1-BTEX	2660		100	mg/kg		28-JUL-20	
Total Hydrocarbons (C6-C50)	3340		130	mg/kg		28-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	135		0.71	mg/kg		28-JUL-20	
Miscellaneous Parameters							
Moisture	20.0		0.10	%		22-JUL-20	R5164979
L2476948-6 TH20-04 @ S5							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
BTEX and F1-F4 by Tumbler Method							
BTX plus F1 by GCMS							
Benzene	0.114		0.0050	mg/kg	16-JUL-20	24-JUL-20	R5166321
Toluene	<0.050		0.050	mg/kg	16-JUL-20	24-JUL-20	R5166321
Ethyl benzene	10.5		0.015	mg/kg	16-JUL-20	24-JUL-20	R5166321
o-Xylene	<0.050		0.050	mg/kg	16-JUL-20	24-JUL-20	R5166321
m+p-Xylenes	1.34		0.050	mg/kg	16-JUL-20	24-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	24-JUL-20	R5166321
F1 (C6-C10)	1130	DLHC	50	mg/kg	16-JUL-20	24-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	129.3		70-130	%	16-JUL-20	24-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	98.6		70-130	%	16-JUL-20	24-JUL-20	R5166321
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	80		25	mg/kg	23-JUL-20	23-JUL-20	R5166240
F3 (C16-C34)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
F4 (C34-C50)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
Surrogate: 2-Bromobenzotrifluoride	106.6		60-140	%	23-JUL-20	23-JUL-20	R5166240
Chrom. to baseline at nC50	YES				23-JUL-20	23-JUL-20	R5166240
CCME Total Hydrocarbons							
F1-BTEX	1120		50	mg/kg		28-JUL-20	
Total Hydrocarbons (C6-C50)	1210		90	mg/kg		28-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	1.34		0.071	mg/kg		28-JUL-20	
Miscellaneous Parameters							
Moisture	24.6		0.10	%		22-JUL-20	R5164979

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-7 TH20-05 @ S4							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
BTEX and F1-F4 by Tumbler Method							
BTX plus F1 by GCMS							
Benzene	28.1	DLHC	0.050	mg/kg	16-JUL-20	24-JUL-20	R5166321
Toluene	130	DLHC	0.50	mg/kg	16-JUL-20	24-JUL-20	R5166321
Ethyl benzene	36.2	DLHC	0.15	mg/kg	16-JUL-20	24-JUL-20	R5166321
o-Xylene	39.9	DLHC	0.50	mg/kg	16-JUL-20	24-JUL-20	R5166321
m+p-Xylenes	90.0	DLHC	0.50	mg/kg	16-JUL-20	24-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	24-JUL-20	R5166321
F1 (C6-C10)	1410	DLHC	50	mg/kg	16-JUL-20	24-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	114.6		70-130	%	16-JUL-20	24-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	86.8		70-130	%	16-JUL-20	24-JUL-20	R5166321
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	79		25	mg/kg	23-JUL-20	23-JUL-20	R5166240
F3 (C16-C34)	62		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
F4 (C34-C50)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
Surrogate: 2-Bromobenzotrifluoride	100.6		60-140	%	23-JUL-20	23-JUL-20	R5166240
Chrom. to baseline at nC50	YES				23-JUL-20	23-JUL-20	R5166240
CCME Total Hydrocarbons							
F1-BTEX	1080		50	mg/kg		28-JUL-20	
Total Hydrocarbons (C6-C50)	1550		90	mg/kg		28-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	130		0.71	mg/kg		28-JUL-20	
Miscellaneous Parameters							
Moisture	31.3		0.10	%		22-JUL-20	R5164979
L2476948-8 TH20-05 @ S5							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
Miscellaneous Parameters							
% Moisture	23.6		0.25	%	27-JUL-20	28-JUL-20	R5168055
PAHs in Sediment							
1-Methylnaphthalene	3.73		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
2-Methylnaphthalene	8.50	DLHC	0.050	ug/g	27-JUL-20	29-JUL-20	R5170203
Acenaphthene	0.0832		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Acenaphthylene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Acridine	0.051		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Anthracene	0.0111		0.0040	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(a)anthracene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(a)pyrene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(b)fluoranthene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(g,h,i)perylene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(k)fluoranthene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Chrysene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Dibenzo(ah)anthracene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Fluoranthene	0.0221		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Fluorene	0.0852		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Indeno(1,2,3-cd)pyrene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Naphthalene	9.32	DLHC	0.050	ug/g	27-JUL-20	29-JUL-20	R5170203
Phenanthrene	0.0870		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Pyrene	0.0286		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Quinoline	0.459		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
B(a)P Total Potency Equivalent	<0.020		0.020	ug/g	27-JUL-20	29-JUL-20	R5170203
IACR (CCME)	<0.15		0.15		27-JUL-20	29-JUL-20	R5170203

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-8 TH20-05 @ S5							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
PAHs in Sediment							
Surrogate: 2-Fluorobiphenyl	99.9		60-140	%	27-JUL-20	29-JUL-20	R5170203
Surrogate: p-Terphenyl d14	101.1		60-140	%	27-JUL-20	29-JUL-20	R5170203
L2476948-9 TH20-06 @ S3							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
BTEX and F1-F4 by Tumbler Method							
BTX plus F1 by GCMS							
Benzene	0.0278		0.0050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Toluene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Ethyl benzene	<0.015		0.015	mg/kg	16-JUL-20	23-JUL-20	R5166321
o-Xylene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
m+p-Xylenes	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
F1 (C6-C10)	21		10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	96.0		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	86.3		70-130	%	16-JUL-20	23-JUL-20	R5166321
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	23-JUL-20	23-JUL-20	R5166240
F3 (C16-C34)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
F4 (C34-C50)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
Surrogate: 2-Bromobenzotrifluoride	98.3		60-140	%	23-JUL-20	23-JUL-20	R5166240
Chrom. to baseline at nC50	YES				23-JUL-20	23-JUL-20	R5166240
CCME Total Hydrocarbons							
F1-BTEX	21		10	mg/kg		24-JUL-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		24-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		24-JUL-20	
Miscellaneous Parameters							
Moisture	26.6		0.10	%		22-JUL-20	R5164979
L2476948-10 TH20-06 @ S4							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
Miscellaneous Parameters							
% Moisture	26.5		0.25	%	27-JUL-20	28-JUL-20	R5168055
PAHs in Sediment							
1-Methylnaphthalene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
2-Methylnaphthalene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Acenaphthene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Acenaphthylene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Acridine	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Anthracene	<0.0040		0.0040	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(a)anthracene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(a)pyrene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(b)fluoranthene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(g,h,i)perylene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(k)fluoranthene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Chrysene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Dibenzo(ah)anthracene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Fluoranthene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Fluorene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Indeno(1,2,3-cd)pyrene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-10 TH20-06 @ S4							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
PAHs in Sediment							
Naphthalene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Phenanthrene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Pyrene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Quinoline	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
B(a)P Total Potency Equivalent	<0.020		0.020	ug/g	27-JUL-20	29-JUL-20	R5170203
IACR (CCME)	<0.15		0.15		27-JUL-20	29-JUL-20	R5170203
Surrogate: 2-Fluorobiphenyl	94.4		60-140	%	27-JUL-20	29-JUL-20	R5170203
Surrogate: p-Terphenyl d14	102.2		60-140	%	27-JUL-20	29-JUL-20	R5170203
L2476948-11 TH20-06 @ S5							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
% Particles > 75um (Coarse/Fine)							
MUST PSA % > 75um	1.1		1.0	%	27-JUL-20	27-JUL-20	R5167774
General Texture Class	Fine				27-JUL-20	27-JUL-20	R5167774
L2476948-12 TH20-07 @ S1							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
BTEX and F1-F4 by Tumbler Method							
BTX plus F1 by GCMS							
Benzene	<0.0050		0.0050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Toluene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Ethyl benzene	<0.015		0.015	mg/kg	16-JUL-20	23-JUL-20	R5166321
o-Xylene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
m+p-Xylenes	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
F1 (C6-C10)	<10		10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	91.7		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	95.8		70-130	%	16-JUL-20	23-JUL-20	R5166321
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	23-JUL-20	23-JUL-20	R5166240
F3 (C16-C34)	145		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
F4 (C34-C50)	121		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
Surrogate: 2-Bromobenzotrifluoride	94.8		60-140	%	23-JUL-20	23-JUL-20	R5166240
Chrom. to baseline at nC50	YES				23-JUL-20	23-JUL-20	R5166240
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		24-JUL-20	
Total Hydrocarbons (C6-C50)	266		76	mg/kg		24-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		24-JUL-20	
Miscellaneous Parameters							
Moisture	24.5		0.10	%		22-JUL-20	R5164979
L2476948-13 TH20-08 @ S3							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
Miscellaneous Parameters							
% Moisture	19.4		0.25	%	27-JUL-20	28-JUL-20	R5168055
PAHs in Sediment							
1-Methylnaphthalene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
2-Methylnaphthalene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476948-13 TH20-08 @ S3							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
PAHs in Sediment							
Acenaphthene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Acenaphthylene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Acridine	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Anthracene	0.0071		0.0040	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(a)anthracene	0.021		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(a)pyrene	0.0147		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(b)fluoranthene	0.018		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(g,h,i)perylene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Benzo(k)fluoranthene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Chrysene	0.019		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Dibenzo(ah)anthracene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Fluoranthene	0.0345		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Fluorene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Indeno(1,2,3-cd)pyrene	<0.010		0.010	ug/g	27-JUL-20	29-JUL-20	R5170203
Naphthalene	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Phenanthrene	0.0250		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Pyrene	0.0293		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
Quinoline	<0.0050		0.0050	ug/g	27-JUL-20	29-JUL-20	R5170203
B(a)P Total Potency Equivalent	0.022		0.020	ug/g	27-JUL-20	29-JUL-20	R5170203
IACR (CCME)	0.27		0.15		27-JUL-20	29-JUL-20	R5170203
Surrogate: 2-Fluorobiphenyl	92.7		60-140	%	27-JUL-20	29-JUL-20	R5170203
Surrogate: p-Terphenyl d14	93.5		60-140	%	27-JUL-20	29-JUL-20	R5170203
L2476948-14 TH20-08 @ S7							
Sampled By: CLIENT on 16-JUL-20							
Matrix: SOIL							
BTEX and F1-F4 by Tumbler Method							
BTX plus F1 by GCMS							
Benzene	<0.0050		0.0050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Toluene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Ethyl benzene	<0.015		0.015	mg/kg	16-JUL-20	23-JUL-20	R5166321
o-Xylene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
m+p-Xylenes	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
Styrene	<0.050		0.050	mg/kg	16-JUL-20	23-JUL-20	R5166321
F1 (C6-C10)	<10		10	mg/kg	16-JUL-20	23-JUL-20	R5166321
Surrogate: 4-Bromofluorobenzene (SS)	97.6		70-130	%	16-JUL-20	23-JUL-20	R5166321
Surrogate: 3,4-Dichlorotoluene (SS)	118.2		70-130	%	16-JUL-20	23-JUL-20	R5166321
CCME Total Extractable Hydrocarbons							
F2 (C10-C16)	<25		25	mg/kg	23-JUL-20	23-JUL-20	R5166240
F3 (C16-C34)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
F4 (C34-C50)	<50		50	mg/kg	23-JUL-20	23-JUL-20	R5166240
Surrogate: 2-Bromobenzotrifluoride	96.0		60-140	%	23-JUL-20	23-JUL-20	R5166240
Chrom. to baseline at nC50	YES				23-JUL-20	23-JUL-20	R5166240
CCME Total Hydrocarbons							
F1-BTEX	<10		10	mg/kg		24-JUL-20	
Total Hydrocarbons (C6-C50)	<76		76	mg/kg		24-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.071		0.071	mg/kg		24-JUL-20	
Miscellaneous Parameters							
Moisture	33.7		0.10	%		22-JUL-20	R5164979

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
SOL:MI	Surrogate recovery outside acceptable limits due to matrix interference

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTEXS+F1-HSMS-WP	Soil	BTX plus F1 by GCMS	EPA 8260C

The soil methanol extract is added to water and reagents, then heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

F1-F4-CALC-WP	Soil	CCME Total Hydrocarbons	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.

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.

F2-F4-TMB-FID-WP	Soil	CCME Total Extractable Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001

A soil or sediment sample is extracted with 1:1 hexane/acetone in a tumbler, followed by a silica gel clean up to facilitate separation of the hydrocarbons from other polar extractions. An aliquot of the solvent is analyzed using a gas chromatograph equipped with a flame -ionization detector.

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

Moisture content in solid matrices is determined gravimetrically after drying to constant weight at 105°C.

MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PAH-CCME-SQGL-WT	Soil	PAHs in Sediment	SW846 8270

The procedure uses a mechanical shaking technique to extract a representative sub-sample with a mixture of methanol and toluene. The extract is analyzed by GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

PSA-MUST-SK	Soil	% Particles > 75um (Coarse/Fine)	ASTM D422-63-SIEVE

An air-dried sample is reduced to < 2 mm size and mixed with a dispersing agent (Calgon solution). The sample is washed through a 200 mesh (75 µm) sieve. The retained mass of sample is used to determine % sand fraction.

Reference: ASTM D422-63

THM-SUM-CALC-WP	Soil	Total Trihalomethanes (THMs)	CALCULATION

Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.

VOC+F1-HSMS-WP	Soil	VOC plus F1 by GCMS	EPA 8260C

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
The soil methanol extract is added to water and reagents, then heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
XYLENES-SUM-CALC-WP	Soil	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
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.

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
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

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.

Quality Control Report

Workorder: L2476948 Report Date: 29-JUL-20

Client: Wood Environment & Infrastructure Solutions (Winnipeg)
440 Dovercourt Drive
Winnipeg MB R3Y 1G4
Contact: JUSTIN HUBERDEAU

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	**Soil**							
Batch R5166321								
WG3368523-2 LCS								
Benzene			91.4		%		70-130	23-JUL-20
Toluene			89.4		%		70-130	23-JUL-20
Ethyl benzene			86.9		%		70-130	23-JUL-20
o-Xylene			93.5		%		70-130	23-JUL-20
m+p-Xylenes			94.4		%		70-130	23-JUL-20
Styrene			85.4		%		70-130	23-JUL-20
WG3368523-3 LCS								
F1 (C6-C10)			122.0		%		70-130	23-JUL-20
WG3368523-1 MB								
Benzene			<0.0050		mg/kg		0.005	23-JUL-20
Toluene			<0.050		mg/kg		0.05	23-JUL-20
Ethyl benzene			<0.015		mg/kg		0.015	23-JUL-20
o-Xylene			<0.050		mg/kg		0.05	23-JUL-20
m+p-Xylenes			<0.050		mg/kg		0.05	23-JUL-20
Styrene			<0.050		mg/kg		0.05	23-JUL-20
F1 (C6-C10)			<10		mg/kg		10	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			79.0		%		70-130	23-JUL-20
Surrogate: 3,4-Dichlorotoluene (SS)			80.9		%		70-130	23-JUL-20
F2-F4-TMB-FID-WP	**Soil**							
Batch R5166240								
WG3368697-4 DUP		**L2476948-1**						
F2 (C10-C16)		<25	<25	RPD-NA	mg/kg	N/A	40	23-JUL-20
F3 (C16-C34)		<50	<50	RPD-NA	mg/kg	N/A	40	23-JUL-20
F4 (C34-C50)		<50	<50	RPD-NA	mg/kg	N/A	40	23-JUL-20
WG3368697-3 IRM		**ALS PHC RM3**						
F2 (C10-C16)			103.5		%		70-130	23-JUL-20
F3 (C16-C34)			88.4		%		70-130	23-JUL-20
F4 (C34-C50)			84.2		%		70-130	23-JUL-20
WG3368697-2 LCS								
F2 (C10-C16)			101.5		%		70-130	23-JUL-20
F3 (C16-C34)			96.6		%		70-130	23-JUL-20
F4 (C34-C50)			104.8		%		70-130	23-JUL-20
WG3368697-1 MB								
F2 (C10-C16)			<25		mg/kg		25	23-JUL-20
F3 (C16-C34)			<50		mg/kg		50	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-TMB-FID-WP	**Soil**							
Batch R5166240								
WG3368697-1 MB								
F4 (C34-C50)			<50		mg/kg		50	23-JUL-20
Surrogate: 2-Bromobenzotrifluoride			106.7		%		60-140	23-JUL-20
MOISTURE-WP	**Soil**							
Batch R5164979								
WG3367877-3 DUP		**L2476948-2**						
Moisture		27.9	27.0		%	3.3	20	22-JUL-20
WG3367877-2 LCS								
Moisture			100.5		%		90-110	22-JUL-20
WG3367877-1 MB								
Moisture			<0.10		%		0.1	22-JUL-20
MOISTURE-WT	**Soil**							
Batch R5168055								
WG3370785-3 DUP		**L2476948-8**						
% Moisture		23.6	23.4		%	0.9	20	28-JUL-20
WG3370785-2 LCS								
% Moisture			100.4		%		90-110	28-JUL-20
WG3370785-1 MB								
% Moisture			<0.25		%		0.25	28-JUL-20
PAH-CCME-SQGL-WT	**Soil**							
Batch R5170203								
WG3370893-3 DUP		**L2476948-8**						
1-Methylnaphthalene		3.73	3.67		ug/g	1.8	50	29-JUL-20
2-Methylnaphthalene		8.50	8.62		ug/g	1.5	50	29-JUL-20
Acenaphthene		0.0832	0.0710		ug/g	16	50	29-JUL-20
Acenaphthylene		<0.0050	<0.0050	RPD-NA	ug/g	N/A	50	29-JUL-20
Acridine		0.051	0.052		ug/g	1.9	50	29-JUL-20
Anthracene		0.0111	0.0116		ug/g	4.5	50	29-JUL-20
Benzo(a)anthracene		<0.010	<0.010	RPD-NA	ug/g	N/A	50	29-JUL-20
Benzo(a)pyrene		<0.0050	0.0050	RPD-NA	ug/g	N/A	50	29-JUL-20
Benzo(b)fluoranthene		<0.010	<0.010	RPD-NA	ug/g	N/A	50	29-JUL-20
Benzo(g,h,i)perylene		<0.010	<0.010	RPD-NA	ug/g	N/A	50	29-JUL-20
Benzo(k)fluoranthene		<0.010	<0.010	RPD-NA	ug/g	N/A	50	29-JUL-20
Chrysene		<0.010	0.011	RPD-NA	ug/g	N/A	50	29-JUL-20
Dibenzo(ah)anthracene		<0.0050	<0.0050	RPD-NA	ug/g	N/A	50	29-JUL-20
Fluoranthene		0.0221	0.0266		ug/g	19	50	29-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-SQGL-WT	**Soil**							
Batch R5170203								
WG3370893-3 DUP		**L2476948-8**						
Fluorene		0.0852	0.0747		ug/g	13	50	29-JUL-20
Indeno(1,2,3-cd)pyrene		<0.010	<0.010	RPD-NA	ug/g	N/A	50	29-JUL-20
Naphthalene		9.32	9.73		ug/g	4.3	50	29-JUL-20
Phenanthrene		0.0870	0.0857		ug/g	1.4	50	29-JUL-20
Pyrene		0.0286	0.0308		ug/g	7.3	50	29-JUL-20
Quinoline		0.459	0.438		ug/g	4.8	50	29-JUL-20
WG3370893-2 LCS								
1-Methylnaphthalene			84.1		%		50-140	29-JUL-20
2-Methylnaphthalene			80.9		%		50-140	29-JUL-20
Acenaphthene			82.7		%		50-140	29-JUL-20
Acenaphthylene			77.0		%		50-140	29-JUL-20
Acridine			80.5		%		50-140	29-JUL-20
Anthracene			81.8		%		50-140	29-JUL-20
Benzo(a)anthracene			79.4		%		50-140	29-JUL-20
Benzo(a)pyrene			77.3		%		50-140	29-JUL-20
Benzo(b)fluoranthene			74.9		%		50-140	29-JUL-20
Benzo(g,h,i)perylene			81.2		%		50-140	29-JUL-20
Benzo(k)fluoranthene			85.4		%		50-140	29-JUL-20
Chrysene			90.7		%		50-140	29-JUL-20
Dibenzo(ah)anthracene			80.0		%		50-140	29-JUL-20
Fluoranthene			75.9		%		50-140	29-JUL-20
Fluorene			75.4		%		50-140	29-JUL-20
Indeno(1,2,3-cd)pyrene			70.4		%		50-140	29-JUL-20
Naphthalene			82.8		%		50-140	29-JUL-20
Phenanthrene			81.5		%		50-140	29-JUL-20
Pyrene			76.6		%		50-140	29-JUL-20
Quinoline			72.5		%		50-140	29-JUL-20
WG3370893-1 MB								
1-Methylnaphthalene			<0.0050		ug/g		0.005	29-JUL-20
2-Methylnaphthalene			<0.0050		ug/g		0.005	29-JUL-20
Acenaphthene			<0.0050		ug/g		0.005	29-JUL-20
Acenaphthylene			<0.0050		ug/g		0.005	29-JUL-20
Acridine			<0.010		ug/g		0.01	29-JUL-20
Anthracene			<0.0040		ug/g		0.004	29-JUL-20
Benzo(a)anthracene			<0.010		ug/g		0.01	29-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-SQGL-WT	**Soil**							
Batch R5170203								
WG3370893-1 MB								
Benzo(a)pyrene			<0.0050		ug/g		0.005	29-JUL-20
Benzo(b)fluoranthene			<0.010		ug/g		0.01	29-JUL-20
Benzo(g,h,i)perylene			<0.010		ug/g		0.01	29-JUL-20
Benzo(k)fluoranthene			<0.010		ug/g		0.01	29-JUL-20
Chrysene			<0.010		ug/g		0.01	29-JUL-20
Dibenzo(ah)anthracene			<0.0050		ug/g		0.005	29-JUL-20
Fluoranthene			<0.0050		ug/g		0.005	29-JUL-20
Fluorene			<0.0050		ug/g		0.005	29-JUL-20
Indeno(1,2,3-cd)pyrene			<0.010		ug/g		0.01	29-JUL-20
Naphthalene			<0.0050		ug/g		0.005	29-JUL-20
Phenanthrene			<0.0050		ug/g		0.005	29-JUL-20
Pyrene			<0.0050		ug/g		0.005	29-JUL-20
Quinoline			<0.0050		ug/g		0.005	29-JUL-20
Surrogate: 2-Fluorobiphenyl			89.2		%		60-140	29-JUL-20
Surrogate: p-Terphenyl d14			88.7		%		60-140	29-JUL-20
WG3370893-4 MS		**L2476948-8**						
1-Methylnaphthalene			N/A	MS-B	%		-	29-JUL-20
2-Methylnaphthalene			N/A	MS-B	%		-	29-JUL-20
Acenaphthene			79.7		%		50-150	29-JUL-20
Acenaphthylene			81.1		%		50-150	29-JUL-20
Acridine			84.4		%		50-150	29-JUL-20
Anthracene			85.0		%		50-150	29-JUL-20
Benzo(a)anthracene			83.7		%		50-150	29-JUL-20
Benzo(a)pyrene			71.7		%		50-150	29-JUL-20
Benzo(b)fluoranthene			77.4		%		50-150	29-JUL-20
Benzo(g,h,i)perylene			66.1		%		50-150	29-JUL-20
Benzo(k)fluoranthene			72.9		%		50-150	29-JUL-20
Chrysene			88.6		%		50-150	29-JUL-20
Dibenzo(ah)anthracene			68.9		%		50-150	29-JUL-20
Fluoranthene			80.3		%		50-150	29-JUL-20
Fluorene			73.3		%		50-150	29-JUL-20
Indeno(1,2,3-cd)pyrene			60.3		%		50-150	29-JUL-20
Naphthalene			N/A	MS-B	%		-	29-JUL-20
Phenanthrene			81.6		%		50-150	29-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-SQGL-WT	**Soil**							
Batch R5170203								
WG3370893-4 MS		**L2476948-8**						
Pyrene			80.8		%		50-150	29-JUL-20
Quinoline			56.2		%		50-150	29-JUL-20
PSA-MUST-SK	**Soil**							
Batch R5167774								
WG3369762-2 IRM		**2017-PSA**						
MUST PSA % > 75um			42.3		%		39.2-49.2	27-JUL-20
VOC+F1-HSMS-WP	**Soil**							
Batch R5166321								
WG3368523-4 DUP		**L2476948-1**						
Acetone		<0.50	<0.50	RPD-NA	mg/kg	N/A	50	23-JUL-20
Benzene		0.0176	0.0179		mg/kg	2.1	50	23-JUL-20
Bromobenzene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
Bromochloromethane		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
Bromodichloromethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Bromoform		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Bromomethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
n-Butylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
sec-Butylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
tert-Butylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Carbon disulfide		<0.25	<0.25	RPD-NA	mg/kg	N/A	50	23-JUL-20
Carbon Tetrachloride		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Chlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Chloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Chloroform		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Chloromethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
2-Chlorotoluene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
4-Chlorotoluene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
Dibromochloromethane		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,2-Dibromo-3-chloropropane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,2-Dibromoethane		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
Dibromomethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Soil**							
Batch R5166321								
WG3368523-4 DUP		**L2476948-1**						
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Dichlorodifluoromethane		<0.10	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,1-dichloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,1-dichloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
cis-1,2-Dichloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
trans-1,2-Dichloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Dichloromethane		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,3-Dichloropropane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
2,2-Dichloropropane		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,1-Dichloropropene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
cis-1,3-Dichloropropene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
trans-1,3-Dichloropropene		<0.10	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Ethylbenzene		<0.015	<0.015	RPD-NA	mg/kg	N/A	50	23-JUL-20
F1		72	73		mg/kg	1.3	50	23-JUL-20
Hexachlorobutadiene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Hexane		0.143	0.147		mg/kg	3.1	50	23-JUL-20
2-Hexanone (Methyl butyl ketone)		<2.0	<2.0	RPD-NA	mg/kg	N/A	50	23-JUL-20
Isopropylbenzene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
4-Isopropyltoluene		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-JUL-20
MEK		<0.50	<0.50	RPD-NA	mg/kg	N/A	50	23-JUL-20
MIBK		<0.50	<0.50	RPD-NA	mg/kg	N/A	50	23-JUL-20
MTBE		<0.20	<0.20	RPD-NA	mg/kg	N/A	50	23-JUL-20
Styrene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Tetrachloroethene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Toluene		0.074	0.075		mg/kg	1.7	50	23-JUL-20
1,2,3-Trichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,2,4-Trichlorobenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Trichloroethene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Soil**							
Batch R5166321								
WG3368523-4 DUP		**L2476948-1**						
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,2,3-Trichloropropane		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,2,4-Trimethylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
1,3,5-Trimethylbenzene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
Vinyl Chloride		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
M+P-Xylenes		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
o-Xylene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	23-JUL-20
WG3368523-2 LCS								
Acetone			85.3		%		70-130	23-JUL-20
Benzene			91.4		%		70-130	23-JUL-20
Bromobenzene			89.4		%		70-130	23-JUL-20
Bromochloromethane			95.2		%		70-130	23-JUL-20
Bromodichloromethane			91.3		%		70-130	23-JUL-20
Bromoform			74.2		%		70-130	23-JUL-20
Bromomethane			106.5		%		60-140	23-JUL-20
n-Butylbenzene			93.3		%		70-130	23-JUL-20
sec-Butylbenzene			102.6		%		70-130	23-JUL-20
tert-Butylbenzene			94.0		%		70-130	23-JUL-20
Carbon disulfide			87.3		%		70-130	23-JUL-20
Carbon Tetrachloride			92.9		%		70-130	23-JUL-20
Chlorobenzene			93.3		%		70-130	23-JUL-20
Chloroethane			86.1		%		60-140	23-JUL-20
Chloroform			95.9		%		70-130	23-JUL-20
Chloromethane			87.4		%		60-140	23-JUL-20
2-Chlorotoluene			88.9		%		70-130	23-JUL-20
4-Chlorotoluene			97.5		%		70-130	23-JUL-20
Dibromochloromethane			75.9		%		70-130	23-JUL-20
1,2-Dibromo-3-chloropropane			72.3		%		70-130	23-JUL-20
1,2-Dibromoethane			78.6		%		70-130	23-JUL-20
Dibromomethane			95.2		%		70-130	23-JUL-20
1,2-Dichlorobenzene			98.1		%		70-130	23-JUL-20
1,3-Dichlorobenzene			100.6		%		70-130	23-JUL-20
1,4-Dichlorobenzene			100.0		%		70-130	23-JUL-20
Dichlorodifluoromethane			57.6	MES	%		60-140	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Soil**							
Batch R5166321								
WG3368523-2 LCS								
1,1-dichloroethane			91.2		%		70-130	23-JUL-20
1,2-Dichloroethane			88.4		%		70-130	23-JUL-20
1,1-dichloroethene			84.3		%		70-130	23-JUL-20
cis-1,2-Dichloroethene			89.4		%		70-130	23-JUL-20
trans-1,2-Dichloroethene			87.3		%		70-130	23-JUL-20
Dichloromethane			95.4		%		60-140	23-JUL-20
1,2-Dichloropropane			87.5		%		70-130	23-JUL-20
1,3-Dichloropropane			83.9		%		70-130	23-JUL-20
2,2-Dichloropropane			100.6		%		70-130	23-JUL-20
1,1-Dichloropropene			91.7		%		70-130	23-JUL-20
cis-1,3-Dichloropropene			78.1		%		70-130	23-JUL-20
trans-1,3-Dichloropropene			78.5		%		70-130	23-JUL-20
Ethylbenzene			86.9		%		70-130	23-JUL-20
Hexachlorobutadiene			104.1		%		70-130	23-JUL-20
Hexane			83.3		%		70-130	23-JUL-20
2-Hexanone (Methyl butyl ketone)			76.4		%		70-130	23-JUL-20
Isopropylbenzene			96.5		%		70-130	23-JUL-20
4-Isopropyltoluene			97.7		%		70-130	23-JUL-20
MEK			86.5		%		70-130	23-JUL-20
MIBK			83.8		%		70-130	23-JUL-20
MTBE			89.7		%		70-130	23-JUL-20
Styrene			85.4		%		70-130	23-JUL-20
1,1,1,2-Tetrachloroethane			85.3		%		70-130	23-JUL-20
1,1,2,2-Tetrachloroethane			80.7		%		70-130	23-JUL-20
Tetrachloroethene			105.3		%		70-130	23-JUL-20
Toluene			89.4		%		70-130	23-JUL-20
1,2,3-Trichlorobenzene			95.2		%		70-130	23-JUL-20
1,2,4-Trichlorobenzene			105.0		%		70-130	23-JUL-20
1,1,1-Trichloroethane			88.1		%		70-130	23-JUL-20
1,1,2-Trichloroethane			85.1		%		70-130	23-JUL-20
Trichloroethene			95.4		%		70-130	23-JUL-20
Trichlorofluoromethane			81.1		%		60-140	23-JUL-20
1,2,3-Trichloropropane			82.7		%		70-130	23-JUL-20
1,2,4-Trimethylbenzene			90.2		%		70-130	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Soil**							
Batch R5166321								
WG3368523-2 LCS								
1,3,5-Trimethylbenzene			93.7		%		70-130	23-JUL-20
Vinyl Chloride			80.5		%		60-140	23-JUL-20
M+P-Xylenes			94.4		%		70-130	23-JUL-20
o-Xylene			93.5		%		70-130	23-JUL-20
WG3368523-3 LCS								
F1			122.0		%		70-130	23-JUL-20
WG3368523-1 MB								
Acetone			<0.50		mg/kg		0.5	23-JUL-20
Benzene			<0.0050		mg/kg		0.005	23-JUL-20
Bromobenzene			<0.10		mg/kg		0.1	23-JUL-20
Bromochloromethane			<0.10		mg/kg		0.1	23-JUL-20
Bromodichloromethane			<0.050		mg/kg		0.05	23-JUL-20
Bromoform			<0.050		mg/kg		0.05	23-JUL-20
Bromomethane			<0.050		mg/kg		0.05	23-JUL-20
n-Butylbenzene			<0.050		mg/kg		0.05	23-JUL-20
sec-Butylbenzene			<0.050		mg/kg		0.05	23-JUL-20
tert-Butylbenzene			<0.050		mg/kg		0.05	23-JUL-20
Carbon disulfide			<0.25		mg/kg		0.25	23-JUL-20
Carbon Tetrachloride			<0.050		mg/kg		0.05	23-JUL-20
Chlorobenzene			<0.050		mg/kg		0.05	23-JUL-20
Chloroethane			<0.050		mg/kg		0.05	23-JUL-20
Chloroform			<0.050		mg/kg		0.05	23-JUL-20
Chloromethane			<0.050		mg/kg		0.05	23-JUL-20
2-Chlorotoluene			<0.10		mg/kg		0.1	23-JUL-20
4-Chlorotoluene			<0.10		mg/kg		0.1	23-JUL-20
Dibromochloromethane			<0.050		mg/kg		0.05	23-JUL-20
1,2-Dibromo-3-chloropropane			<0.050		mg/kg		0.05	23-JUL-20
1,2-Dibromoethane			<0.050		mg/kg		0.05	23-JUL-20
Dibromomethane			<0.050		mg/kg		0.05	23-JUL-20
1,2-Dichlorobenzene			<0.050		mg/kg		0.05	23-JUL-20
1,3-Dichlorobenzene			<0.050		mg/kg		0.05	23-JUL-20
1,4-Dichlorobenzene			<0.050		mg/kg		0.05	23-JUL-20
Dichlorodifluoromethane			<0.050		mg/kg		0.05	23-JUL-20
1,1-dichloroethane			<0.050		mg/kg		0.05	23-JUL-20
1,2-Dichloroethane			<0.050		mg/kg		0.05	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Soil**							
Batch R5166321								
WG3368523-1 MB								
1,1-dichloroethene			<0.050		mg/kg		0.05	23-JUL-20
cis-1,2-Dichloroethene			<0.050		mg/kg		0.05	23-JUL-20
trans-1,2-Dichloroethene			<0.050		mg/kg		0.05	23-JUL-20
Dichloromethane			<0.10		mg/kg		0.1	23-JUL-20
1,2-Dichloropropane			<0.050		mg/kg		0.05	23-JUL-20
1,3-Dichloropropane			<0.050		mg/kg		0.05	23-JUL-20
2,2-Dichloropropane			<0.10		mg/kg		0.1	23-JUL-20
1,1-Dichloropropene			<0.050		mg/kg		0.05	23-JUL-20
cis-1,3-Dichloropropene			<0.050		mg/kg		0.05	23-JUL-20
trans-1,3-Dichloropropene			<0.050		mg/kg		0.05	23-JUL-20
Ethylbenzene			<0.015		mg/kg		0.015	23-JUL-20
F1			<10		mg/kg		10	23-JUL-20
Hexachlorobutadiene			<0.050		mg/kg		0.05	23-JUL-20
Hexane			<0.050		mg/kg		0.05	23-JUL-20
2-Hexanone (Methyl butyl ketone)			<0.50		mg/kg		0.5	23-JUL-20
Isopropylbenzene			<0.10		mg/kg		0.1	23-JUL-20
4-Isopropyltoluene			<0.10		mg/kg		0.1	23-JUL-20
MEK			<0.50		mg/kg		0.5	23-JUL-20
MIBK			<0.50		mg/kg		0.5	23-JUL-20
MTBE			<0.20		mg/kg		0.2	23-JUL-20
Styrene			<0.050		mg/kg		0.05	23-JUL-20
1,1,1,2-Tetrachloroethane			<0.050		mg/kg		0.05	23-JUL-20
1,1,2,2-Tetrachloroethane			<0.050		mg/kg		0.05	23-JUL-20
Tetrachloroethene			<0.050		mg/kg		0.05	23-JUL-20
Toluene			<0.050		mg/kg		0.05	23-JUL-20
1,2,3-Trichlorobenzene			<0.050		mg/kg		0.05	23-JUL-20
1,2,4-Trichlorobenzene			<0.050		mg/kg		0.05	23-JUL-20
1,1,1-Trichloroethane			<0.050		mg/kg		0.05	23-JUL-20
1,1,2-Trichloroethane			<0.050		mg/kg		0.05	23-JUL-20
Trichloroethene			<0.010		mg/kg		0.01	23-JUL-20
Trichlorofluoromethane			<0.050		mg/kg		0.05	23-JUL-20
1,2,3-Trichloropropane			<0.050		mg/kg		0.05	23-JUL-20
1,2,4-Trimethylbenzene			<0.050		mg/kg		0.05	23-JUL-20
1,3,5-Trimethylbenzene			<0.050		mg/kg		0.05	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Soil**							
Batch R5166321								
WG3368523-1 MB								
Vinyl Chloride			<0.050		mg/kg		0.05	23-JUL-20
M+P-Xylenes			<0.050		mg/kg		0.05	23-JUL-20
o-Xylene			<0.050		mg/kg		0.05	23-JUL-20
Surrogate: 1,4-Difluorobenzene (SS)			92.2		%		70-130	23-JUL-20
Surrogate: 3,4-Dichlorotoluene (SS)			80.9		%		70-130	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			79.0		%		70-130	23-JUL-20

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
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
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.

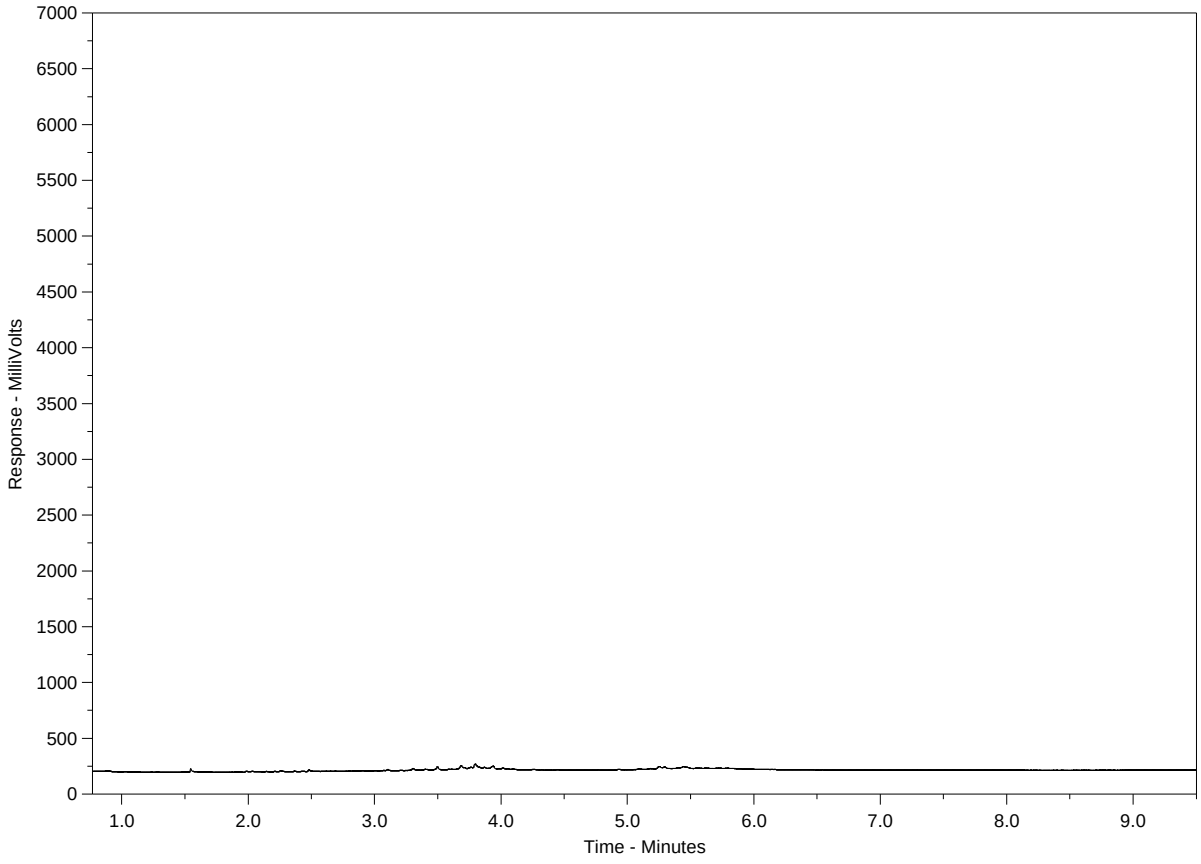
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

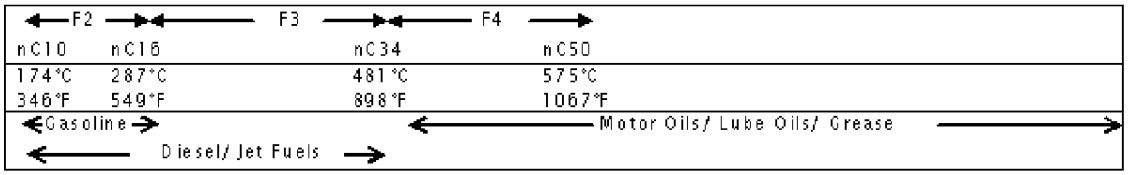
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L2476948-1
Client Sample ID: TH20-01 @ S4





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

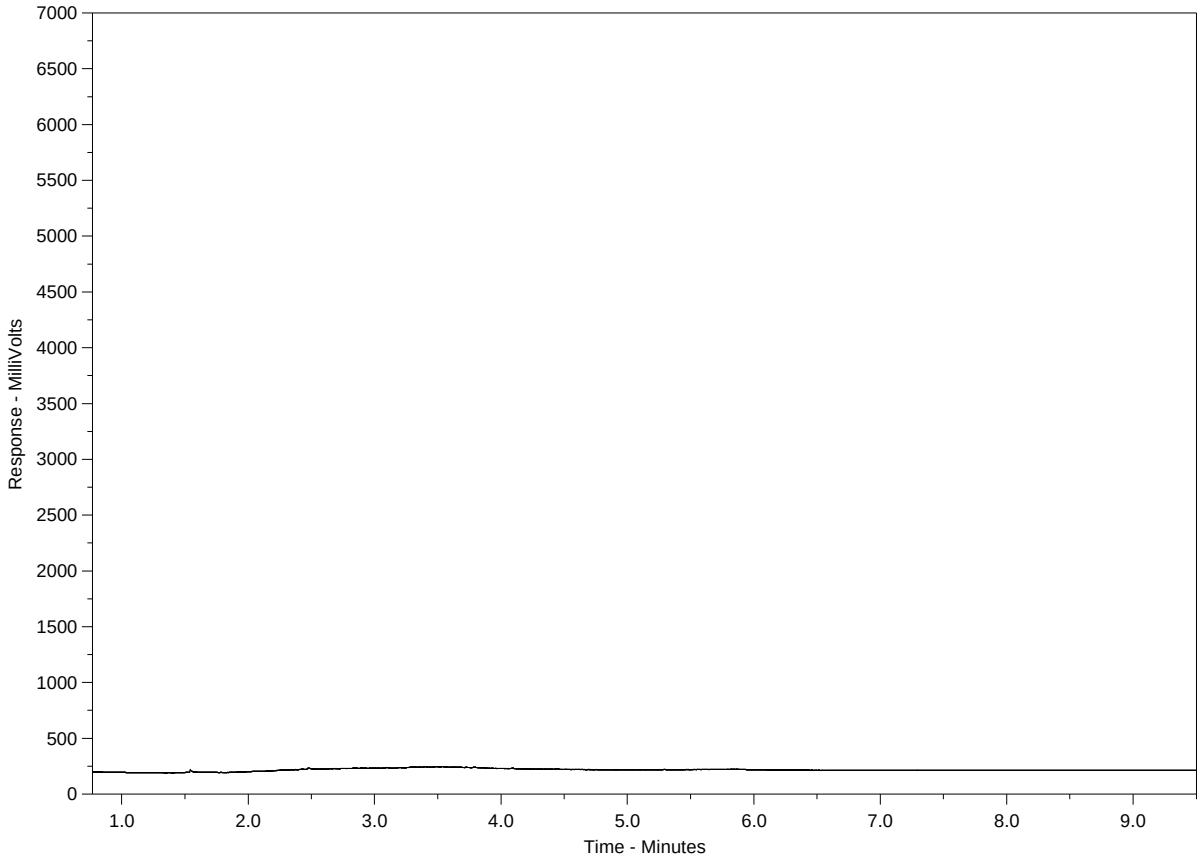
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

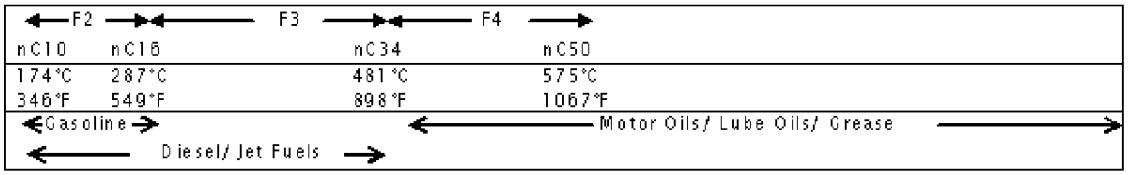
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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: L2476948-4
Client Sample ID: TH20-02 @ S16





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

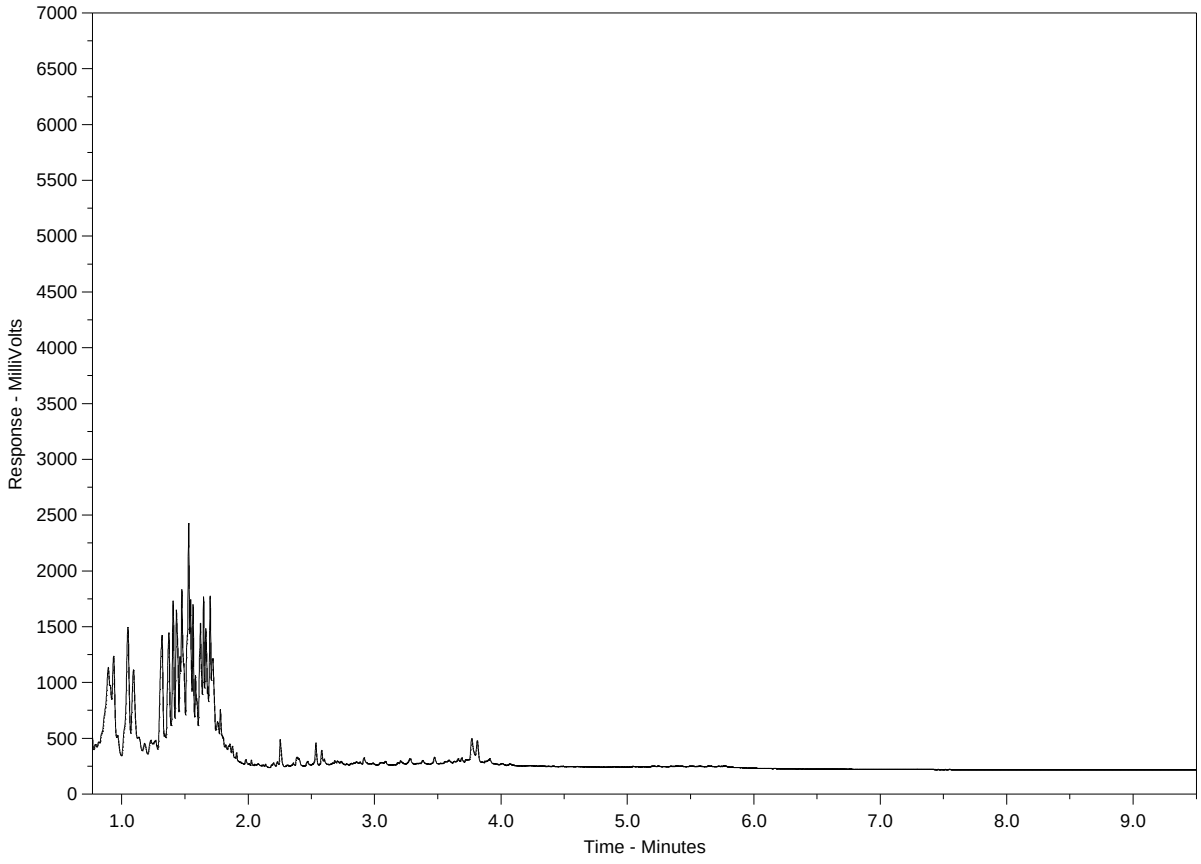
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

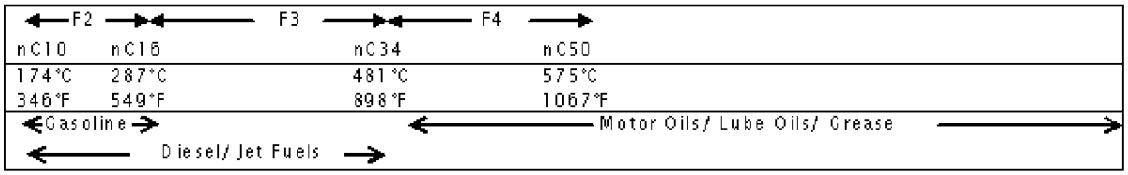
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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: L2476948-5
Client Sample ID: TH20-03 @ S2





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

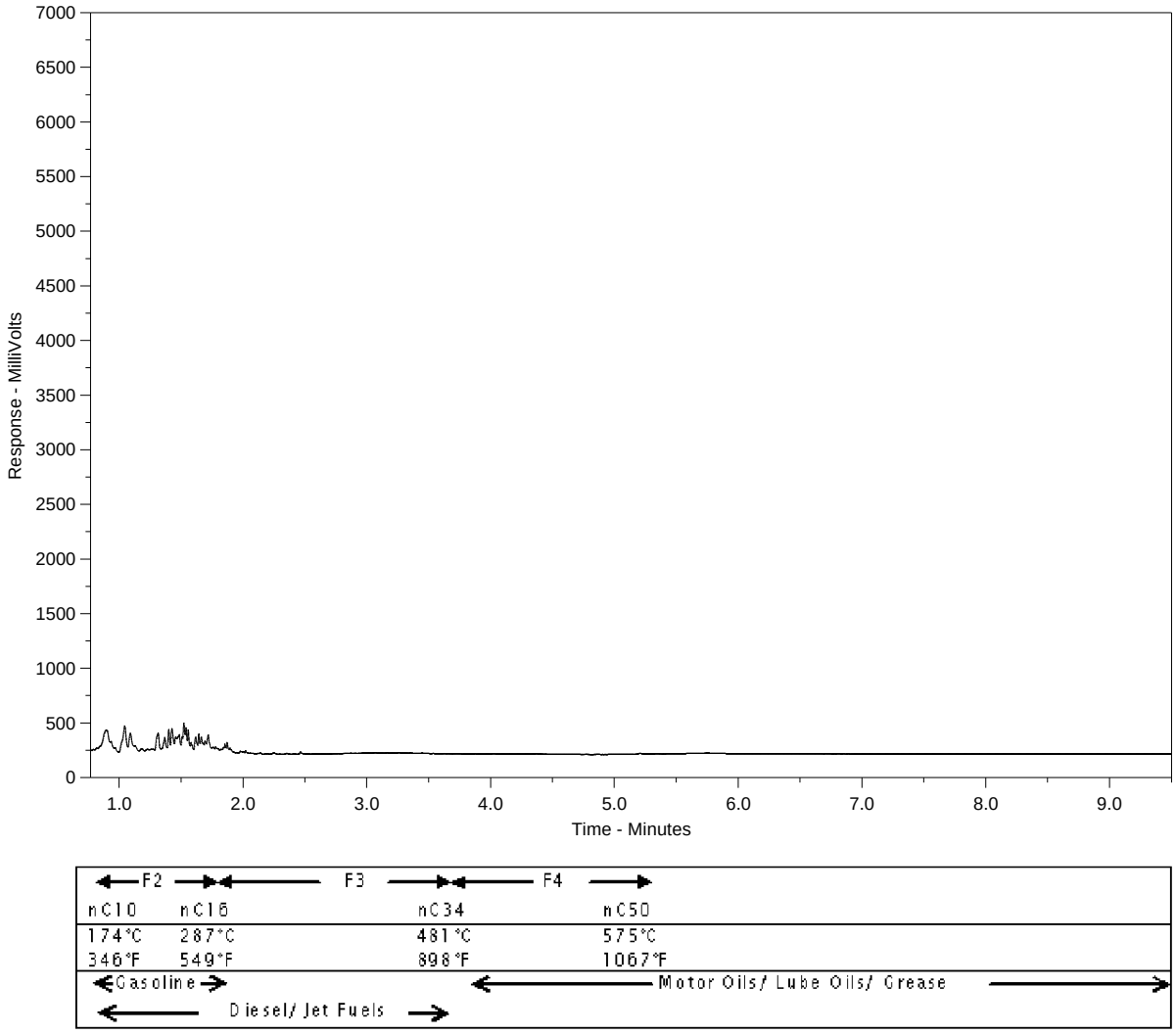
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at 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: L2476948-6
Client Sample ID: TH20-04 @ S5



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

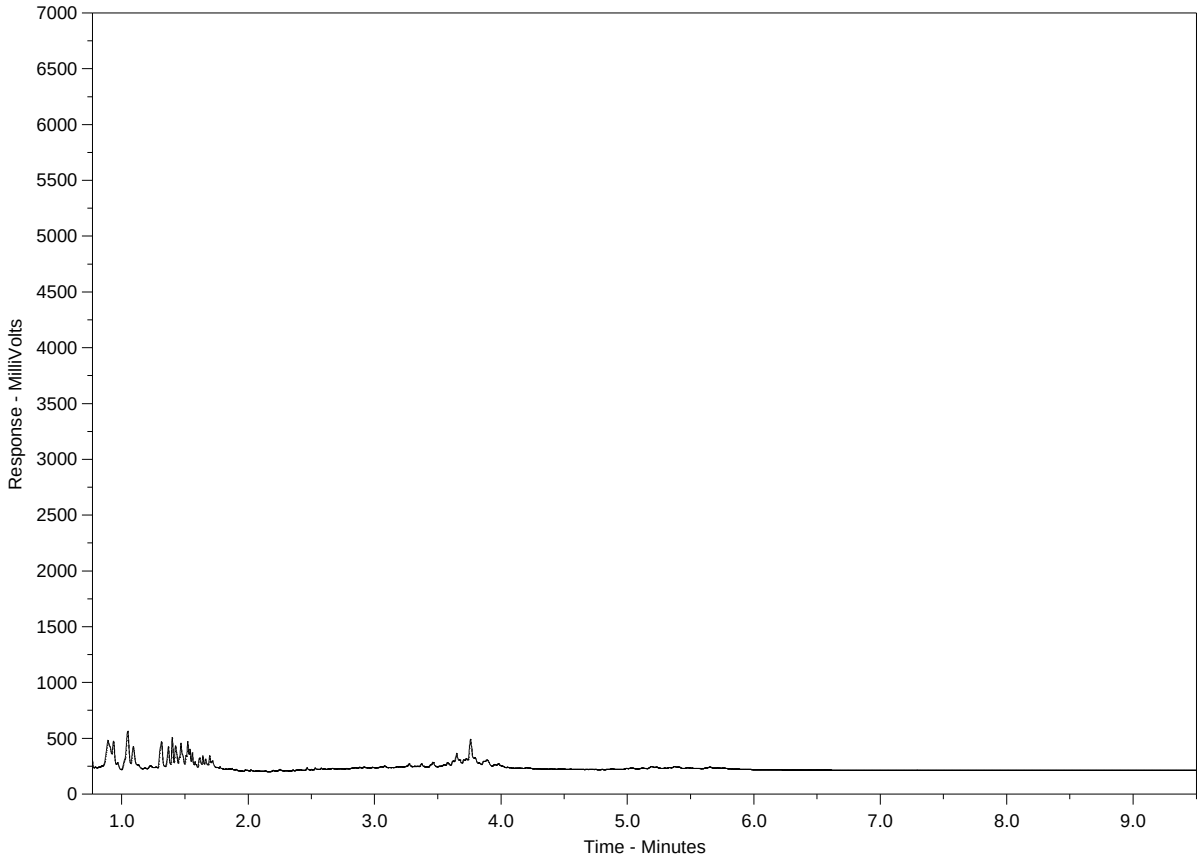
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

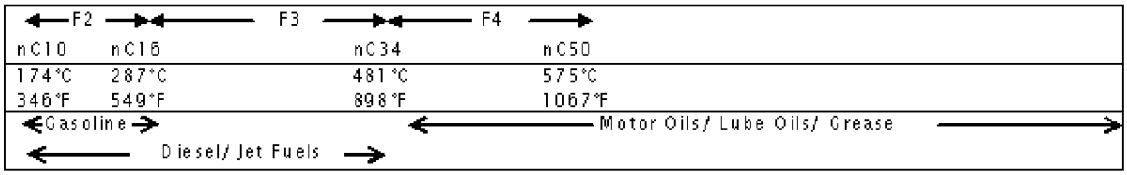
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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: L2476948-7
Client Sample ID: TH20-05 @ S4





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

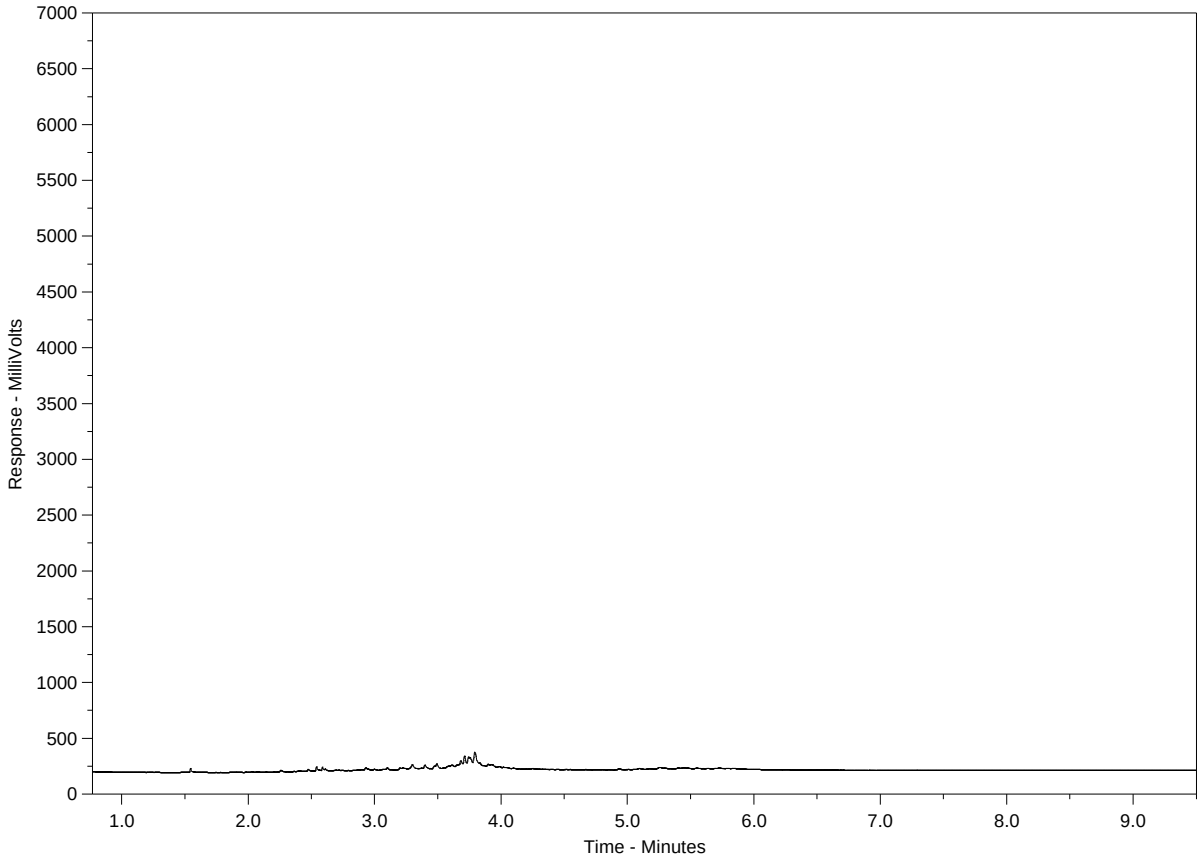
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

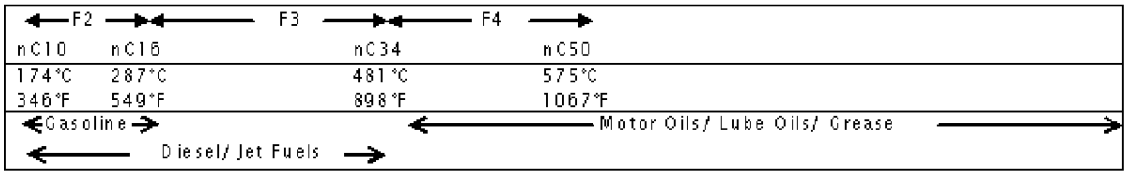
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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: L2476948-9
Client Sample ID: TH20-06 @ S3





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

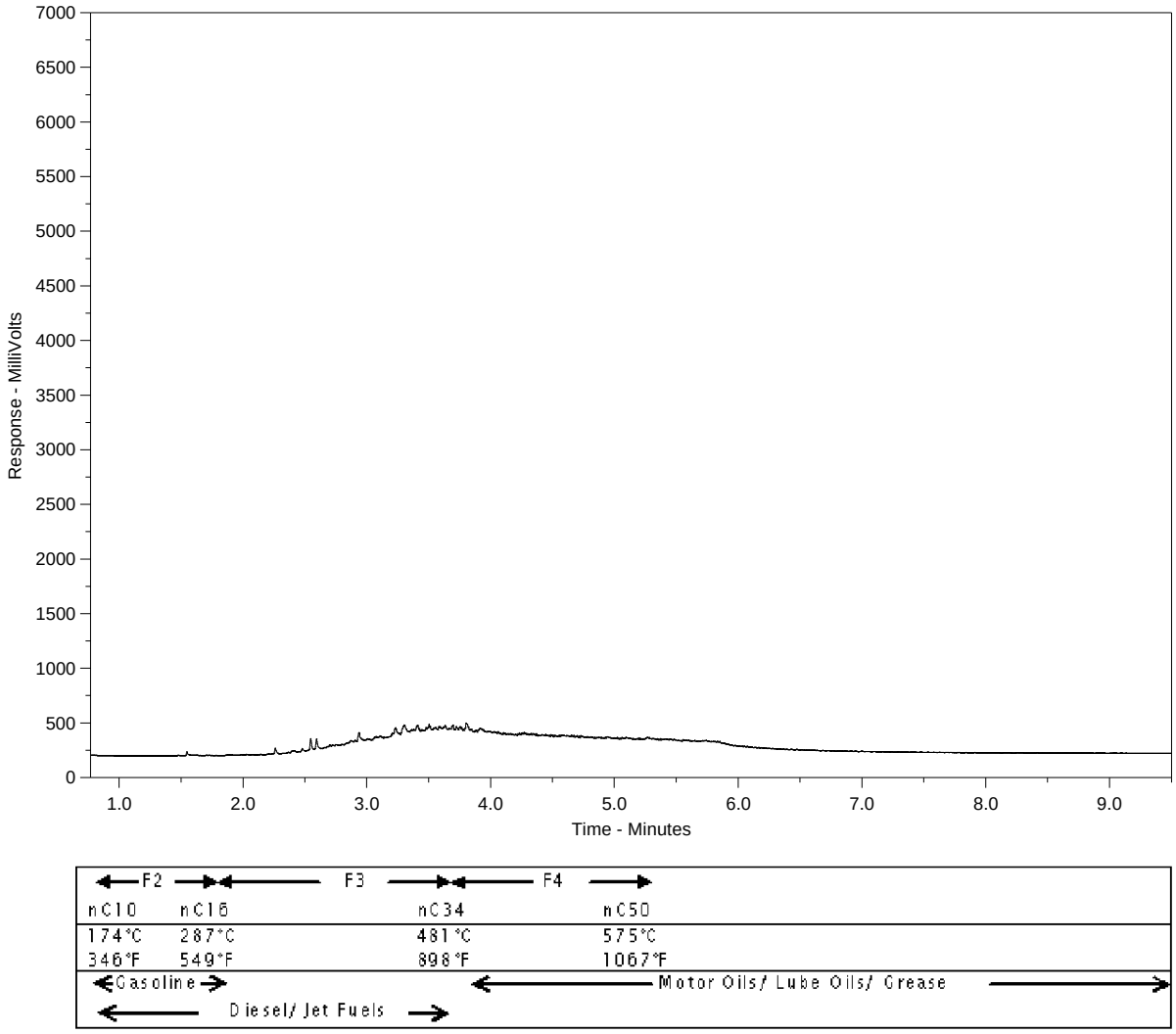
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at 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: L2476948-12
Client Sample ID: TH20-07 @ S1



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

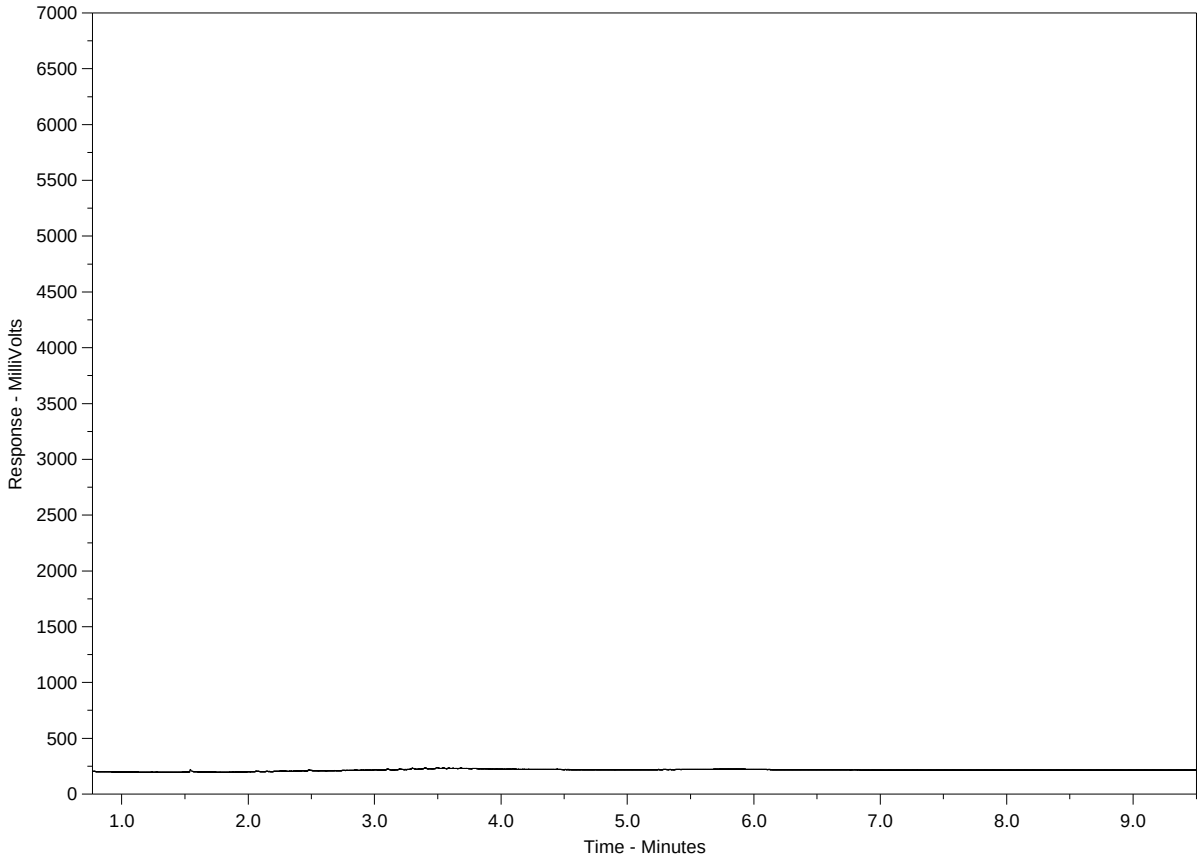
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

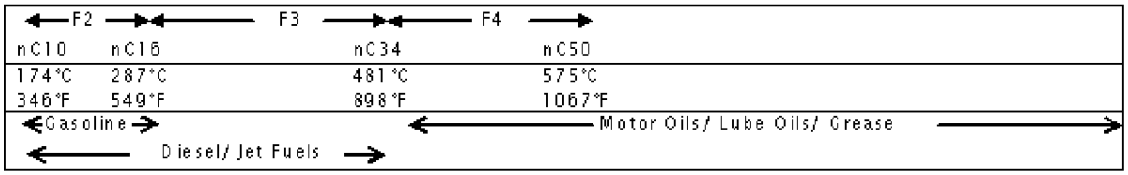
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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: L2476948-14
Client Sample ID: TH20-08 @ S7





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 left.

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

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

L2476948-COFC

COC # _____

Page 1 of 2

Report to:	**Report Format / Distribution**	**Service Requested:**
Company: Wood	☑ Standard ☐ Other	☑ Regular Service (Default)
Contact:	☑ PDF ☑ Excel ☐ Fax	☐ Rush Service (2-3 Days)
Address: 440 Dovercourt Drive	Email 1: justin.huberdeau@woodplc.com	☐ Priority Service (1 Day or ASAP)
	Email 2:	☐ Emergency Service (<1 Day / Wkend) - Contact ALS
Phone: (204)488-2997 Fax: (204)489-8261		**Analysis Request**
Invoice To: ☑ Same as Report	Indicate Bottles: Filtered / Preserved (F/P) →	
Company:	**Client / Project Information:**	
Contact:	Job #: WX1911101 Main Street Earls	
Address:	PO/AFE:	
Sample	Legal Site Description:	
Phone: Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only) [redacted]	**ALS Contact:**	**Sampler** (Initials):

Sample #	Sample Identification (This description will appear on the report)	Date dd-mmm-yy	Time hh:mm	Sample Type (Select from drop-down list)	BTEX F1 - F4	Grain Size %>75 um	VOC	PAH	PHC Fraction F1-F4						Hazardous?	Highly Contaminated?	Number of Containers
[redacted] 1	TH20-01 @ S4	16-Jul-20		Soil			X		X								
[redacted] 2	TH20-01 @ S8	16-Jul-20		Soil			X										
[redacted] 3	Th20-02 @ S4	16-Jul-20		Soil		X											
[redacted] 4	TH20-02 @ S16	16-Jul-20		Soil			X		X								
[redacted] 5	TH20-03 @ S2	16-Jul-20		Soil	X												
[redacted] 6	Th20-04 @ S5	16-Jul-20		Soil	X												
[redacted] 7	TH20-05 @ S4	16-Jul-20		Soil	X												
[redacted] 8	TH20-05 @ S5	16-Jul-20		Soil				X									
[redacted] 9	TH20-06 @ S3	16-Jul-20		Soil	X												
[redacted] 10	TH20-06 @ S4	16-Jul-20		Soil				X									

Guidelines / Regulations	**Special Instructions / Hazardous Details**

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the adjacent worksheet.

Relinquished By:	Justin Huberdeau	Date & Time:	20-Jul-20	Received By:		Date & Time:	July 21/20 750	Sample Condition (lab use only)
Relinquished By:		Date & Time:		Received By:		Date & Time:		Temperature: -1 C; Samples Received in Good Condition? Y / N (if no provided details)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

L2476948-COFC

COC # _____

Page 2 of 2

Report to:	Report Format / Distribution	Service Requested:
Company: Wood	☑ Standard ☐ Other	☑ Regular Service (Default)
Contact:	☑ PDF ☑ Excel ☐ Fax	☐ Rush Service (2-3 Days)
Address: 440 Dovercourt Drive	Email 1: justin.huberdeau@woodplc.com	☐ Priority Service (1 Day or ASAP)
	Email 2:	☐ Emergency Service (<1 Day / Wkend) - Contact ALS
Phone: (204)488-2997 Fax: (204)489-8261		Analysis Request
Invoice To: ☑ Same as Report	Indicate Bottles: Filtered / Preserved (F/P) →	
Company:	**Client / Project Information:**	
Contact:	Job #: WX1911101 Main Street Earls	
Address:	PO/AFE:	
Sample	Legal Site Description:	
Phone: Fax:	Quote #:	
[redacted] Lab Work Order # [redacted] (lab use only)	**ALS Contact:** **Sampler** (Initials):	

Sample #	Sample Identification (This description will appear on the report)	Date dd-mmm-yy	Time hh:mm	Sample Type (Select from drop-down list)	BTEX F1 - F4	Grain Size %>75 um	VOC	PAH	PHC Fraction F1-F4						Hazardous?	Highly Contaminated?	Number of Containers
[redacted] 1	TH20-06 @ S5	16-Jul-20		Soil		X											
[redacted] 2	TH20-07 @ S1	16-Jul-20		Soil	X												
[redacted] 3	TH20-08 @ S3	16-Jul-20		Soil				X									
[redacted] 4	TH20-08 @ S7	16-Jul-20		Soil	X												
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	

Guidelines / Regulations	Special Instructions / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the adjacent worksheet.

Relinquished By:	Justin Huberdeau	Date & Time:	20-Jul-20	Received By:		Date & Time:	July 21/20 750	[redacted] Sample Condition (lab use only) [redacted]
Relinquished By:		Date & Time:		Received By:		Date & Time:		Temperature 1 ∘ 1 / Samples Received in Good Condition Y / N (if no provided details)

Wood Environment & Infrastructure Solutions (Winnipeg)
ATTN: JUSTIN HUBERDEAU
440 Dovercourt Drive
Winnipeg MB R3Y 1G4

Date Received: 24-JUL-20
Report Date: 06-AUG-20 10:14 (MT)
Version: FINAL

Client Phone: 204-488-2997

Certificate of Analysis

Lab Work Order #: L2479258

Project P.O. #: NOT SUBMITTED
Job Reference: WX1911101 MAIN STREET EARLS (GW)
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2479258-1 TH20-01							
Sampled By: CLIENT on 24-JUL-20							
Matrix: WATER							
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	1.65		0.10	mg/L	25-JUL-20	25-JUL-20	R5167079
F3 (C16-C34)	0.31		0.25	mg/L	25-JUL-20	25-JUL-20	R5167079
F4 (C34-C50)	<0.25		0.25	mg/L	25-JUL-20	25-JUL-20	R5167079
Surrogate: 2-Bromobenzotrifluoride	94.6		60-140	%	25-JUL-20	25-JUL-20	R5167079
CCME Total Hydrocarbons							
F1-BTEX	1.10		0.10	mg/L		31-JUL-20	
Total Hydrocarbons (C6-C50)	3.21		0.38	mg/L		31-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	0.00477		0.00064	mg/L		31-JUL-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.0018		0.0018	mg/L		31-JUL-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		30-JUL-20	R5172606
Benzene	0.00939		0.00050	mg/L		30-JUL-20	R5172606
Bromobenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Bromochloromethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Bromodichloromethane	<0.0010	DLCI	0.0010	mg/L		30-JUL-20	R5172606
Bromoform	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Bromomethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
n-Butylbenzene	0.0118	EMPC	0.0010	mg/L		30-JUL-20	R5172606
sec-Butylbenzene	0.0016		0.0010	mg/L		30-JUL-20	R5172606
tert-Butylbenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Carbon disulfide	<0.0050		0.0050	mg/L		30-JUL-20	R5172606
Carbon Tetrachloride	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Chlorobenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Chloroethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Chloroform	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Chloromethane	<0.0050		0.0050	mg/L		30-JUL-20	R5172606
2-Chlorotoluene	<0.020		0.020	mg/L		30-JUL-20	R5172606
4-Chlorotoluene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Dibromochloromethane	<0.0010	DLCI	0.0010	mg/L		30-JUL-20	R5172606
1,2-Dibromo-3-chloropropane	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
1,2-Dibromoethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Dibromomethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,2-Dichlorobenzene	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
1,3-Dichlorobenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,4-Dichlorobenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,1-dichloroethane	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
1,2-Dichloroethane	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
1,1-dichloroethene	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
trans-1,2-Dichloroethene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Dichloromethane	<0.0050		0.0050	mg/L		30-JUL-20	R5172606
1,2-Dichloropropane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,3-Dichloropropane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
2,2-Dichloropropane	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
1,1-Dichloropropene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
cis-1,3-Dichloropropene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
trans-1,3-Dichloropropene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2479258-1 TH20-01							
Sampled By: CLIENT on 24-JUL-20							
Matrix: WATER							
VOC plus F1 by GCMS							
Ethylbenzene	0.133		0.00050	mg/L		30-JUL-20	R5172606
F1	1.25		0.10	mg/L		30-JUL-20	R5172606
Hexachlorobutadiene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Hexane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		30-JUL-20	R5172606
Isopropylbenzene	0.0137		0.0010	mg/L		30-JUL-20	R5172606
4-Isopropyltoluene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
MEK	<0.020		0.020	mg/L		30-JUL-20	R5172606
MIBK	<0.020		0.020	mg/L		30-JUL-20	R5172606
MTBE	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Styrene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Tetrachloroethene	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Toluene	0.00084		0.00050	mg/L		30-JUL-20	R5172606
1,2,3-Trichlorobenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,2,4-Trichlorobenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Trichloroethene	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Trichlorofluoromethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,2,4-Trimethylbenzene	0.0047		0.0010	mg/L		30-JUL-20	R5172606
1,3,5-Trimethylbenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Vinyl Chloride	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
M+P-Xylenes	0.00477		0.00040	mg/L		30-JUL-20	R5172606
o-Xylene	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Surrogate: 4-Bromofluorobenzene (SS)	83.7		70-130	%		30-JUL-20	R5172606
Surrogate: 1,4-Difluorobenzene (SS)	93.2		70-130	%		30-JUL-20	R5172606
Surrogate: 3,4-Dichlorotoluene (SS)	76.4		70-130	%		30-JUL-20	R5172606
L2479258-2 TH20-05							
Sampled By: CLIENT on 24-JUL-20							
Matrix: WATER							
CCME PAHs in mg/L							
1-Methyl Naphthalene	0.128	DLM	0.0020	mg/L	29-JUL-20	05-AUG-20	R5173832
2-Methyl Naphthalene	0.254	DLM	0.0020	mg/L	29-JUL-20	05-AUG-20	R5173832
Acenaphthene	0.00145	DLM	0.00020	mg/L	29-JUL-20	05-AUG-20	R5173832
Acenaphthylene	<0.00043	DLQ	0.00043	mg/L	29-JUL-20	05-AUG-20	R5173832
Anthracene	0.00024	R	0.00010	mg/L	29-JUL-20	05-AUG-20	R5173832
Acridine	<0.00020	DLM	0.00020	mg/L	29-JUL-20	05-AUG-20	R5173832
Benzo(a)anthracene	<0.00010	DLM	0.00010	mg/L	29-JUL-20	05-AUG-20	R5173832
Benzo(a)pyrene	0.000067	DLM	0.000050	mg/L	29-JUL-20	05-AUG-20	R5173832
Benzo(b&j)fluoranthene	0.00013	DLM	0.00010	mg/L	29-JUL-20	05-AUG-20	R5173832
Benzo(g,h,i)perylene	<0.00020	DLM	0.00020	mg/L	29-JUL-20	05-AUG-20	R5173832
Benzo(k)fluoranthene	<0.00010	DLM	0.00010	mg/L	29-JUL-20	05-AUG-20	R5173832
Chrysene	<0.00020	DLM	0.00020	mg/L	29-JUL-20	05-AUG-20	R5173832
Dibenzo(a,h)anthracene	<0.000050	DLM	0.000050	mg/L	29-JUL-20	05-AUG-20	R5173832
Fluoranthene	0.00039	DLM	0.00020	mg/L	29-JUL-20	05-AUG-20	R5173832
Fluorene	0.00133	DLM	0.00020	mg/L	29-JUL-20	05-AUG-20	R5173832
Indeno(1,2,3-cd)pyrene	<0.00010	DLM	0.00010	mg/L	29-JUL-20	05-AUG-20	R5173832

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2479258-2 TH20-05							
Sampled By: CLIENT on 24-JUL-20							
Matrix: WATER							
CCME PAHs in mg/L							
Naphthalene	0.417	DLM	0.0050	mg/L	29-JUL-20	05-AUG-20	R5173832
Phenanthrene	0.00137	DLM	0.00050	mg/L	29-JUL-20	05-AUG-20	R5173832
Pyrene	0.00045	DLM	0.00010	mg/L	29-JUL-20	05-AUG-20	R5173832
Quinoline	<0.00460	DLQ	0.0046	mg/L	29-JUL-20	05-AUG-20	R5173832
B(a)P Total Potency Equivalent	0.000123		0.000072	mg/L	29-JUL-20	05-AUG-20	R5173832
Surrogate: d8-Naphthalene	91		50-150	%	29-JUL-20	05-AUG-20	R5173832
Surrogate: d10-Phenanthrene	84		50-150	%	29-JUL-20	05-AUG-20	R5173832
Surrogate: d12-Chrysene	85		50-150	%	29-JUL-20	05-AUG-20	R5173832
Surrogate: d10-Acenaphthene	92		50-150	%	29-JUL-20	05-AUG-20	R5173832
Surrogate: d9-Acridine (SS)	73		50-150	%	29-JUL-20	05-AUG-20	R5173832
VOC plus F1 to F4							
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	25-JUL-20	25-JUL-20	R5167079
F3 (C16-C34)	0.88		0.25	mg/L	25-JUL-20	25-JUL-20	R5167079
F4 (C34-C50)	0.54		0.25	mg/L	25-JUL-20	25-JUL-20	R5167079
Surrogate: 2-Bromobenzotrifluoride	90.8		60-140	%	25-JUL-20	25-JUL-20	R5167079
CCME Total Hydrocarbons							
F1-BTEX	37.5		1.0	mg/L		06-AUG-20	
F2-Naphth	<0.10		0.10	mg/L		06-AUG-20	
F3-PAH	0.88		0.25	mg/L		06-AUG-20	
Total Hydrocarbons (C6-C50)	47.6		1.1	mg/L		06-AUG-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	3.59		0.021	mg/L		05-AUG-20	
Total Trihalomethanes (THMs)							
Total THMs	<0.021		0.021	mg/L		05-AUG-20	
VOC plus F1 by GCMS							
Acetone	<0.050		0.050	mg/L		30-JUL-20	R5172606
Benzene	1.42	DLHC	0.0050	mg/L		30-JUL-20	R5172606
Bromobenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Bromochloromethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Bromodichloromethane	<0.020	DLCI	0.020	mg/L		30-JUL-20	R5172606
Bromoform	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Bromomethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
n-Butylbenzene	0.141	DLM	0.010	mg/L		30-JUL-20	R5172606
sec-Butylbenzene	<0.020	DLCI	0.020	mg/L		30-JUL-20	R5172606
tert-Butylbenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Carbon disulfide	<0.0050		0.0050	mg/L		30-JUL-20	R5172606
Carbon Tetrachloride	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Chlorobenzene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Chloroethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Chloroform	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Chloromethane	<0.0050		0.0050	mg/L		30-JUL-20	R5172606
2-Chlorotoluene	<0.020		0.020	mg/L		30-JUL-20	R5172606
4-Chlorotoluene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
Dibromochloromethane	<0.0050	DLCI	0.0050	mg/L		30-JUL-20	R5172606
1,2-Dibromo-3-chloropropane	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
1,2-Dibromoethane	<0.010	DLCI	0.010	mg/L		30-JUL-20	R5172606
Dibromomethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,2-Dichlorobenzene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
1,3-Dichlorobenzene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
1,4-Dichlorobenzene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
Dichlorodifluoromethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2479258-2 TH20-05							
Sampled By: CLIENT on 24-JUL-20							
Matrix: WATER							
VOC plus F1 by GCMS							
1,1-dichloroethane	<0.0050	DLCI	0.0050	mg/L		30-JUL-20	R5172606
1,2-Dichloroethane	<0.0050	DLCI	0.0050	mg/L		30-JUL-20	R5172606
1,1-dichloroethene	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
cis-1,2-Dichloroethene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
trans-1,2-Dichloroethene	<0.0020	DLCI	0.0020	mg/L		30-JUL-20	R5172606
Dichloromethane	<0.15	DLCI	0.15	mg/L		30-JUL-20	R5172606
1,2-Dichloropropane	<0.0050	DLCI	0.0050	mg/L		30-JUL-20	R5172606
1,3-Dichloropropane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
2,2-Dichloropropane	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
1,1-Dichloropropene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
cis-1,3-Dichloropropene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
trans-1,3-Dichloropropene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
Ethylbenzene	1.67	DLHC	0.025	mg/L		30-JUL-20	R5172606
F1	46.2	DLHC	1.0	mg/L		30-JUL-20	R5172606
Hexachlorobutadiene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
Hexane	0.610	EMPC	0.0010	mg/L		30-JUL-20	R5172606
2-Hexanone (Methyl butyl ketone)	<0.050	DLCI	0.050	mg/L		30-JUL-20	R5172606
Isopropylbenzene	0.0711		0.0010	mg/L		30-JUL-20	R5172606
4-Isopropyltoluene	0.021	DLM	0.010	mg/L		30-JUL-20	R5172606
MEK	<0.020		0.020	mg/L		30-JUL-20	R5172606
MIBK	<0.020		0.020	mg/L		30-JUL-20	R5172606
MTBE	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Styrene	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
1,1,2,2-Tetrachloroethane	<0.0020	DLCI	0.0020	mg/L		30-JUL-20	R5172606
Tetrachloroethene	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Toluene	1.99	EMPC	0.0050	mg/L		30-JUL-20	R5172606
1,2,3-Trichlorobenzene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
1,2,4-Trichlorobenzene	<0.0020	DLM	0.0020	mg/L		30-JUL-20	R5172606
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
1,1,2-Trichloroethane	0.0335		0.00050	mg/L		30-JUL-20	R5172606
Trichloroethene	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
Trichlorofluoromethane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,2,3-Trichloropropane	<0.0010		0.0010	mg/L		30-JUL-20	R5172606
1,2,4-Trimethylbenzene	2.34	DLHC	0.010	mg/L		30-JUL-20	R5172606
1,3,5-Trimethylbenzene	0.564	DLHC	0.010	mg/L		30-JUL-20	R5172606
Vinyl Chloride	<0.00050		0.00050	mg/L		30-JUL-20	R5172606
M+P-Xylenes	2.48	DLHC	0.020	mg/L		30-JUL-20	R5172606
o-Xylene	1.11	DLHC	0.0050	mg/L		30-JUL-20	R5172606
Surrogate: 4-Bromofluorobenzene (SS)	95.2		70-130	%		30-JUL-20	R5172606
Surrogate: 1,4-Difluorobenzene (SS)	91.7		70-130	%		30-JUL-20	R5172606
Surrogate: 3,4-Dichlorotoluene (SS)	93.9		70-130	%		30-JUL-20	R5172606
L2479258-3 TH20-08							
Sampled By: CLIENT on 24-JUL-20							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		26-JUL-20	R5167214
Toluene	<0.0010		0.0010	mg/L		26-JUL-20	R5167214
Ethyl benzene	<0.00050		0.00050	mg/L		26-JUL-20	R5167214
o-Xylene	<0.00050		0.00050	mg/L		26-JUL-20	R5167214

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2479258-3 TH20-08							
Sampled By: CLIENT on 24-JUL-20							
Matrix: WATER							
BTX plus F1 by GCMS							
m+p-Xylenes	<0.00040		0.00040	mg/L		26-JUL-20	R5167214
F1 (C6-C10)	<0.10		0.10	mg/L		26-JUL-20	R5167214
Surrogate: 4-Bromofluorobenzene (SS)	91.5		70-130	%		26-JUL-20	R5167214
CCME PHC F2-F4 in Water							
F2 (C10-C16)	31.8		0.10	mg/L	25-JUL-20	25-JUL-20	R5167079
F3 (C16-C34)	55.8		0.25	mg/L	25-JUL-20	25-JUL-20	R5167079
F4 (C34-C50)	6.84		0.25	mg/L	25-JUL-20	25-JUL-20	R5167079
Surrogate: 2-Bromobenzotrifluoride	195.0	SOL:MI	60-140	%	25-JUL-20	25-JUL-20	R5167079
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		04-AUG-20	
F2-Naphth	31.8		0.10	mg/L		04-AUG-20	
F3-PAH	55.8		0.25	mg/L		04-AUG-20	
Total Hydrocarbons (C6-C50)	94.5		0.38	mg/L		04-AUG-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		28-JUL-20	
CCME PAHs in mg/L							
1-Methyl Naphthalene	0.000020		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
2-Methyl Naphthalene	0.000032		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
Acenaphthene	<0.000020		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
Acenaphthylene	<0.000020		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
Anthracene	0.000020		0.000010	mg/L	29-JUL-20	04-AUG-20	R5173832
Acridine	<0.000020		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
Benzo(a)anthracene	0.000074		0.000010	mg/L	29-JUL-20	04-AUG-20	R5173832
Benzo(a)pyrene	0.0000661		0.0000050	mg/L	29-JUL-20	04-AUG-20	R5173832
Benzo(b&j)fluoranthene	0.000085		0.000010	mg/L	29-JUL-20	04-AUG-20	R5173832
Benzo(g,h,i)perylene	0.000047		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
Benzo(k)fluoranthene	0.000026		0.000010	mg/L	29-JUL-20	04-AUG-20	R5173832
Chrysene	0.000056		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
Dibenzo(a,h)anthracene	0.0000122		0.0000050	mg/L	29-JUL-20	04-AUG-20	R5173832
Fluoranthene	0.000130		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
Fluorene	<0.000020		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
Indeno(1,2,3-cd)pyrene	0.000049		0.000010	mg/L	29-JUL-20	04-AUG-20	R5173832
Naphthalene	<0.000050		0.000050	mg/L	29-JUL-20	04-AUG-20	R5173832
Phenanthrene	0.000073		0.000050	mg/L	29-JUL-20	04-AUG-20	R5173832
Pyrene	0.000133		0.000010	mg/L	29-JUL-20	04-AUG-20	R5173832
Quinoline	<0.000020		0.000020	mg/L	29-JUL-20	04-AUG-20	R5173832
B(a)P Total Potency Equivalent	0.000103		0.000030	mg/L	29-JUL-20	04-AUG-20	R5173832
Surrogate: d8-Naphthalene	70.9		50-150	%	29-JUL-20	04-AUG-20	R5173832
Surrogate: d10-Phenanthrene	97.4		50-150	%	29-JUL-20	04-AUG-20	R5173832
Surrogate: d12-Chrysene	89.9		50-150	%	29-JUL-20	04-AUG-20	R5173832
Surrogate: d10-Acenaphthene	88.6		50-150	%	29-JUL-20	04-AUG-20	R5173832
Surrogate: d9-Acridine (SS)	75.5		50-150	%	29-JUL-20	04-AUG-20	R5173832

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
SOL:MI	Surrogate recovery outside acceptable limits due to matrix interference

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	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.

F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

PAH-CCME-PPM-WT	Water	CCME PAHs in mg/L	EPA 3511/8270D (mod)

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

THM-SUM-CALC-WP	Water	Total Trihalomethanes (THMs)	CALCULATION

Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.

VOC+F1-HSMS-WP	Water	VOC plus F1 by GCMS	EPA 8260C / EPA 5021A

In this method samples are analyzed using a headspace autosampler interfaced to a dual column gas chromatograph with MS and Flame Ionization detectors.

XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT

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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

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.

Quality Control Report

Workorder: L2479258 Report Date: 06-AUG-20

Client: Wood Environment & Infrastructure Solutions (Winnipeg)
440 Dovercourt Drive
Winnipeg MB R3Y 1G4
Contact: JUSTIN HUBERDEAU

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	**Water**							
Batch R5167214								
WG3370589-8 LCS								
Benzene			83.2		%		70-130	25-JUL-20
Toluene			86.5		%		70-130	25-JUL-20
Ethyl benzene			87.8		%		70-130	25-JUL-20
o-Xylene			102.1		%		70-130	25-JUL-20
m+p-Xylenes			97.7		%		70-130	25-JUL-20
WG3370589-9 LCS								
F1 (C6-C10)			92.8		%		70-130	25-JUL-20
WG3370589-7 MB								
Benzene			<0.00050		mg/L		0.0005	25-JUL-20
Toluene			<0.0010		mg/L		0.001	25-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	25-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	25-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	25-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	25-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			90.6		%		70-130	25-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-6 LCS								
F2 (C10-C16)			101.1		%		70-130	24-JUL-20
F3 (C16-C34)			93.2		%		70-130	24-JUL-20
F4 (C34-C50)			110.8		%		70-130	24-JUL-20
WG3369781-5 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			91.2		%		60-140	24-JUL-20
PAH-CCME-PPM-WT	**Water**							
Batch R5173832								
WG3372494-2 LCS								
1-Methyl Naphthalene			103.0		%		50-150	04-AUG-20
2-Methyl Naphthalene			101.8		%		50-150	04-AUG-20
Acenaphthene			121.0		%		50-150	04-AUG-20
Acenaphthylene			113.5		%		50-150	04-AUG-20
Anthracene			134.8		%		50-150	04-AUG-20
Acridine			129.7		%		50-150	04-AUG-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	**Water**							
Batch R5173832								
WG3372494-2 LCS								
Benzo(a)anthracene			146.0		%		50-150	04-AUG-20
Benzo(a)pyrene			114.7		%		50-150	04-AUG-20
Benzo(b&j)fluoranthene			121.2		%		50-150	04-AUG-20
Benzo(g,h,i)perylene			109.3		%		50-150	04-AUG-20
Benzo(k)fluoranthene			112.1		%		50-150	04-AUG-20
Chrysene			134.4		%		50-150	04-AUG-20
Dibenzo(a,h)anthracene			119.3		%		50-150	04-AUG-20
Fluoranthene			125.8		%		50-150	04-AUG-20
Fluorene			119.7		%		50-150	04-AUG-20
Indeno(1,2,3-cd)pyrene			135.3		%		50-150	04-AUG-20
Naphthalene			93.9		%		50-150	04-AUG-20
Phenanthrene			129.8		%		50-150	04-AUG-20
Pyrene			128.6		%		50-150	04-AUG-20
Quinoline			108.9		%		50-150	04-AUG-20
WG3372494-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	04-AUG-20
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	04-AUG-20
Acenaphthene			<0.000020		mg/L		0.00002	04-AUG-20
Acenaphthylene			<0.000020		mg/L		0.00002	04-AUG-20
Anthracene			<0.000010		mg/L		0.00001	04-AUG-20
Acridine			<0.000020		mg/L		0.00002	04-AUG-20
Benzo(a)anthracene			<0.000010		mg/L		0.00001	04-AUG-20
Benzo(a)pyrene			<0.000005		mg/L		0.000005	04-AUG-20
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	04-AUG-20
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	04-AUG-20
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	04-AUG-20
Chrysene			<0.000020		mg/L		0.00002	04-AUG-20
Dibenzo(a,h)anthracene			<0.000005		mg/L		0.000005	04-AUG-20
Fluoranthene			<0.000020		mg/L		0.00002	04-AUG-20
Fluorene			<0.000020		mg/L		0.00002	04-AUG-20
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	04-AUG-20
Naphthalene			<0.000050		mg/L		0.00005	04-AUG-20
Phenanthrene			<0.000050		mg/L		0.00005	04-AUG-20
Pyrene			<0.000010		mg/L		0.00001	04-AUG-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	**Water**							
Batch R5173832								
WG3372494-1 MB								
Quinoline			<0.000020		mg/L		0.00002	04-AUG-20
Surrogate: d8-Naphthalene			83.3		%		50-150	04-AUG-20
Surrogate: d10-Phenanthrene			106.6		%		50-150	04-AUG-20
Surrogate: d12-Chrysene			102.4		%		50-150	04-AUG-20
Surrogate: d10-Acenaphthene			96.8		%		50-150	04-AUG-20
Surrogate: d9-Acridine (SS)			104.8		%		50-150	04-AUG-20
VOC+F1-HSMS-WP	**Water**							
Batch R5172606								
WG3372826-4 DUP		**L2479258-1**						
Acetone		<0.050	<0.050	RPD-NA	mg/L	N/A	30	30-JUL-20
Benzene		0.00939	0.00903		mg/L	3.9	30	30-JUL-20
Bromobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Bromochloromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Bromodichloromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Bromoform		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Bromomethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	30-JUL-20
n-Butylbenzene		0.0118	0.0109		mg/L	7.8	30	30-JUL-20
sec-Butylbenzene		0.0016	0.0016		mg/L	3.9	30	30-JUL-20
tert-Butylbenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Carbon disulfide		<0.0050	<0.0050	RPD-NA	mg/L	N/A	30	30-JUL-20
Carbon Tetrachloride		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
Chlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Chloroethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	30-JUL-20
Chloroform		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
Chloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	30-JUL-20
2-Chlorotoluene		<0.020	<0.020	RPD-NA	mg/L	N/A	30	30-JUL-20
4-Chlorotoluene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Dibromochloromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
1,2-Dibromo-3-chloropropane		<0.0020	<0.0020	RPD-NA	mg/L	N/A	30	30-JUL-20
1,2-Dibromoethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Dibromomethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
1,2-Dichlorobenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
1,3-Dichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
1,4-Dichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Water**							
Batch R5172606								
WG3372826-4 DUP		**L2479258-1**						
Dichlorodifluoromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	30-JUL-20
1,1-dichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
1,2-Dichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
1,1-dichloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
cis-1,2-Dichloroethene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
trans-1,2-Dichloroethene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Dichloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	30	30-JUL-20
1,2-Dichloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
1,3-Dichloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
2,2-Dichloropropane		<0.0020	<0.0020	RPD-NA	mg/L	N/A	30	30-JUL-20
1,1-Dichloropropene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
cis-1,3-Dichloropropene		<0.0020	<0.0020	RPD-NA	mg/L	N/A	30	30-JUL-20
trans-1,3-Dichloropropene		<0.0020	<0.0020	RPD-NA	mg/L	N/A	30	30-JUL-20
Ethylbenzene		0.133	0.129		mg/L	3.3	30	30-JUL-20
F1		1.25	1.18		mg/L	5.8	30	30-JUL-20
Hexachlorobutadiene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Hexane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
2-Hexanone (Methyl butyl ketone)		<0.020	<0.020	RPD-NA	mg/L	N/A	30	30-JUL-20
Isopropylbenzene		0.0137	0.0132		mg/L	3.1	30	30-JUL-20
4-Isopropyltoluene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
MEK		<0.020	<0.020	RPD-NA	mg/L	N/A	30	30-JUL-20
MIBK		<0.020	<0.020	RPD-NA	mg/L	N/A	30	30-JUL-20
MTBE		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
Styrene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
1,1,1,2-Tetrachloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
1,1,2,2-Tetrachloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
Tetrachloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
Toluene		0.00084	0.00081		mg/L	3.4	30	30-JUL-20
1,2,3-Trichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
1,2,4-Trichlorobenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
1,1,1-Trichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
1,1,2-Trichloroethane		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
Trichloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
Trichlorofluoromethane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	30-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Water**							
Batch R5172606								
WG3372826-4 DUP		**L2479258-1**						
1,2,3-Trichloropropane		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
1,2,4-Trimethylbenzene		0.0047	0.0045		mg/L	3.8	30	30-JUL-20
1,3,5-Trimethylbenzene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	30-JUL-20
Vinyl Chloride		<0.00050	<0.00050	RPD-NA	mg/L	N/A	50	30-JUL-20
M+P-Xylenes		0.00477	0.00465		mg/L	2.7	30	30-JUL-20
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	30-JUL-20
WG3372826-2 LCS								
Acetone			86.1		%		70-130	29-JUL-20
Benzene			92.9		%		70-130	29-JUL-20
Bromobenzene			91.5		%		70-130	29-JUL-20
Bromochloromethane			96.2		%		70-130	29-JUL-20
Bromodichloromethane			93.1		%		70-130	29-JUL-20
Bromoform			76.4		%		70-130	29-JUL-20
Bromomethane			107.0		%		60-140	29-JUL-20
n-Butylbenzene			90.4		%		70-130	29-JUL-20
sec-Butylbenzene			105.6		%		70-130	29-JUL-20
tert-Butylbenzene			96.3		%		70-130	29-JUL-20
Carbon disulfide			98.4		%		70-130	29-JUL-20
Carbon Tetrachloride			98.3		%		70-130	29-JUL-20
Chlorobenzene			94.0		%		70-130	29-JUL-20
Chloroethane			93.6		%		60-140	29-JUL-20
Chloroform			96.8		%		70-130	29-JUL-20
Chloromethane			109.4		%		60-140	29-JUL-20
2-Chlorotoluene			89.4		%		70-130	29-JUL-20
4-Chlorotoluene			98.4		%		70-130	29-JUL-20
Dibromochloromethane			77.8		%		70-130	29-JUL-20
1,2-Dibromo-3-chloropropane			70.1		%		70-130	29-JUL-20
1,2-Dibromoethane			78.0		%		70-130	29-JUL-20
Dibromomethane			97.1		%		70-130	29-JUL-20
1,2-Dichlorobenzene			93.4		%		70-130	29-JUL-20
1,3-Dichlorobenzene			96.2		%		70-130	29-JUL-20
1,4-Dichlorobenzene			95.3		%		70-130	29-JUL-20
Dichlorodifluoromethane			111.4		%		60-140	29-JUL-20
1,1-dichloroethane			91.8		%		70-130	29-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Water**							
Batch R5172606								
WG3372826-2 LCS								
1,2-Dichloroethane			88.7		%		70-130	29-JUL-20
1,1-dichloroethene			90.1		%		70-130	29-JUL-20
cis-1,2-Dichloroethene			89.8		%		70-130	29-JUL-20
trans-1,2-Dichloroethene			89.0		%		70-130	29-JUL-20
Dichloromethane			96.2		%		70-130	29-JUL-20
1,2-Dichloropropane			86.4		%		70-130	29-JUL-20
1,3-Dichloropropane			83.0		%		70-130	29-JUL-20
2,2-Dichloropropane			85.9		%		70-130	29-JUL-20
1,1-Dichloropropene			93.7		%		70-130	29-JUL-20
cis-1,3-Dichloropropene			67.4	MES	%		70-130	29-JUL-20
trans-1,3-Dichloropropene			64.7	MES	%		70-130	29-JUL-20
Ethylbenzene			87.9		%		70-130	29-JUL-20
Hexachlorobutadiene			107.2		%		70-130	29-JUL-20
Hexane			92.9		%		70-130	29-JUL-20
2-Hexanone (Methyl butyl ketone)			77.3		%		70-130	29-JUL-20
Isopropylbenzene			98.6		%		70-130	29-JUL-20
4-Isopropyltoluene			101.1		%		70-130	29-JUL-20
MEK			86.9		%		70-130	29-JUL-20
MIBK			84.7		%		70-130	29-JUL-20
MTBE			93.5		%		70-130	29-JUL-20
Styrene			85.8		%		70-130	29-JUL-20
1,1,1,2-Tetrachloroethane			88.6		%		70-130	29-JUL-20
1,1,2,2-Tetrachloroethane			81.7		%		70-130	29-JUL-20
Tetrachloroethene			107.0		%		70-130	29-JUL-20
Toluene			89.2		%		70-130	29-JUL-20
1,2,3-Trichlorobenzene			96.9		%		70-130	29-JUL-20
1,2,4-Trichlorobenzene			104.0		%		70-130	29-JUL-20
1,1,1-Trichloroethane			92.2		%		70-130	29-JUL-20
1,1,2-Trichloroethane			84.7		%		70-130	29-JUL-20
Trichloroethene			96.6		%		70-130	29-JUL-20
Trichlorofluoromethane			92.6		%		60-140	29-JUL-20
1,2,3-Trichloropropane			83.6		%		70-130	29-JUL-20
1,2,4-Trimethylbenzene			92.4		%		70-130	29-JUL-20
1,3,5-Trimethylbenzene			96.0		%		70-130	29-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Water**							
Batch R5172606								
WG3372826-2 LCS								
Vinyl Chloride			97.1		%		60-140	29-JUL-20
M+P-Xylenes			96.3		%		70-130	29-JUL-20
o-Xylene			94.0		%		70-130	29-JUL-20
WG3372826-3 LCS								
F1			116.4		%		70-130	29-JUL-20
WG3372826-1 MB								
Acetone			<0.050		mg/L		0.05	29-JUL-20
Benzene			<0.00050		mg/L		0.0005	29-JUL-20
Bromobenzene			<0.0010		mg/L		0.001	29-JUL-20
Bromochloromethane			<0.0010		mg/L		0.001	29-JUL-20
Bromodichloromethane			<0.00050		mg/L		0.0005	29-JUL-20
Bromoform			<0.0010		mg/L		0.001	29-JUL-20
Bromomethane			<0.0010		mg/L		0.001	29-JUL-20
n-Butylbenzene			<0.0010		mg/L		0.001	29-JUL-20
sec-Butylbenzene			<0.0010		mg/L		0.001	29-JUL-20
tert-Butylbenzene			<0.0010		mg/L		0.001	29-JUL-20
Carbon disulfide			<0.0050		mg/L		0.005	29-JUL-20
Carbon Tetrachloride			<0.00050		mg/L		0.0005	29-JUL-20
Chlorobenzene			<0.0010		mg/L		0.001	29-JUL-20
Chloroethane			<0.0010		mg/L		0.001	29-JUL-20
Chloroform			<0.00050		mg/L		0.0005	29-JUL-20
Chloromethane			<0.0050		mg/L		0.005	29-JUL-20
2-Chlorotoluene			<0.020		mg/L		0.02	29-JUL-20
4-Chlorotoluene			<0.0010		mg/L		0.001	29-JUL-20
Dibromochloromethane			<0.00050		mg/L		0.0005	29-JUL-20
1,2-Dibromo-3-chloropropane			<0.0020		mg/L		0.002	29-JUL-20
1,2-Dibromoethane			<0.0010		mg/L		0.001	29-JUL-20
Dibromomethane			<0.0010		mg/L		0.001	29-JUL-20
1,2-Dichlorobenzene			<0.00050		mg/L		0.0005	29-JUL-20
1,3-Dichlorobenzene			<0.0010		mg/L		0.001	29-JUL-20
1,4-Dichlorobenzene			<0.0010		mg/L		0.001	29-JUL-20
Dichlorodifluoromethane			<0.0010		mg/L		0.001	29-JUL-20
1,1-dichloroethane			<0.00050		mg/L		0.0005	29-JUL-20
1,2-Dichloroethane			<0.00050		mg/L		0.0005	29-JUL-20
1,1-dichloroethene			<0.00050		mg/L		0.0005	29-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Water**							
Batch R5172606								
WG3372826-1 MB								
cis-1,2-Dichloroethene			<0.0010		mg/L		0.001	29-JUL-20
trans-1,2-Dichloroethene			<0.0010		mg/L		0.001	29-JUL-20
Dichloromethane			<0.0050		mg/L		0.005	29-JUL-20
1,2-Dichloropropane			<0.0010		mg/L		0.001	29-JUL-20
1,3-Dichloropropane			<0.0010		mg/L		0.001	29-JUL-20
2,2-Dichloropropane			<0.0020		mg/L		0.002	29-JUL-20
1,1-Dichloropropene			<0.0010		mg/L		0.001	29-JUL-20
cis-1,3-Dichloropropene			<0.0020		mg/L		0.002	29-JUL-20
trans-1,3-Dichloropropene			<0.0020		mg/L		0.002	29-JUL-20
Ethylbenzene			<0.00050		mg/L		0.0005	29-JUL-20
F1			<0.10		mg/L		0.1	29-JUL-20
Hexachlorobutadiene			<0.0010		mg/L		0.001	29-JUL-20
Hexane			<0.0010		mg/L		0.001	29-JUL-20
2-Hexanone (Methyl butyl ketone)			<0.020		mg/L		0.02	29-JUL-20
Isopropylbenzene			<0.0010		mg/L		0.001	29-JUL-20
4-Isopropyltoluene			<0.0010		mg/L		0.001	29-JUL-20
MEK			<0.020		mg/L		0.02	29-JUL-20
MIBK			<0.020		mg/L		0.02	29-JUL-20
MTBE			<0.00050		mg/L		0.0005	29-JUL-20
Styrene			<0.0010		mg/L		0.001	29-JUL-20
1,1,1,2-Tetrachloroethane			<0.00050		mg/L		0.0005	29-JUL-20
1,1,2,2-Tetrachloroethane			<0.00050		mg/L		0.0005	29-JUL-20
Tetrachloroethene			<0.00050		mg/L		0.0005	29-JUL-20
Toluene			<0.00050		mg/L		0.0005	29-JUL-20
1,2,3-Trichlorobenzene			<0.0010		mg/L		0.001	29-JUL-20
1,2,4-Trichlorobenzene			<0.0010		mg/L		0.001	29-JUL-20
1,1,1-Trichloroethane			<0.00050		mg/L		0.0005	29-JUL-20
1,1,2-Trichloroethane			<0.00050		mg/L		0.0005	29-JUL-20
Trichloroethene			<0.00050		mg/L		0.0005	29-JUL-20
Trichlorofluoromethane			<0.0010		mg/L		0.001	29-JUL-20
1,2,3-Trichloropropane			<0.0010		mg/L		0.001	29-JUL-20
1,2,4-Trimethylbenzene			<0.0010		mg/L		0.001	29-JUL-20
1,3,5-Trimethylbenzene			<0.0010		mg/L		0.001	29-JUL-20
Vinyl Chloride			<0.00050		mg/L		0.0005	29-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP	**Water**							
Batch R5172606								
WG3372826-1 MB								
M+P-Xylenes			<0.00040		mg/L		0.0004	29-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	29-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			79.4		%		70-130	29-JUL-20
Surrogate: 1,4-Difluorobenzene (SS)			98.6		%		70-130	29-JUL-20
Surrogate: 3,4-Dichlorotoluene (SS)			96.1		%		70-130	29-JUL-20

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
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

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

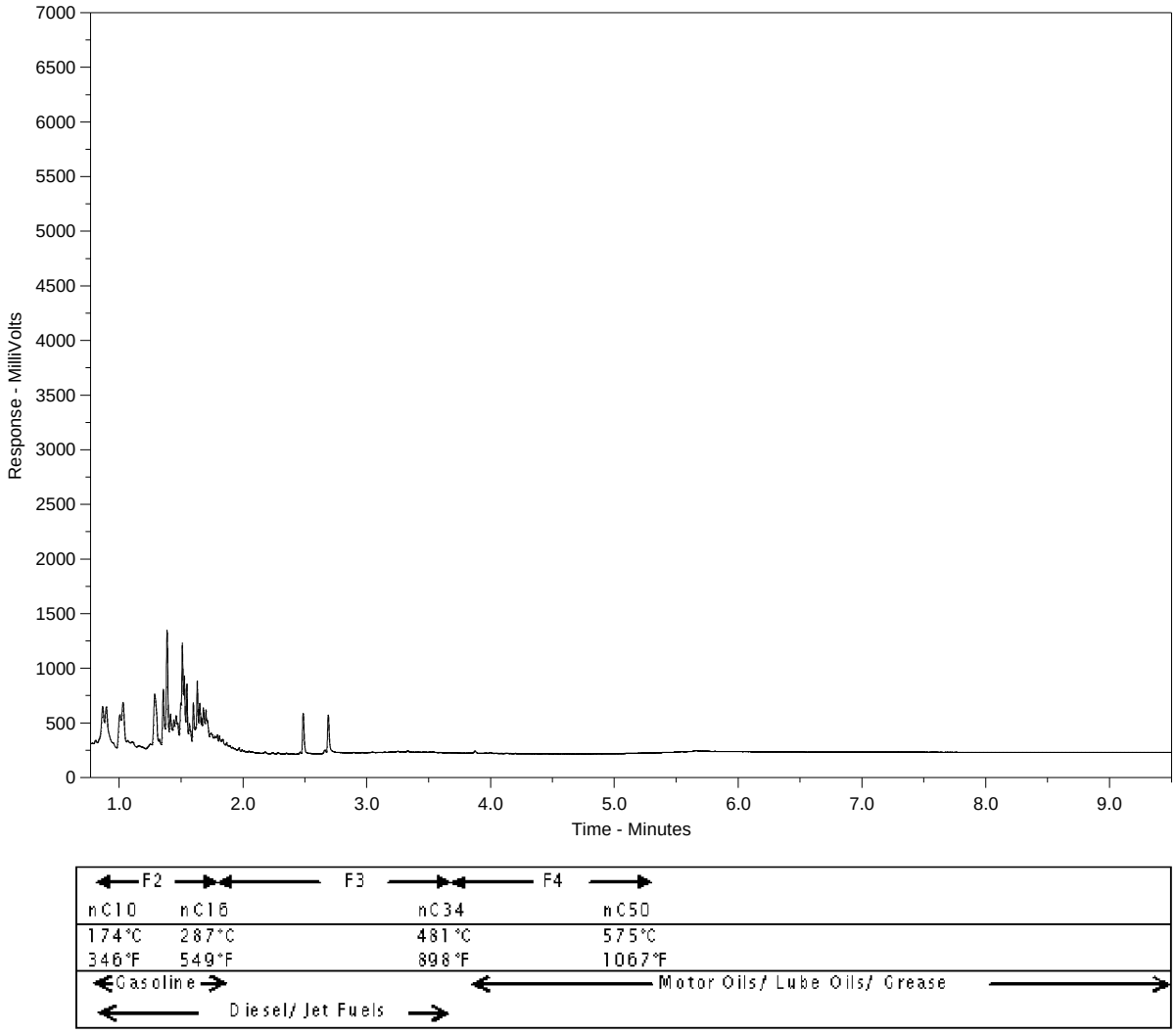
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2479258-1
Client Sample ID: TH20-01



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

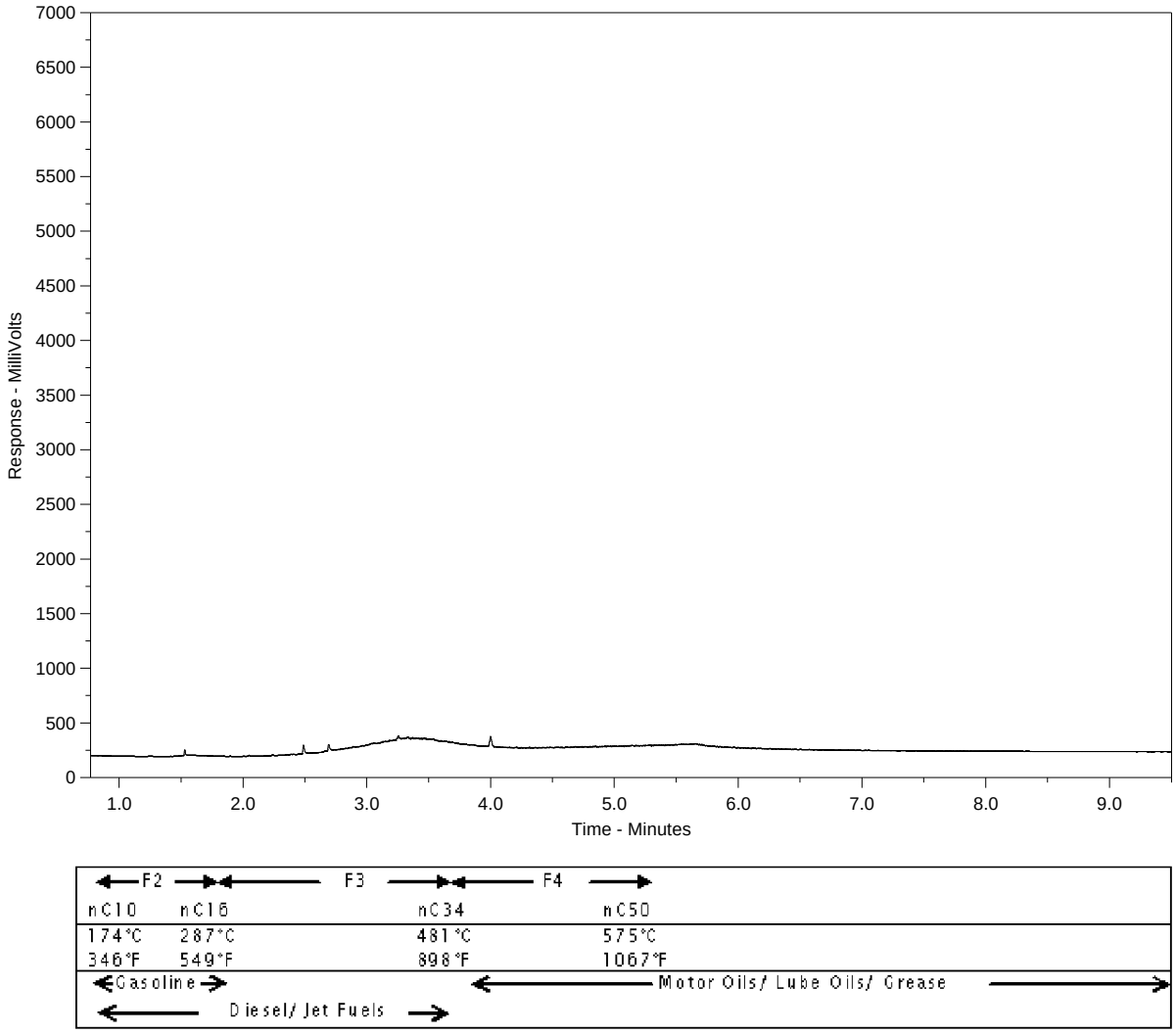
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at 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: L2479258-2
Client Sample ID: TH20-05



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

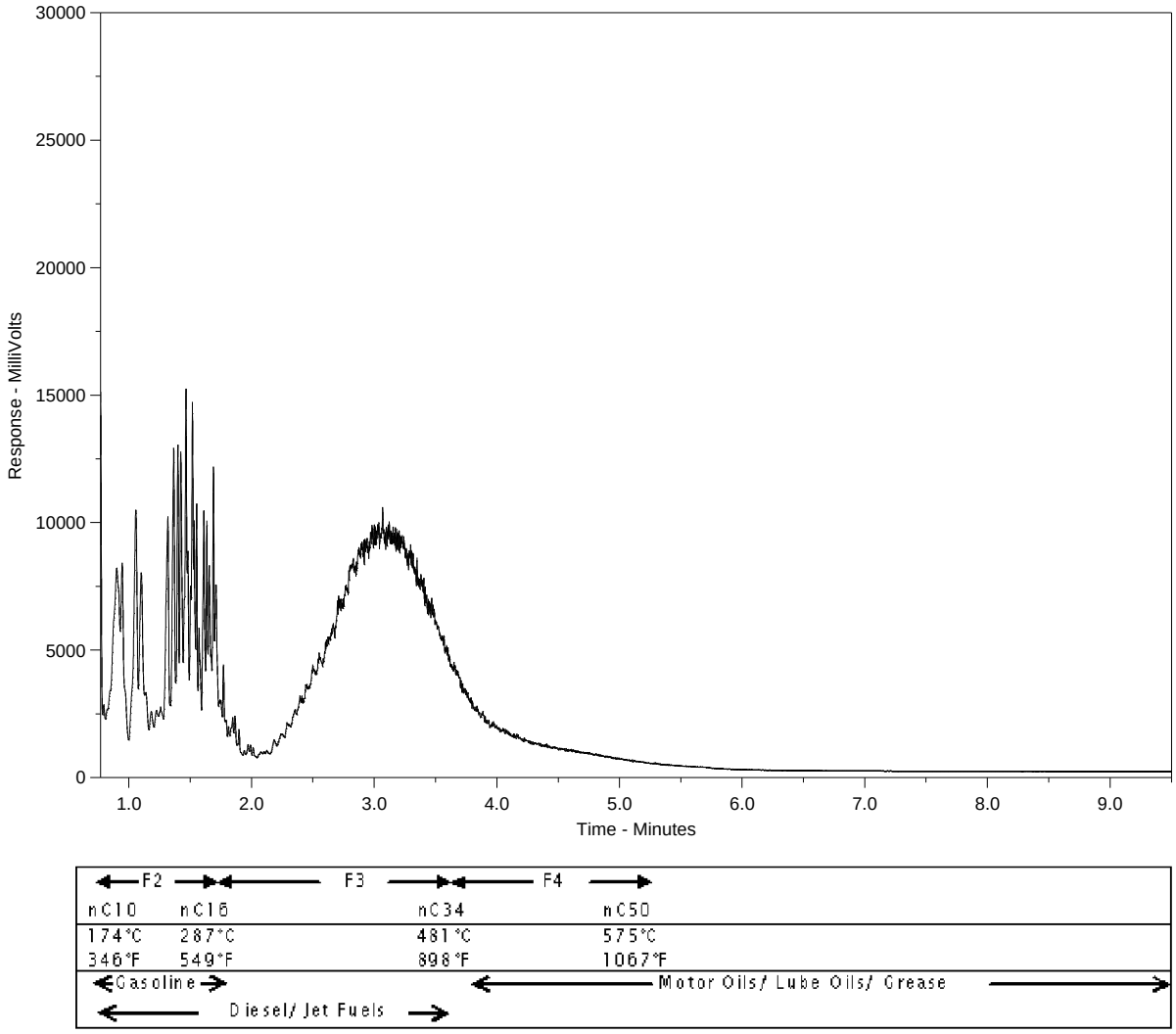
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at 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: L2479258-3
Client Sample ID: TH20-08



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 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.

COC # _____

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

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Report to:	**Report Format / Distribution**	**Service Requested:**
Company: Wood	☑ Standard ☐ Other	☐ Regular Service (Default)
Contact:	☑ PDF ☑ Excel ☐ Fax	☑ Rush Service (2-3 Days)
Address: 440 Dovercourt Drive	Email 1: justin.huberdeau@woodplc.com	☐ Priority Service (1 Day or ASAP)
	Email 2:	☐ Emergency Service (<1 Day / Wkend) - Contact ALS
Phone: (204)488-2997 Fax: (204)489-8261		**Analysis Request**
Invoice To: ☑ Same as Report	Indicate Bottles: Filtered / Preserved (F/P) →	
Company:	**Client / Project Information:**	
Contact:	Job #: WX1911101 Main Street Earls (GW)	
Address:	PO/AFE:	
Sample	Legal Site Description:	
Phone: Fax:	Quote #:	
Lab Work Order # (lab use only)	**ALS Contact:** **Sampler** (Initials):	

Sample #	Sample Identification (This description will appear on the report)	Date dd-mmm-yy	Time hh:mm	Sample Type (Select from drop-down list)	BTEX F1 - F4	VOC	PAH	Hazardous?	Highly Contaminated?	Number of Containers
	TH20-01	24-Jul-20		Water	X	X				5
	TH20-05	24-Jul-20		Water	X	X	X			7
	TH20-08	24-Jul-20		Water	X		X			5

Guidelines / Regulations

Special Instructions / Hazardous Details

Note: Rush Service Required

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the adjacent worksheet.

Relinquished By:	Justin Huberdeau	Date & Time:	24-Jul-20	Received By:		Date & Time:		Sample Condition (lab use only)	
Relinquished By:		Date & Time:		Received By:	[illegible]	Date & Time:	24 July 10:30	Temperature 12.6	Samples Received in Good Condition? Y / N (if no provided details)

Appendix C

Report Limitations

LIMITATIONS

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
   (a) The Standard Terms and Conditions which form a part of our Professional Services Contract;
   (b) The Scope of Services;
   (c) Time and Budgetary limitations as described in our Contract; and
   (d) The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the Site and attendant structures. Our conclusions cannot and are not extended to include those portions of the Site or structures, which are not reasonably available, in Wood's opinion, for direct observation.
4. The environmental conditions at the Site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the Site with any applicable local, provincial or federal by-laws, orders-in-council, legislative enactments and regulations was not performed.
5. The Site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on Site and may be revealed by different or other testing not provided for in our contract.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, Wood must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of Wood's services during the implementation of any remedial measures will allow Wood to observe compliance with the conclusions and recommendations contained in the report. Wood's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or the part, or any reliance thereon or decisions made based on any information or conclusions in the report is the sole responsibility of such third party. Wood accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Wood.

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