CHUNG & VANDER DOELEN
ENGINEERING LTD.

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CORK STREET RAILWAY LANDS
(BETWEEN MARTIN STREET AND PRINCESS STREET)

MOUNT FOREST, ONTARIO

SUBMITTED TO:
South Saugeen Developments Ltd.
c/o John Padfield
1021 Walton Avenue North
Listowel, Ontario
N4W 3S2

FILE NO.: E17383 **/** September 5, 2017

CHUNG & VANDER DOELEN
ENGINEERING LTD.

311 VICTORIA STREET NORTH
KITCHENER / ONTARIO / N2H 5E1

September 5, 2017
FILE NO.: E17383

Mr. John Padfield
South Saugeen Developments Ltd.
1021 Walton Avenue North
Listowel, Ontario
N4W 3S2

Dear Mr. Padfield:

RE: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
CORK STREET RAILWAY LANDS (BETWEEN MARTIN STREET & PRINCESS STREET)
MOUNT FOREST, ONTARIO

We are enclosing one (1) copy of our Phase Two Environmental Site Assessment (ESA) report conducted for the above-referenced property.

If you have any questions or clarifications are required, please contact the undersigned at your convenience.

We thank you for giving us this opportunity to be of service to you.

Yours truly,

CHUNG & VANDER DOELEN ENGINEERING LTD.

Michael J. Lefebvre, P.Geo.
Manager, Environmental Services

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 EXECUTIVE SUMMARY

CHUNG & VANDER DOELEN ENGINEERING LTD. (CVD) was retained by Mr. John Padfield of South Saugeen Developments Ltd. to conduct a Phase Two Environmental Site Assessment (ESA) of the Cork Street railway lands between Martin Street and Princess Street in Mount Forest, Ontario (hereinafter referred to as the "Site").

The purpose of the Phase Two ESA was to investigate the soil and groundwater conditions at the Site based on the findings of a Phase One ESA completed and reported under a separate cover by CVD. It is our understanding that the Phase Two ESA is part of the due diligence requirements to support the residential redevelopment of the Site and the filing of a Record of Site Condition (RSC).

The Phase Two Property is a vacant property covering a plan area of 1.163 ha in an area of residential, agricultural and community land uses. According to available resources, the Phase Two Property was historically part of the Toronto Grey & Bruce railway network until the tracks were decommissioned and railroad ballast removed circa 1990s. Since the decommissioning of the railway tracks, the Phase Two Property has remained vacant.

As such, CVD conducted the following scope of work:

- Three (3) boreholes (MW1 to MW3) were advanced at the Site to characterize the underlying soil and groundwater conditions. Monitoring wells were installed in all boreholes.
- Ten (10) test pits (TP1 to TP10) were excavated at the Site to characterize the underlying soil conditions.
- Selected soil samples were submitted for chemical analyses which included pH, polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene and xylenes (BTEX), petroleum hydrocarbons (PHC) F1-F4, As, Sb, Se, and metals.
- Groundwater samples from the monitoring wells were submitted for chemical analyses, including PAHs, BTEX, PHC F1-F4, As, Sb, Se and metals.
- Remedial action (impacted soil excavation and off-Site disposal) and confirmatory soil sampling.
- A report of findings and conclusions was prepared.

The boreholes were located in the following areas (Figure 4) with the following rationale:

- MW1 was advanced on the northern part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.

- MW2 was advanced on the central part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.

- MW3 was advanced on the southern part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.

- Test pits TP1 to TP10 were excavated along the length of the Site to investigate potential environmental impacts related to residual railway ballast.

The Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act dated April 15, 2011 established in accordance with the amended Ontario Regulation 153/04 was consulted in the assessment of the soil and groundwater on the property.

The Town of Mount Forest relies on groundwater as a source of potable water. Bedrock was not encountered within 2.0 mbgs at the Phase Two Property but static groundwater levels less than 3.0 mbgs were measured from all monitoring wells. The analytical results were therefore compared to the MOECC Table 6, Generic Site Condition Standards for Shallow Soils in a Potable Groundwater Condition.

Based on redevelopment plans, the soil and groundwater results were compared to the residential/parkland/institutional property use for a coarse textured soil (herein referred to as the "applicable Table 6 standards"). A coarse textured soil definition for the Site was adopted to evaluate the soil and groundwater conditions at a higher standard than medium and fine textured soil.

The overall findings of the Phase Two ESA conclude the following:

- Three (3) boreholes installed with monitoring wells (MW1 to MW3) were advanced on the Site to characterize the underlying soil and groundwater conditions.

- The analytical results of soil and groundwater samples selected for analysis from MW1 to MW3 indicate that all PAH, BTEX, PHC F1-F4, As, Sb, Se and metal parameters were either not detected or were below the applicable Table 6 standards. All laboratory method of detection limits (MDLs) were below the applicable Table 6 standards.

- Ten (10) test pits were excavated along the length of the Site to characterize the underlying soil conditions.

- The analytical results of the soil sample selected for analysis from test pits TP3 identified an arsenic concentration that exceeded the applicable Table 6 standard.

- The analytical results of the soil sample selected for analysis from TP8 identified arsenic, acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(ah)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, 1+2-methylnaphthalene, and naphthalene parameters that exceeded the applicable Table 6 standards.

- The analytical results of soil samples collected from the remaining borehole and test pit locations reported that all tested chemical parameters met the applicable Table 6 standards. No other contaminants are identified at the Phase Two Property at a concentration above the applicable Table 6 standards.

- Remedial action (soil excavation and disposal) and verification sampling were completed to remove impacted soil identified in TP3 and TP8. The impacted soil was excavated and trucked off-Site for disposal at the Waste Management Petrolia Landfill.

- The analytical results of soil verification samples submitted from the areas of remedial excavation reported all metals and PAH parameters were either not detected or below the applicable Table 6 standards. All MDLs were below the applicable Table 6 standards. Based on these results, it is expected that all As and PAH impacted soils have been removed from these areas.

2.0 INTRODUCTION

CHUNG & VANDER DOELEN ENGINEERING LTD. (CVD) was retained by Mr. John Padfield of South Saugeen Developments Ltd. to conduct a Phase Two Environmental Site Assessment (ESA) of the Cork Street railway lands between Martin Street and Princess Street in Mount Forest, Ontario (hereinafter referred to as the "Site").

The purpose of the Phase Two ESA was to investigate the soil and groundwater conditions at the Site based on the findings of a Phase One ESA completed and reported under a separate cover by CVD. It is our understanding that the Phase Two ESA is part of the due diligence requirements to support the residential redevelopment of the Site and the filing of a Record of Site Condition (RSC).

2.1 Site Description

The Phase Two Property is a vacant property covering a plan area of 1.163 ha in an area of residential, agricultural and community land uses. According to available resources, the Phase Two Property was historically part of the Toronto Grey & Bruce railway network until the tracks were decommissioned and railroad ballast removed circa 1990s. Since the decommissioning of the railway tracks, the Phase Two Property has remained vacant.

2.2 Property Ownership

The legal description of the Site is as follows:

- PT LT 2 CON WOSR DIVISION 1 ARTHUR TOWNSHIP; PT LT 2 CON WOSR DIVISION 2 ARTHUR TOWNSHIP; PT PKLT 10 S/S PRINCESS STREET PL TOWN OF MOUNT FOREST BEING PTS 2, 3, 9 & 10, 61R7789; S/T RO800177E; TOWNSHIP OF WELLINGTON NORTH, COUNTY OF WELLINGTON

The property PIN is 71053-0213 (LT).

CVD's contact information for the owner of the Site is as follows:

Mr. John Brian Padfield
South Saugeen Developments Ltd.
1021 Walton Avenue North
Listowel, Ontario
N4V 3S2
Phone: 519-323-6647
Email: JohnP@w-u.on.ca

2.3 Current and Proposed Future Uses

The Site is currently vacant. The proposed future land use is the development of a part of the Site as a residential land use.

2.4 Applicable Site Condition Standard

The Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act dated April 15, 2011 established in accordance with the amended Ontario Regulation 153/04 was consulted in the assessment of the soil and groundwater on the property.

The Town of Mount Forest relies on groundwater as a source of potable water. Bedrock was not encountered within 2.0 mbgs at the Phase Two Property but static groundwater levels less than 3.0 mbgs were measured from all monitoring wells. The analytical results were therefore compared to the MOECC Table 6, Generic Site Condition Standards for Shallow Soils in a Potable Groundwater Condition.

Based on redevelopment plans, the soil and groundwater results were compared to the residential/parkland/institutional property use for a coarse textured soil (herein referred to as the "applicable Table 6 standards"). A coarse textured soil definition for the Site was adopted to evaluate the soil and groundwater conditions at a higher standard than medium and fine textured soil.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

From a topographic survey completed by CVD, the geodetic elevation of the Site is at ±412 metres above sea level (masl) and slopes down towards the south. The nearest surficial body of water to the Site is the South Saugeen River, which is located ±200 m south of the Site.

According to "Ontario Geological Survey Map 2384 – Palmerston, Southern Ontario, Granular Resources", the Site is located in a physiographic region of Late Wisconsinan glaciofluvial outwash gravel and gravelly sand.

According to Map 2544, "Bedrock Geology of Southern Ontario, Southern Sheet," the bedrock in the area generally consists of Upper Silurian limestone, dolostone, shale, sandstone, gypsum and salt of the Salina Formation.

Based on water well records provided by the Government of Ontario for properties west of the Phase Two Property, the depth to bedrock for the Phase Two Property is inferred to be at approximately 46 meters below ground surface (mbgs).

The Town of Mount Forest relies on groundwater as a potable water source. The Saugeen, Grey Sauble,

Northern Bruce Peninsula Source Protection Region has implemented a plan that designates Wellhead Protection Areas around each municipal drinking-water supply well in the Town of Mount Forest. Wellhead Protection Areas (WHPA) are classified from A to D, with WHPA-A areas being the areas closest to municipal wells and the most vulnerable.

Based on map "MAP 5.1.WN.MF.1 Mount Forest Drinking Water Systems WHPA" from the Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region, the Site is located outside of the WHPA of Mount Forest.

3.2 Past Investigations

A Phase One ESA of the Site was completed by CVD. The findings and conclusions of the investigations are documented in the following reports:

- Chung & Vander Doelen Engineering Ltd., "Phase One Environmental Site Assessment, Cork Street Railway Lands (Between Martin Street and Princess Street), Mount Forest, Ontario". Dated June 23, 2017.

The Phase One ESA did not identify any actual sources of contamination associated with the Site and surrounding properties. One (1) Potentially Contaminating Activity (PCA) associated with a closed landfill within the Phase One Study Area was identified but not expected to be an environmental concern to the Site. However, two (2) PCAs, associated with historical railroad development and land use, were identified on the Site. A Phase Two ESA was recommended to evaluate potential environmental impacts related to the on-Site PCAs.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of the Investigation

The Phase Two ESA scope of work was based on providing an assessment of the soil and groundwater conditions on the Site. The scope of work for the Phase Two ESA investigation is documented in the Sampling and Analysis Plan (SAP) which is attached in Appendix F.

CVD developed the SAP based on the PCAs, APECs and potential contaminants of concern (COCs) that were identified in the Phase One ESA. CVD identified the following COCs that required evaluation: As, Sb, Se, metals, and PAHs. For due diligence purposes, BTEX and PHC F1-F4 were also evaluated.

In summary, the Phase Two ESA investigation included the following tasks, test pits excavation, advancement of boreholes and monitoring wells installation, field screening measures, collection of soil and groundwater samples, groundwater field measurements, hydraulic evaluation, analytical testing of soil and groundwater samples, residue management, QA/QC, elevation surveying, and report preparation.

4.2 Media Investigated

The Phase Two ESA scope of work was based on providing an overall evaluation of the soil and groundwater conditions in close proximity to the PCA that was identified in the Phase One ESA.

As such, CVD conducted the following scope of work:

- Three (3) boreholes (MW1 to MW3) were advanced at the Site to characterize the underlying soil and groundwater conditions. Monitoring wells were installed in all boreholes (BH1 to BH3).
- Ten (10) test pits (TP1 to TP10) were excavated at the Site to characterize the underlying soil conditions.
- Selected soil samples were submitted for chemical analyses which included pH, polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene and xylenes (BTEX), petroleum hydrocarbons (PHC) F1-F4, As, Sb, Se, and metals.
- Groundwater samples from the monitoring wells were submitted for chemical analyses, including PAHs, BTEX, PHC F1-F4, As, Sb, Se and metals.
- Remedial action (impacted soil excavation and off-Site disposal) and confirmatory soil sampling.
- A report of findings and conclusions was prepared.

The boreholes were located in the following areas (Figure 4) with the following rationale:

- MW1 was advanced on the northern part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.
- MW2 was advanced on the central part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.
- MW3 was advanced on the southern part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.
- Test pits TP1 to TP10 were excavated along the length of the Site to investigate potential environmental impacts related to residual railway ballast.

4.3 Deviations from Sampling & Analysis Plan

Before completion of the Phase Two ESA, a detailed Sampling & Analysis Plan (SAP) was prepared. The SAP is provided in Appendix F.

No deviations from the SAP were identified that would affect the findings of the Phase Two ESA.

4.4 Impediments

There were no impediments encountered during completion of the Phase Two ESA.

5.0 INVESTIGATION METHOD

5.1 General

The Phase Two ESA was completed using standard engineering and scientific judgement, principles and practices, and was conducted in accordance with the amended Ontario Regulation 153/04.

The test pits excavation program was conducted on March 10, 2017. The work was overseen by a representative of CVD, and was conducted using standard field protocols. Prior to commencing the test pitting and drilling activities, the locations of natural gas, sewer, water, telephone and electrical services were located and cleared by contacting Ontario One Call and a private utility locator (G-Tel Engineering).

The drilling program was conducted on April 24, 2017. The work was overseen by a representative of CVD, and was conducted using standard field protocols. Prior to commencing the drilling activities, the locations of natural gas, sewer, water, telephone and electrical services were located and cleared by contacting Ontario One Call and a private utility locator (G-Tel Engineering).

5.2 Borehole Drilling and Test Pit Excavation

CVD directed and supervised the advancement of ten (10) test pits (TP1 to TP10) using a track-mounted Hitachi excavator operated by OnTrack Earthworks Inc. of Mount Forest, Ontario. The test pit locations are provided on Figure 4.

CVD directed and supervised the advancement of three (3) boreholes (MW1 to MW3) using a track-mounted Geoprobe 7822DT drill rig operated by London Soil Test Ltd. of London, Ontario. The borehole and monitoring well locations are provided on Figure 4.

All drilling equipment was cleaned by the drilling contractor prior to start of each project. Dedicated sampling gloves are used to handle samples at each interval. At a minimum CVD changed gloves between each soil sample and borehole/test pit location. Sampling equipment is washed using a

solution of Alconox soap and distilled water. A final rinse with distilled water was carried out prior to reuse.

Soil samples were collected from test pits and from each core tube interval. The test pits were excavated to a depth of up to 1.50 metres below ground surface (mbgs) where fill and/or native soil deposits were fully exposed. The boreholes were advanced to depths of between 3.81 and 4.57 mbgs where sufficient groundwater was available for sampling and native soil deposits were fully exposed.

5.3 Soil: Sampling

Soil samples were collected from test pits and core tubes based on visual, olfactory and/or PID evidence of impact. All soil samples were logged for physical characteristics, as well as olfactory and visual evidence of contamination. The borehole logs detailing soil sampling and geological descriptions are enclosed in Appendix B.

The samples were either kept in a refrigerated environment or on ice until such time as they could be delivered to an accredited laboratory for chemical analysis. Soil samples were submitted to ALS Laboratory Group (CAEAL accredited laboratory) in Waterloo, Ontario, for chemical analyses.

5.4 Field Screening Measurements

In addition to visual and olfactory observations, soil samples recovered at regular intervals throughout the sampling activities were field screened for head space VOC concentrations using the MiniRAE 3000 PID to further direct the investigation. The PID is able to detect organic vapour at concentrations ranging from 1 parts per million (ppm) to 2,000 ppm relative to isobutylene. The PID was inspected and calibrated according to the manufactures recommendations prior to the start of each day of drilling.

Soil vapour readings were not registered above 0.0 ppm in any of the boreholes.

5.5 Groundwater: Monitoring Well Installation

Monitoring wells were installed in the three (3) boreholes (MW1, MW2 and MW3). The groundwater monitoring wells were constructed of a clean 38 mm diameter 'Triloc' PVC pipe with a 3.0 m long screened interval. The well screens were installed to encompass the groundwater interface. The riser portion of the well was backfilled with a combination of time released coated bentonite pellets, Quik-Grout® and bentonite. A 0.3 m concrete seal was placed above the bentonite. The monitoring wells were capped and covered with steel stick-up well casings. The construction details of the monitoring wells are included in the borehole logs in Appendix B.

The monitoring wells were installed by London Soil Test Ltd. of London, Ontario, using a track-mount Geoprobe 7822DT drill rig. All drilling equipment was cleaned by the drilling contractor prior to start of each project. This includes augers, drill rods and sampling spoons. In the event that contamination was

encountered during drilling activities, then all drilling equipment was cleaned between each borehole. Cleaning was conducted using high pressure washing equipment and a phosphate detergent. Decontamination was conducted in an area away from any borehole locations on an impervious surface where wash water could be contained for proper disposal by a licensed waste hauler if required. In addition, dedicated sampling gloves are used to handle samples at each interval.

5.6 Groundwater: Field Measurement of Water Quality Parameters

No field measurements of water quality were completed. All groundwater samples were collected into laboratory prepared containers for analytical testing.

5.7 Groundwater: Sampling

Groundwater sampling was conducted in accordance with the Ministry of the Environment and Climate Change (MOECC) document entitled "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario" dated December 1996 and the amended Ontario Regulation 153/04.

The monitoring wells were developed and purged prior to sampling using a low density polyethylene tubing and a foot valve sampling device (Waterra®) to remove standing water, filter pack water and to allow for the influx of fresh formation water. In accordance with standard operating procedures, all monitoring wells were purged dry and allowed to recover, or three to ten well volumes were removed prior to sampling.

The groundwater samples were placed in laboratory prepared containers and either refrigerated or stored in a cooler with ice from the time of sampling until delivery to the laboratory.

5.8 Sediment Sampling

No waterbodies are present at the Site and no sediment was encountered on the Site, therefore no sediment sampling was conducted.

5.9 Analytical Testing

Soil and groundwater samples were submitted to ALS Laboratory Group (CAEAL accredited laboratory) in Waterloo, Ontario, for chemical analyses. The soil and groundwater samples submitted to the laboratory were representative of the conditions encountered during the drilling, test pit and/or remedial programs.

The following tables summarizes the selected soil and groundwater samples tested:

Boreholes and Monitoring Wells:

Sample Id.	Depth (m)	Matrix	Testing Rationale	Laboratory Analyses
MW1-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAH
MW2-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAH
MW3-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAH, BTEX, PHC F1-F4
MW1	0.51	Groundwater	Chemical characterization of imported fill material along the eastern limits of the Site.	As, Sb, Se, Metals, PAH, BTEX, PHC F1-F4
MW2	0.54	Groundwater	Chemical characterization of imported fill material along the eastern limits of the Site.	As, Sb, Se, Metals, PAH, BTEX, PHC F1-F4
MW3	1.17	Groundwater	Chemical characterization of imported fill material along the eastern limits of the Site.	As, Sb, Se, Metals, PAH, BTEX, PHC F1-F4
MW301	1.17	Groundwater	Duplicate of MW3	As, Sb, Se, Metals

Test Pits:

Sample Id.	Depth (m)	Matrix	Testing Rationale	Laboratory Analyses
TP1-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs, PHC F2-F4
TP2-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs, PHC F2-F4
TP3-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs, PHC F2-F4
TP3-2	1.50 – 1.60	Soil	Verify subsurface soil is within the acceptable range of 5.0 to 11.0.	pH
TP4-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs

Test Pits (cont.):

Sample Id.	Depth (m)	Matrix	Testing Rationale	Laboratory Analyses
TP5-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs
TP6-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs, PHC F2-F4
TP7-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs
TP8-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs, PHC F2-F4
TP9-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed.	As, Sb, Se, Metals, PAHs, PHC F2-F4
TP10-1	0.30 – 0.61	Soil	Chemical characterisation of surface soil along former railway track bed; Verify pH value in surficial soil is within the acceptable range of 5.0 to 9.0.	As, Sb, Se, Metals, PAHs, pH

Confirmatory Sampling:

Sample Id.	Depth (m)	Matrix	Testing Rationale	Laboratory Analyses
1-1	0.70 – 0.80	Soil	Confirmatory soil sample from the remedial excavation pit (floor), on the north half of the Site.	As, Sb, Se, Metals, PAH
101-1	0.70 – 0.80	Soil	QA/QC – Duplicate sample of 1-1	As, Sb, Se, Metals, PAH
1-4	0.70 – 0.80	Soil	Confirmatory soil sample from the remedial excavation pit (floor), on the north half of the Site.	As, Sb, Se, Metals, PAH
1-5	0.70 – 0.80	Soil	Confirmatory soil sample from the remedial excavation pit (floor), on the north half of the Site.	As, Sb, Se, Metals, PAH
1-7	0.30 – 0.61	Soil	Confirmatory soil sample from the remedial excavation pit (north wall), on the north half of the Site.	As, Sb, Se, Metals, PAH
1-9	0.30 – 0.61	Soil	Confirmatory soil sample from the remedial excavation pit (east wall), on the north half of the Site.	As, Sb, Se, Metals, PAH

Confirmatory Sampling (cont.):

Sample Id.	Depth (m)	Matrix	Testing Rationale	Laboratory Analyses
1-11	0.30 – 0.61	Soil	Confirmatory soil sample from the remedial excavation (south wall), on the north half of the Site.	As, Sb, Se, Metals, PAH
1-12	0.30 – 0.61	Soil	Confirmatory soil sample from the remedial excavation (west wall), on the north half of the Site.	As, Sb, Se, Metals, PAH
2-1	0.70 – 0.80	Soil	Confirmatory soil sample from the remedial excavation pit (floor), on the south half of the Site.	As, Sb, Se, Metals, PAH
2-4	0.70 – 0.80	Soil	Confirmatory soil sample from the remedial excavation pit (floor), on the south half of the Site.	As, Sb, Se, Metals, PAH
2-5	0.70 – 0.80	Soil	Confirmatory soil sample from the remedial excavation pit (floor), on the south half of the Site.	As, Sb, Se, Metals, PAH
2-6	0.30 – 0.61	Soil	Confirmatory soil sample from the remedial excavation pit (north wall), on the south half of the Site.	As, Sb, Se, Metals, PAH
2-9	0.30 – 0.61	Soil	Confirmatory soil sample from the remedial excavation pit (east wall), on the south half of the Site.	As, Sb, Se, Metals, PAH
2-11	0.30 – 0.61	Soil	Confirmatory soil sample from the remedial excavation (south wall), on the south half of the Site.	As, Sb, Se, Metals, PAH
2-12	0.30 – 0.61	Soil	Confirmatory soil sample from the remedial excavation (west wall), on the south half of the Site.	As, Sb, Se, Metals, PAH

5.10 Residue Management Procedures

All soil cuttings were left on-Site and purged groundwater was re-infiltrated at the Site.

5.11 Elevation Surveying

Ground surface elevations of the borehole/monitoring well locations are referenced to a temporary benchmark, the top of a 1-inch square iron survey bar located at the intersection of Martin Street and Cork Street. The temporary benchmark has a geodetic elevation of 411.881 m.

5.12 Quality Assurance and Quality Control Measures

CVD implemented a QA/QC program to ensure quality data was generated for the Phase Two ESA investigation. The QA/QC program involved both field and laboratory QA/QC measures.

CVD implemented QA/QC measures during the Phase Two ESA which included cleaning of all equipment during the drilling and soil/groundwater sampling activities, inspection and calibration of PID during drilling activities, the collection of field duplicate samples to verify the analytical results and submission of soil and groundwater samples to ALS Laboratory Group in laboratory supplied jars and bottles under chain of custody.

6.0 REVIEW AND EVALUATION

6.1 Geology

The Phase Two Property stratigraphy consists of sand and gravel fill up to ±0.6 mbgs that is underlain by sand to gravelly sand that and/or silt till. Bedrock was not encountered in any of the boreholes.

The borehole logs for detailed soil descriptions and stratigraphy are included in Appendix B.

6.2 Groundwater Elevations and Flow Direction

Groundwater levels and free product levels were measured at each monitoring well location utilizing a Heron H.01 interface meter. The water levels were determined by referenced the existing ground surface. No free product was detected on the surface of the water table or at the bottom of the monitoring wells on April 28, 2017.

Based on the groundwater measurements, the groundwater is located within the native soil at depths ranging between 0.51 and 1.17 mbgs (hydraulic heads between 410.01 and 411.07 m). Based on the hydraulic heads from MW1 to MW3, the localized groundwater flow direction is approximated to be southeasterly. The shallow groundwater flow direction is illustrated in Figure 5. The groundwater levels and corresponding elevations are presented in the below.

Borehole Location	*Ground Elevation (masl)*	*Static Groundwater Level (mbgs)*	*Groundwater Elevation/Hydraulic Head (m)*
MW1	411.58	0.51	411.07
MW2	411.56	0.54	411.02
MW3	411.18	1.17	410.01

Elevations are relative to a temporary benchmark, the top of a 1-inch square iron survey bar located at the intersection of Martin Street and Cork Street with a geodetic elevation of 411.88 m.

6.3 Groundwater Hydraulic Gradients

The 'horizontal' hydraulic gradient (or water table slope) across the Site was calculated to be 0.05 m/m, based on the measured groundwater levels (hydraulic head) at each monitoring well. The 'horizontal' hydraulic conductivity (or permeability) of the surficial aquifer is expected to be $1x10^{-3}$ cm/s to 1.0 cm/s, given the nature of the aquifer (i.e. sand and gravel with some silt).

6.4 Soil: Field Screening

Soil vapour readings were not detected above 0.0 ppm during the drilling activities. Borehole logs showing all vapour readings recorded during the drilling activities are provided in Appendix B.

6.5 Soil Quality

The analytical results of soil and groundwater samples selected for analysis from MW1 to MW3 indicate that all PAH, BTEX, PHC F1-F4 and metal parameters were either not detected or were below the applicable Table 6 standards. All laboratory MDLs were below the applicable Table 6 standards.

The analytical results of soil samples selected for analysis from test pits TP3 and TP8 identified arsenic, acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(ah)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, 1+2-methylnaphthalene, and naphthalene parameters that exceeded the applicable Table 6 standards.

The analytical results of soil samples selected for analysis from all other test pits (TP1, TP2, TP4, TP5, TP6, TP7, TP9, TP10) indicate that all PAH and metal parameters were either not detected or were below the applicable Table 6 standards. All MDLs were below the applicable Table 6 standards.

A comparison of the soil analytical results to the applicable Table 6 standards is included in Appendix C. A chemical concentration plan is illustrated in Figure 6. The ALS Laboratory Group Certificates of Analyses are enclosed in Appendix D.

6.6 Groundwater Quality

The concentrations of all analyzed dissolved metals, BTEX, PHC F1-F4 and PAH parameters of groundwater samples collected from the monitoring wells (MW1-MW3) were either below MDLs or below the applicable Table 6 standards. All laboratory MDLs were below the applicable Table 6 standards.

A comparison of the groundwater analytical results to the applicable Table 6 standards is included in Appendix C. The ALS Laboratory Group Certificates of Analyses are enclosed in Appendix D.

6.7 Quality Assurance and Quality Control Results

Blind field duplicates of soil and water samples were submitted to the laboratory for the chemical testing of metals.

CVD has reviewed the Report of Analysis and QC Summary furnished by ALS Laboratory Group, and has determined that sampling, data, and reporting quality requirements were fulfilled. The results of the chemical analyses are therefore considered reliable and complete.

7.0 REMEDIAL ACTIONS

Test pit sample locations TP3 and TP8 were identified to have metals and/or PAH impacted soil between 0.0 to 0.5 mbgs. The surface area of impacted soil was estimated to be approximately 140 m^2.

An excavation contractor (OnTrack Earthworks Inc.) was retained to complete the excavation and removal of the impacted soil. CVD provided direction to the contractor during the excavation and soil removal activities and collected soil samples during and after the soil remediation was completed.

A representative sample of the impacted soil was submitted to ALS Laboratory Group in Waterloo, Ontario, for analysis under Ontario Regulation 558/00 Schedule 4. The analytical results (Appendix D) indicated that the impacted soil was classified as a non-hazardous waste.

The impacted soil was subsequently excavated and removed from the Site between May 26th and May 29th, 2017. The the impacted soil (435.7 metric tonnes) was removed from the Site by Waste Away Recycling & Environmental Inc. (MOECC licensed waste hauler) for disposal at the Waste Management Petrolia Landfill, a MOECC registered landfill in Petrolia, Ontario.

Following the removal of the impacted soil, CVD collected confirmatory soil samples from the floor and sidewalls of the excavation in accordance with the sampling frequency provided in Table 3 of Schedule E of O.Reg 153/04.

A total of fifteen (15) soil verification samples were submitted to ALS Laboratory Group in Waterloo, Ontario, for chemical analyses which included metals and PAHs. The laboratory results indicate that all soil verification samples had As, Sb, Se, metals and PAHs concentrations that were either not detected or below the applicable Table 6 standards. A confirmatory soil sampling plan is illustrated in Figure 7.

The certificates of chemical analysis and results are enclosed in Appendix D. A comparison of the soil chemistry results to the applicable regulatory standard is included in Appendix C.

The Bills of Lading are provided in Appendix E.

8.0 PHASE TWO CONCEPTUAL SITE MODEL (CSM)

The Phase Two Conceptual Site Model is included in Appendix G.

9.0 CONCLUSIONS

CVD was retained to conduct a Phase Two Environmental Site Assessment (ESA) of the Cork Street railway lands between Martin Street and Princess Street in Mount Forest, Ontario

The overall findings of the Phase Two ESA conclude the following:

- Three (3) boreholes installed with monitoring wells (MW1 to MW3) were advanced on the Site to characterize the underlying soil and groundwater conditions.

- The analytical results of soil and groundwater samples selected for analysis from MW1 to MW3 indicate that all PAH, BTEX, PHC F1-F4, As, Sb, Se and metal parameters were either not detected or were below the applicable Table 6 standards. All laboratory method of detection limits (MDLs) were below the applicable Table 6 standards.

- Ten (10) test pits were excavated along the length of the Site to characterize the underlying soil conditions.

- The analytical results of the soil sample selected for analysis from test pits TP3 identified an arsenic concentration that exceeded the applicable Table 6 standard.

- The analytical results of the soil sample selected for analysis from TP8 identified arsenic, acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(ah)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, 1+2-methylnaphthalene, and naphthalene parameters that exceeded the applicable Table 6 standards.

- The analytical results of soil samples collected from the remaining borehole and test pit locations reported that all tested chemical parameters met the applicable Table 6 standards. No other contaminants are identified at the Phase Two Property at a concentration above the applicable Table 6 standards.

- Remedial action (soil excavation and disposal) and verification sampling were completed to remove impacted soil identified in TP3 and TP8. The impacted soil was excavated and trucked off-Site for disposal at the Waste Management Petrolia Landfill.

- The analytical results of soil verification samples submitted from the areas of remedial excavation reported all metals and PAH parameters were either not detected or below the applicable Table 6 standards. All MDLs were below the applicable Table 6 standards. Based on these results, it is expected that all As and PAH impacted soils have been removed from these areas.

10.0 CLOSURE

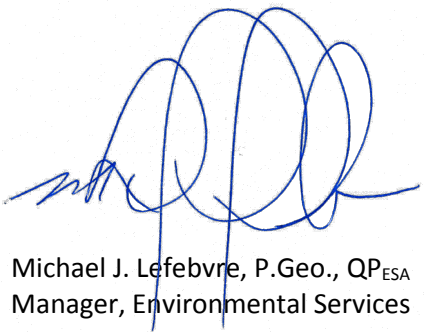
The American Society of Testing and Materials Standard of Practice notes that no environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of a standardized environmental site assessment protocol is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the property, given reasonable limits of time and cost.

This report has been prepared for the exclusive use of John Padfield of South Saugeen Developments Ltd. for specific application to this project property. The environmental investigation was conducted in accordance with the verbal and written requests from the Client, and generally accepted assessment practices. No other warranty, expressed or implied, is made. The limitations of this report are specified in Appendix A.

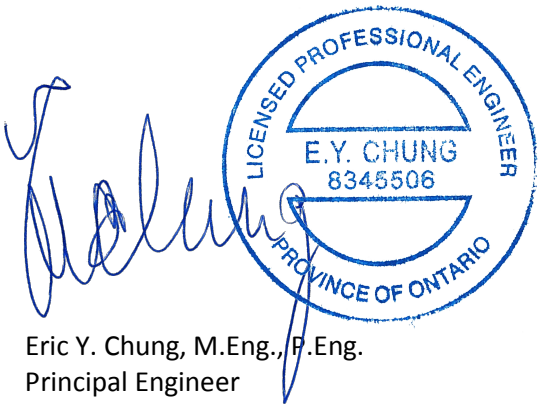
Respectfully submitted,

CHUNG & VANDER DOELEN ENGINEERING LTD.

Peter Dao, M.Sc., P.Geo., QP_{ESA}
Environmental Scientist



Michael J. Lefebvre, P.Geo., QP_{ESA}
Manager, Environmental Services



Eric Y. Chung, M.Eng., P.Eng.
Principal Engineer

11.0 REFERENCES

The following documents, maps, or other publications may have been used in the preparation of this report.

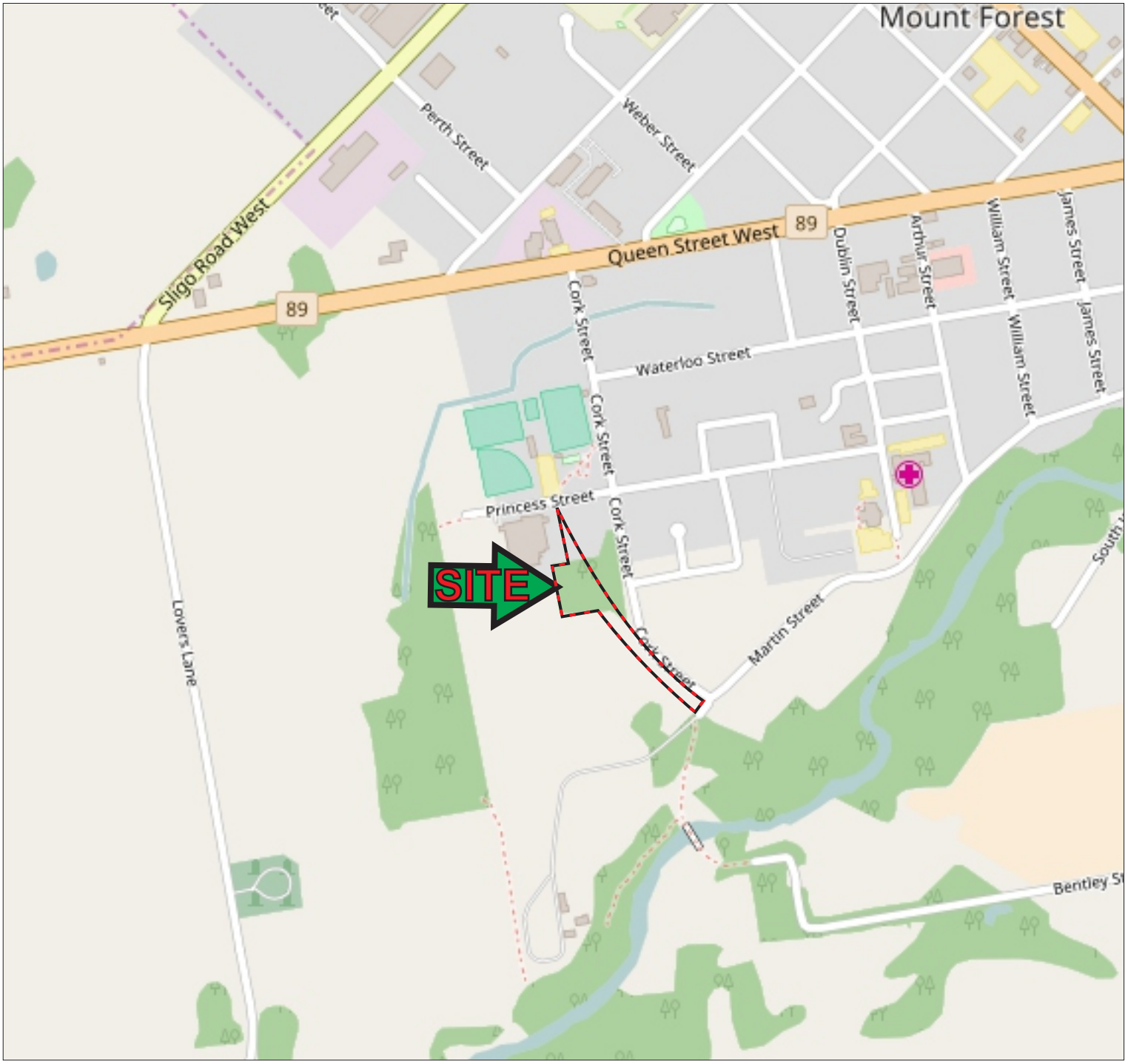
- Chung & Vander Doelen Engineering Ltd., "Phase One Environmental Site Assessment, Cork Street Railway Lands (Between Martin Street and Princess Street), Mount Forest, Ontario". Dated June 23, 2017.

- Government of Ontario Map: Well Records. https://www.ontario.ca/environment-and-energy/map-well-records. Accessed July 2017.

- Ministry of Northern Development and Mines, Map 2544, "Bedrock Geology of Southern Ontario – Southern Sheet", 1991.

- Ontario Geological Survey Map 2384, "Palmerston Southern Ontario, Granular Resources", 1977.

FIGURE 1
KEY PLAN



LEGEND

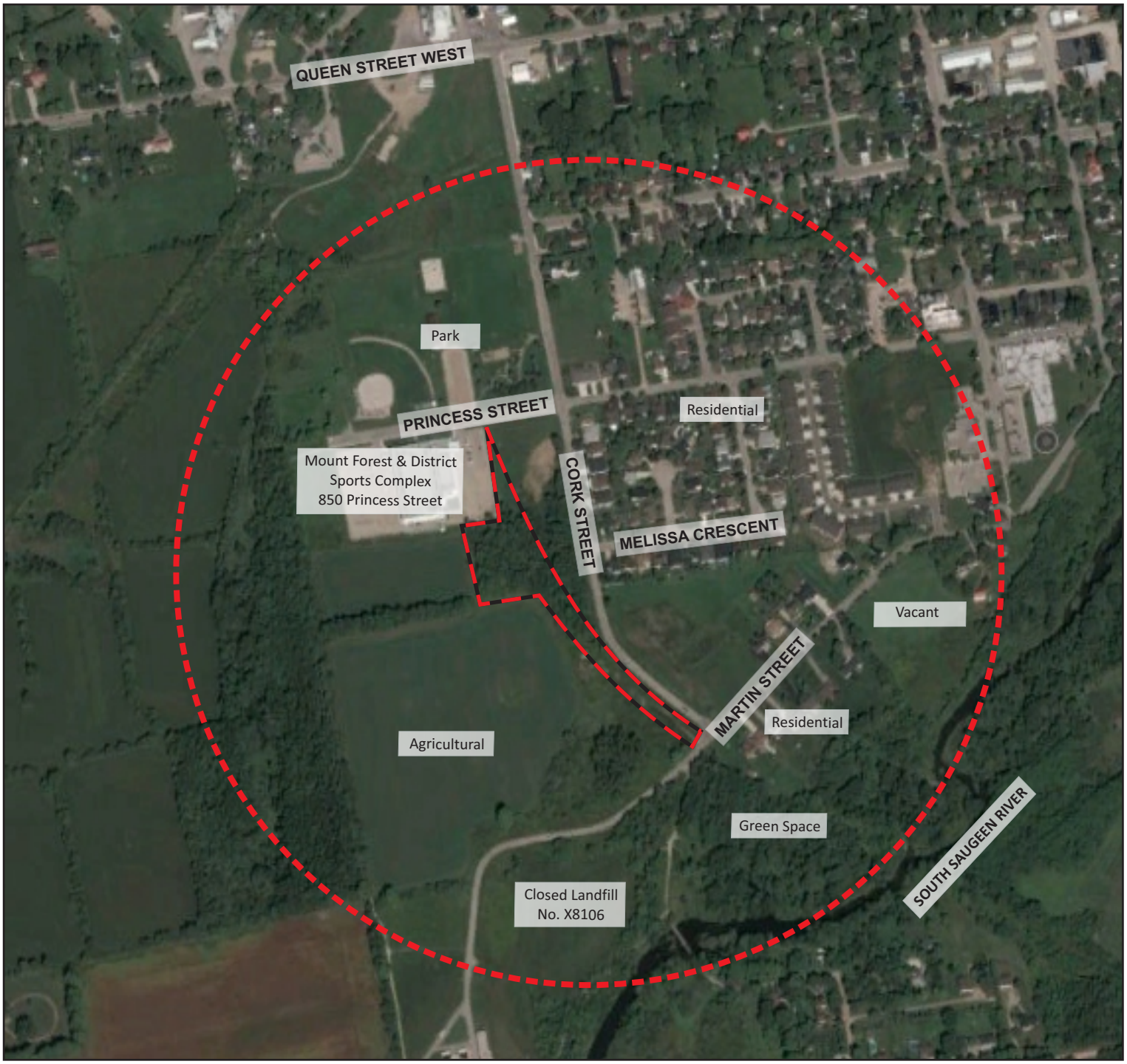
SITE BOUNDARY

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N
W E
S

KEY PLAN **CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO**	**Date:**	**SEPT. 2017**
	Scale:	**1:11000**
	File No.:	**E17383**
	Figure:	**1**

FIGURE 2
PHASE TWO STUDY AREA PLAN



LEGEND

SITE BOUNDARY

PHASE ONE STUDY AREA

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N W E S

STUDY AREA PLAN CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO	Date:	SEPT. 2017
	Scale:	1:11000
	File No.:	E17383
	Figure:	2

FIGURE 3
SITE AND APEC PLAN

LEGEND

- SITE BOUNDARY
- APEC-1 (PCA #30)
- APEC-2 (PCA #46)

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N W E S

SITE AND APEC PLAN CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO	Date:	SEPT. 2017
	Scale:	1:2500
	File No.:	E17383
	Figure:	3

FIGURE 4
BOREHOLE AND TESTPIT LOCATION PLAN

Legend

Site Boundary

Monitoring Well Locations

Test Pit Locations

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N
W E
S

BOREHOLE AND TEST PIT LOCATION PLAN **CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO**	**Date:**	**SEPT. 2017**
	Scale:	**1:2500**
	File No.:	**E17383**
	Figure:	**4**

FIGURE 5
SHALLOW GROUNDWATER FLOW PLAN

Legend

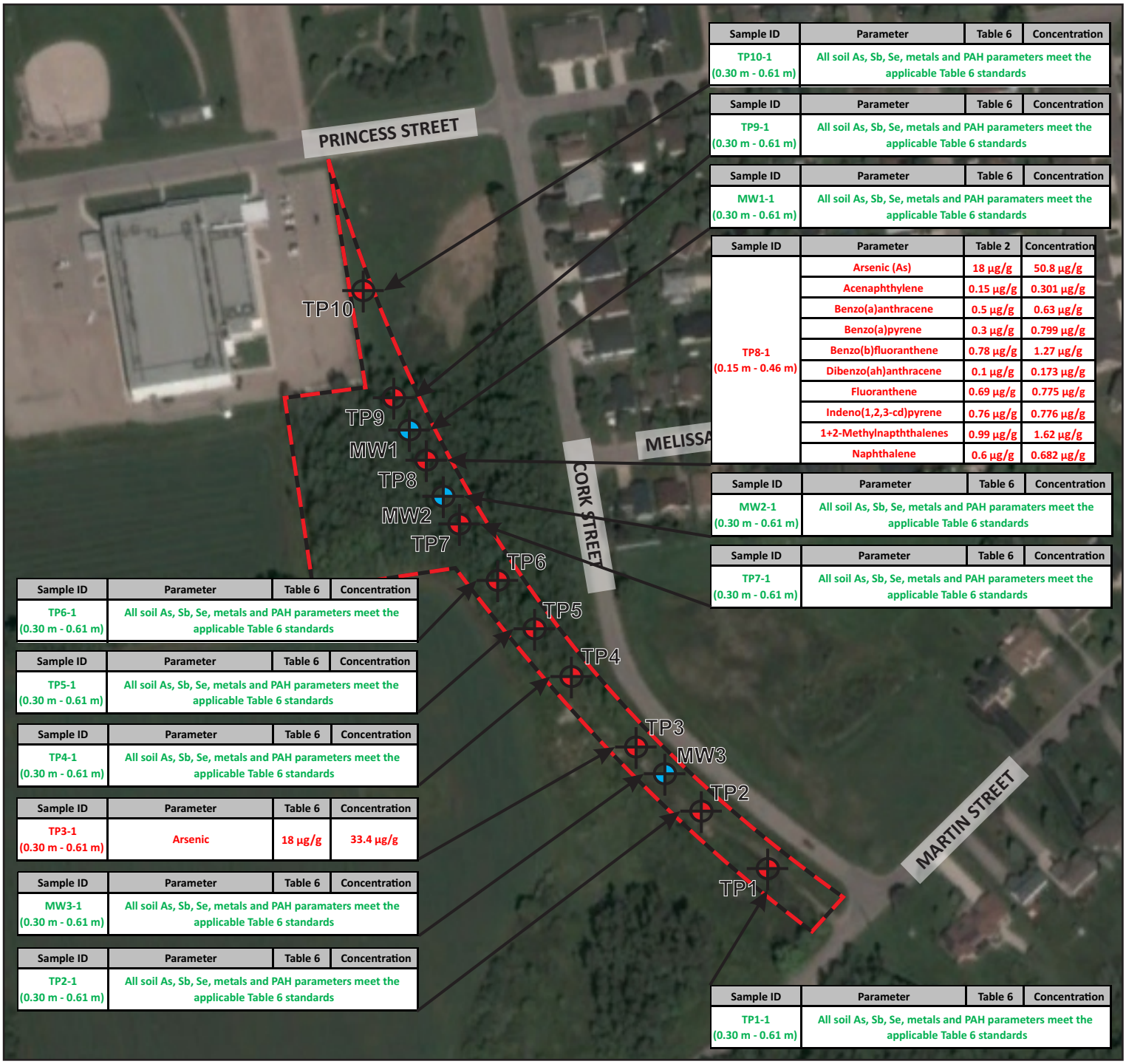
Site Boundary	
Monitoring Well Locations	
General Groundwater Flow Direction	
Groundwater Elevation	324.56 m
Equipotential Lines (inferred)	

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N
W E
S

GROUNDWATER FLOW PLAN CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO	Date:	SEPT. 2017
	Scale:	1:1000
	File No.:	E17417
	Figure:	5

FIGURE 6
CHEMICAL CONCENTRATION PLAN



Sample ID	Parameter	Table 6	Concentration
TP10-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP9-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 2	Concentration
TP8-1 (0.15 m - 0.46 m)	Arsenic (As)	18 µg/g	50.8 µg/g
	Acenaphthylene	0.15 µg/g	0.301 µg/g
	Benzo(a)anthracene	0.5 µg/g	0.63 µg/g
	Benzo(a)pyrene	0.3 µg/g	0.799 µg/g
	Benzo(b)fluoranthene	0.78 µg/g	1.27 µg/g
	Dibenzo(ah)anthracene	0.1 µg/g	0.173 µg/g
	Fluoranthene	0.69 µg/g	0.775 µg/g
	Indeno(1,2,3-cd)pyrene	0.76 µg/g	0.776 µg/g
	1+2-Methylnaphthalenes	0.99 µg/g	1.62 µg/g
	Naphthalene	0.6 µg/g	0.682 µg/g

Sample ID	Parameter	Table 6	Concentration
MW2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP7-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP6-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP5-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP4-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP3-1 (0.30 m - 0.61 m)	Arsenic	18 µg/g	33.4 µg/g

Sample ID	Parameter	Table 6	Concentration
MW3-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

LEGEND

PHASE TWO PROPERTY BOUNDARY

MONITORING WELL LOCATIONS

TEST PIT LOCATIONS

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

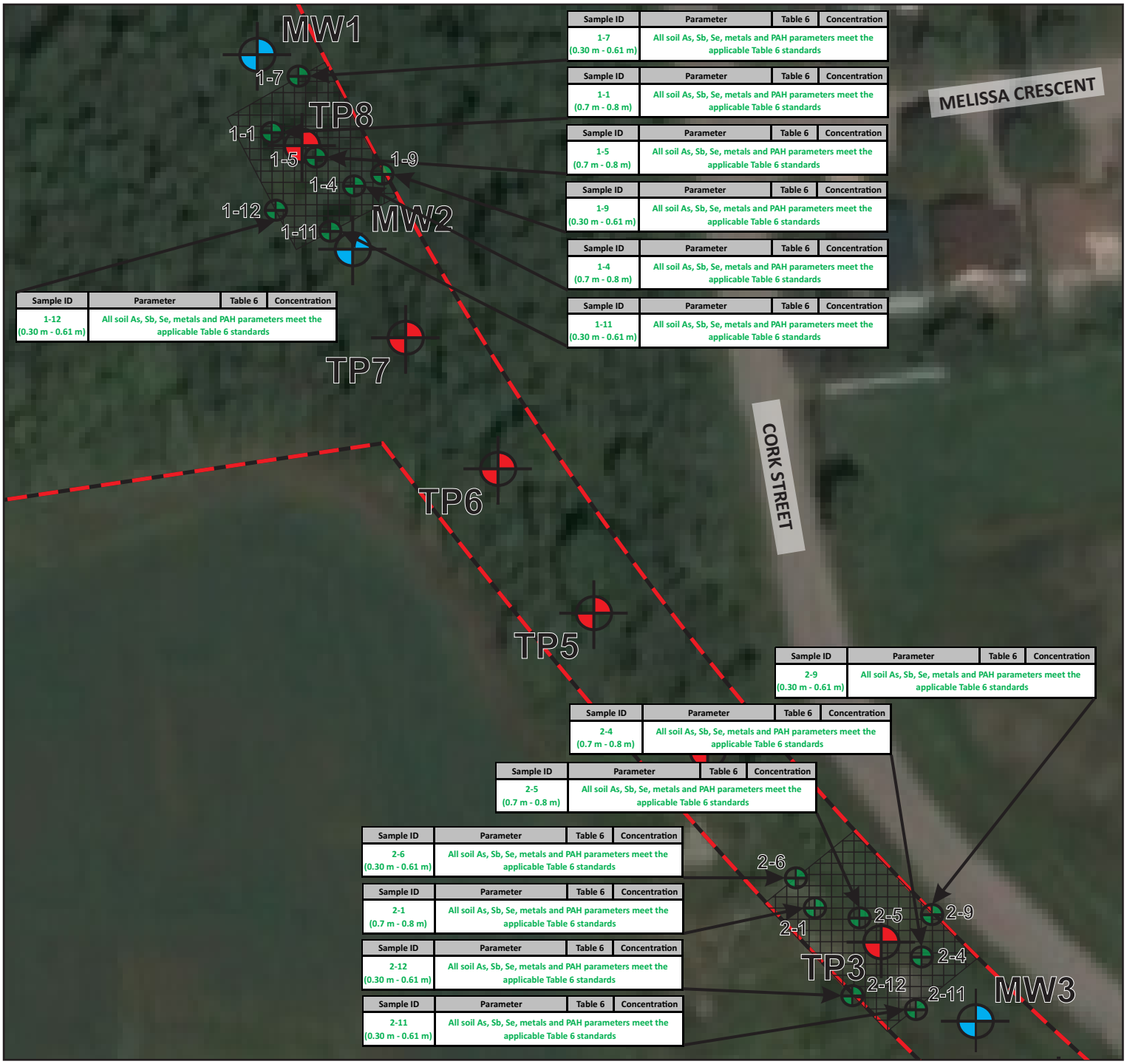
N W E S

CHEMICAL CONCENTRATION PLAN

CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
Scale:	1:2500
File No.:	E17383
Figure:	5A

FIGURE 7
SOIL VERFICATION PLAN POST-REMEDIAL ACTION



LEGEND

PHASE TWO PROPERTY BOUNDARY

MONITORING WELL LOCATIONS

TEST PIT LOCATIONS

EXTENT OF EXCAVATION

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N W E S

SOIL VERIFICATION SAMPLE PLAN
POST-REMEDIAL ACTION

CORK STREET RAILWAY LANDS
(BETWEEN MARTIN & PRINCESS STREET)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
Scale:	1:360
File No.:	E17383
Figure:	7

APPENDIX A
LIMITATIONS

STATEMENT OF LIMITATIONS

1. The work performed in this report was carried out in accordance with the Standard Terms of Conditions made part of our contract. The conclusions presented herein are based solely upon the scope of services and time and budgetary limitations described in our contract.

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

3. The services performed and outlined in this report were based, in part, upon visual observations of the site and attendant structures. Our opinion cannot be extended to portions of the site which were unavailable for direct observation, reasonably beyond the control of CHUNG & VANDER DOELEN ENGINEERING LTD.

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

5. CHUNG & VANDER DOELEN ENGINEERING LTD. has relied in good faith on information and services provided by others while conducting the record search. We accept no responsibility for any deficiency, misstatements or inaccuracies contained in this report as a result of omission, misinterpretation or fraudulent acts of the services used.

6. It should be noted that the observations and recommendations presented in this report are limited to the actual locations explored. The information presented in terms of the thickness and types of the subsoils encountered, groundwater levels, and chemical testing results, etc., are only applicable to the actual locations explored. Variations may be present between these locations. Should significant variation become apparent during later investigations, it may be necessary to reevaluate the findings of this report.

7. The conclusions of this report are based in part, on the information provided by others. The possibility remains that unexpected environmental conditions may be encountered at the site in locations not specifically investigated. Should such an event occur, CHUNG & VANDER DOELEN ENGINEERING LTD. must be notified in order that we may determine if modifications to our conclusions are necessary.

APPENDIX B
BOREHOLE LOGS

FILE No: E17383

BOREHOLE No. MW1

Enclosure No.:
Sheet 1 of 1

Client: **Mr. John Padfield, South Saugeen Developments Ltd.**

Project: **Phase II ESA**

Location: **Cork Street (between Princess and Martin St.), Mount Forest, Ontario**

EQUIPMENT DATA

Machine: **Geoprobe 7822DT**
Method: **Continuous Sample**
Size: **75 mm**
Date: **Apr 24 / 17** TO **Apr 24 / 17**

ELEV./ DEPTH (m)	DESCRIPTION	DEPTH (m)	SAMPLE ID	TYPE	N-VALUE	REMARKS
	Ground Elevation: **411.58 m**					
410.97	FILL sand, some gravel, trace silt, some black staining, brown, dry to saturated	0.5	1-1	DP		- aluminum flushmount well casing and concrete seal - bentonite seal - water level measured at 0.51 mbgs on April 28, 2017
0.61	GRAVELLY SAND trace silt, brown, saturated	1.0	1-2	DP		
		1.5				- 50 mm PVC pipe
409.45		2.0	1-3	DP		- silica sand pack
2.13	TILL silt, some gravel, some sand, saturated sand seams, brown	2.5				- 3 m long well screen
		3.0				
		3.5				**Soil samples field screened for head space VOC concentrations using MiniRAE 3000 PID. Soil vapour readings were not registered above 0.0 ppm**
407.77						
3.81	END OF BOREHOLE	4.0				
		4.5				
		5.0				
		5.5				
		6.0				
		6.5				

SHEAR STRENGTH (kPa)
FIELD VANE: Peak ⊗ Rem. ×
LAB TEST: Unc. ■ P.P. □
50 100 150 200
PENETRATION RESISTANCE
STANDARD ● DYN. CONE ○
20 40 60 80

WATER CONTENT (%)
W_P W W_L
10 20 30

WELL DATA

PROJECT MANAGER: **PD**

CHUNG & VANDER DOELEN ENGINEERING LTD.
311 Victoria Street North
Kitchener, Ontario N2H 5E1
ph. (519) 742-8979, fx. (519) 742-7739

Enclosure No.:
Sheet 1 of 1

FILE No: E17383

BOREHOLE No. MW2

Client: **Mr. John Padfield, South Saugeen Developments Ltd.**

Project: **Phase II ESA**

Location: **Cork Street (between Princess and Martin St.), Mount Forest, Ontario**

EQUIPMENT DATA

Machine: **Geoprobe 7822DT**
Method: **Continuous Sample**
Size: **75 mm**
Date: **Apr 24 / 17** TO **Apr 24 / 17**

ELEV./ DEPTH (m)	DESCRIPTION	DEPTH (m)	SYMBOL	SAMPLE ID	TYPE	N-VALUE	SHEAR STRENGTH (kPa) / PENETRATION RESISTANCE	WATER CONTENT (%)	WELL DATA	DEPTH (m)	REMARKS
	Ground Elevation: **411.56 m**						FIELD VANE: Peak ⊗ Rem. × LAB TEST: Unc. ■ P.P. □ 50 100 150 200; PENETRATION RESISTANCE STANDARD ● DYN. CONE ○ 20 40 60 80	W_P W W_L 10 20 30			
410.65	FILL sand, some gravel, trace silt, some black staining, brown, dry to saturated	0.5		2-1	DP					0.5	- aluminum flushmount well casing and concrete seal - bentonite seal - water level measured at 0.54 mbgs on April 28, 2017
0.91	TILL silt, some gravel, some sand, saturated sand seams, brown	1.0		2-2	DP					1.0	
		1.5								1.5	- 50 mm PVC pipe
		2.0		2-3	DP					2.0	- silica sand pack
		2.5								2.5	- 3 m long well screen
		3.0								3.0	
407.75		3.5								3.5	**Soil samples field screened for head space VOC concentrations using MiniRAE 3000 PID. Soil vapour readings were not registered above 0.0 ppm**
3.81	END OF BOREHOLE	4.0								4.0	
		4.5								4.5	
		5.0								5.0	
		5.5								5.5	
		6.0								6.0	
		6.5								6.5	

PROJECT MANAGER: **PD**

CHUNG & VANDER DOELEN ENGINEERING LTD.
311 Victoria Street North
Kitchener, Ontario N2H 5E1
ph. (519) 742-8979, fx. (519) 742-7739

FILE No: E17383

BOREHOLE No. MW3

Enclosure No.:
Sheet 1 of 1

Client: **Mr. John Padfield, South Saugeen Developments Ltd.**

Project: **Phase II ESA**

Location: **Cork Street (between Princess and Martin St.), Mount Forest, Ontario**

EQUIPMENT DATA

Machine: **Geoprobe 7822DT**
Method: **Continuous Sample**
Size: **75 mm**
Date: **Apr 24 / 17** TO **Apr 24 / 17**

Ground Elevation: **411.18 m**

ELEV./ DEPTH (m)	DESCRIPTION	DEPTH (m)	SAMPLE ID	TYPE	N-VALUE	REMARKS
	FILL sand, some gravel, trace silt, some black staining, brown, dry to saturated	0.5	3-1	DP		- aluminum flushmount well casing and concrete seal - bentonite seal
410.27 0.91	SAND silt, trace gravel, brown, moist to saturated	1.0	3-2	DP		- water level measured at 1.17 mbgs on April 28, 2017
		1.5				- 50 mm PVC pipe
		2.0	3-3	DP		
		2.5	3-4	DP		- silica sand pack
408.13 3.05	TILL silt, some gravel, some sand, saturated sand seams, brown	3.0				- 3 m long well screen
		3.5	3-5	DP		
		4.0	3-6	DP		
406.61 4.57	END OF BOREHOLE	4.5				**Soil samples field screened for head space VOC concentrations using MiniRAE 3000 PID. Soil vapour readings were not registered above 0.0 ppm**
		5.0				
		5.5				
		6.0				
		6.5				

SHEAR STRENGTH (kPa)
FIELD VANE: Peak ⊗ Rem. ×
LAB TEST: Unc. ■ P.P. □
50 100 150 200
PENETRATION RESISTANCE
STANDARD ● DYN. CONE ○
20 40 60 80

WATER CONTENT (%)
W_P W W_L
10 20 30

WELL DATA

PROJECT MANAGER: **PD**

CHUNG & VANDER DOELEN ENGINEERING LTD.
311 Victoria Street North
Kitchener, Ontario N2H 5E1
ph. (519) 742-8979, fx. (519) 742-7739

APPENDIX C
COMPARISON OF CHEMISTRY RESULTS TO APPLICABLE TABLE 6 STANDARDS

ANALYTICAL RESULTS FOR GROUNDWATER

MOECC Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act,

Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition

(Coarse Textured Soil)

		Table 6 standard	MW1	MW2	MW3	MW301
Petroleum Hydrocarbons (F1-F4)	F1 (C6-C10)	420	<25	<25	<25	-
	F1-BTEX	420	<25	<25	<25	-
	F2 (C10-C16)	150	<100	<100	<100	-
	F3 (C16-C34)	500	350	<250	<250	-
	F4 (C34-C50)	500	<250	<250	<250	-
BTEX	Benzene	0.5	<0.50	<0.50	<0.50	-
	Ethylbenzene	2.4	<0.50	<0.50	<0.50	-
	Toluene	24	<0.50	<0.50	<0.50	-
	Xylenes (Total)	72	<0.50	<0.50	<0.50	-
Metals	Antimony (Sb)-Dissolved	6	<0.10	0.25	0.14	0.11
	Arsenic (As)-Dissolved	25	0.24	0.28	0.43	0.43
	Barium (Ba)-Dissolved	1000	25.2	69.3	76.8	72.8
	Beryllium (Be)-Dissolved	4	<0.10	<0.10	<0.10	<0.10
	Boron (B)-Dissolved	5000	14	19	27	22
	Cadmium (Cd)-Dissolved	2.1	<0.010	0.018	0.021	0.017
	Chromium (Cr)-Dissolved	50	<0.50	<0.50	<0.50	<0.50
	Cobalt (Co)-Dissolved	3.8	0.27	0.73	0.5	0.55
	Copper (Cu)-Dissolved	69	0.67	0.69	2.57	0.56
	Lead (Pb)-Dissolved	10	<0.050	<0.050	0.191	<0.050
	Molybdenum (Mo)-Dissolved	70	3.14	44.1	32.8	23.9
	Nickel (Ni)-Dissolved	100	0.58	1.28	1.5	1.41
	Selenium (Se)-Dissolved	10	0.31	0.177	0.124	0.117
	Silver (Ag)-Dissolved	1.2	<0.050	<0.050	<0.050	<0.050
	Thallium (Tl)-Dissolved	2	<0.010	0.013	0.014	0.011
	Uranium (U)-Dissolved	20	0.498	0.881	1.95	1.54
	Vanadium (V)-Dissolved	6.2	<0.50	<0.50	<0.50	<0.50
	Zinc (Zn)-Dissolved	890	2.3	7.9	9.5	7.1
Polycyclic Aromatic Hydrocarbons (PAH)	Acenaphthene	4.1	<0.020	<0.020	<0.020	-
	Acenaphthylene	1	<0.020	<0.020	<0.020	-
	Anthracene	1	<0.020	<0.020	<0.020	-
	Benzo(a)anthracene	1	<0.020	<0.020	<0.020	-
	Benzo(a)pyrene	0.01	<0.010	<0.010	<0.010	-
	Benzo(b)fluoranthene	0.1	<0.020	<0.020	<0.020	-
	Benzo(g,h,i)perylene	0.2	<0.020	<0.020	<0.020	-
	Benzo(k)fluoranthene	0.1	<0.020	<0.020	<0.020	-
	Chrysene	0.1	<0.020	<0.020	<0.020	-
	Dibenzo(ah)anthracene	0.2	<0.020	<0.020	<0.020	-
	Fluoranthene	0.41	<0.020	<0.020	<0.020	-
	Fluorene	120	<0.020	<0.020	<0.020	-
	Indeno(1,2,3-cd)pyrene	0.2	<0.020	<0.020	<0.020	-
	1+2-Methylnaphthalenes	3.2	<0.028	<0.028	<0.028	-
	1-Methylnaphthalene	3.2	<0.020	<0.020	<0.020	-
	2-Methylnaphthalene	3.2	<0.020	0.021	<0.020	-
	Naphthalene	7	<0.050	<0.050	<0.050	-
	Phenanthrene	1	<0.020	<0.020	<0.020	-
	Pyrene	4.1	<0.020	<0.020	<0.020	-

NOTES:

1. Units = ug/L
2. "-" = Parameter not included in chemical analysis

ANALYTICAL RESULTS FOR SOIL

MOECC Soil, Ground Water and Sediment Standards

for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011

Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition for Residential/Parkland/Institutional Property Use (Coarse Textured Soil)

		Table 6 standard	MW1-1 (0.30-0.61 m)	MW2-1 (0.30-0.61 m)	MW3-1 (0.30-0.61 m)	TP1-1 (0.30-0.61 m)	TP2-1 (0.30-0.61 m)	TP3-1 (0.30-0.61 m)	TP4-1 (0.30-0.61 m)	TP5-1 (0.30-0.61 m)
Metals	pH		-	-	-	-	-	-	-	-
	Antimony (Sb)	7.5	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	1.1
	Arsenic (As)	18	5.5	5.8	4.7	4.3	4.5	**33.4**	6.2	6.2
	Barium (Ba)	390	79.7	70.4	57.1	74.5	64.6	35.3	23.5	38.7
	Beryllium (Be)	4	0.62	0.68	0.6	0.55	<0.50	<0.50	<0.50	<0.50
	Boron (B)	120	9.4	7.9	8.3	10	6.3	9.4	7.2	8.1
	Cadmium (Cd)	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr)	160	19.1	25.5	23	22.2	21.3	13.4	11.2	15.6
	Cobalt (Co)	22	6.5	7.5	6.8	6.9	7.3	4.3	3.9	5
	Copper (Cu)	140	17.1	12.5	19.2	14.7	12.4	16.7	11.8	12.9
	Lead (Pb)	120	8.8	17.2	7.8	8	8.5	19.2	8.9	9.2
	Molybdenum (Mo)	6.9	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0
	Nickel (Ni)	100	15.4	16.2	14.1	14.4	13.7	9.8	8.2	10.8
	Selenium (Se)	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Silver (Ag)	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Thallium (Tl)	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	23	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Vanadium (V)	86	31.8	40.4	36.3	34.6	37.5	21.5	19.7	26.8
	Zinc (Zn)	340	39	46.4	48.8	49.5	35.7	29.1	21.7	28.7
Polycyclic Aromatic Hydrocarbons (PAH)	Acenaphthene	7.9	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Acenaphthylene	0.15	<0.050	<0.050	<0.050	<0.050	<0.050	0.06	<0.050	<0.050
	Anthracene	0.67	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Benzo(a)anthracene	0.5	<0.050	<0.050	<0.050	<0.050	0.074	0.148	<0.050	<0.050
	Benzo(a)pyrene	0.3	<0.050	<0.050	<0.050	<0.050	0.124	0.2	<0.050	<0.050
	Benzo(b)fluoranthene	0.78	<0.050	<0.050	<0.050	<0.050	0.212	0.331	<0.050	0.057
	Benzo(g,h,i)perylene	6.6	<0.050	<0.050	<0.050	<0.050	0.118	0.179	<0.050	<0.050
	Benzo(k)fluoranthene	0.78	<0.050	<0.050	<0.050	<0.050	0.078	0.127	<0.050	<0.050
	Chrysene	7	<0.050	<0.050	<0.050	<0.050	0.131	0.25	<0.050	<0.050
	Dibenzo(ah)anthracene	0.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Fluoranthene	0.69	<0.050	<0.050	<0.050	<0.050	0.099	0.239	<0.050	<0.050
	Fluorene	62	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Indeno(1,2,3-cd)pyrene	0.38	<0.050	<0.050	<0.050	<0.050	0.098	0.15	<0.050	<0.050
	1+2-Methylnaphthalenes	0.99	<0.042	<0.042	<0.042	<0.042	<0.042	0.088	<0.042	<0.042
	1-Methylnaphthalene	0.99	<0.030	<0.030	<0.030	<0.030	<0.030	0.043	<0.030	<0.030
	2-Methylnaphthalene	0.99	<0.030	<0.030	<0.030	<0.030	<0.030	0.046	<0.030	<0.030
	Naphthalene	0.6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Phenanthrene	6.2	<0.050	<0.050	<0.050	<0.050	<0.050	0.073	<0.050	<0.050
	Pyrene	78	<0.050	<0.050	<0.050	<0.050	0.116	0.237	<0.050	<0.050
BTEX	Benzene	0.21	-	-	<0.0068	-	-	-	-	-
	Ethylbenzene	1.1	-	-	<0.018	-	-	-	-	-
	Toluene	2.3	-	-	<0.080	-	-	-	-	-
	Xylenes (Total)	3.1	-	-	<0.050	-	-	-	-	-
Petroleum Hydrocarbons (PHC)	F1 (C6-C10)	55	-	-	<5.0	-	-	-	-	-
	F1-BTEX	55	-	-	<5.0	-	-	-	-	-
	F2 (C10-C16)	98	-	-	<10	<10	<10	<10	-	-
	F3 (C16-C34)	300	-	-	<50	<50	<50	<50	-	-
	F4 (C34-C50)	2800	-	-	<50	<50	<50	<50	-	-

NOTES:

1. Units = ug/g (unless otherwise specified)
2. "-" = Parameter not included in chemical analysis
3. Test results shown in **bold and highlighted text** exceed the applicable Table 2 standard

ANALYTICAL RESULTS FOR SOIL

MOECC Soil, Ground Water and Sediment Standards

for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011

Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition for Residential/Parkland/Institutional Property Use (Coarse Textured Soil)

		Table 6 standard	TP6-1 (0.30-0.61 m)	TP7-1 (0.30-0.61 m)	TP8-1 (0.30-0.61 m)	TP9-1 (0.30-0.61 m)	TP10-1 (0.30-0.61 m)	1-1 (0.70-0.80 m)	1-4 (0.70-0.80 m)	1-5 (0.70-0.80 m)
Metals	pH		-	-	-	-	7.97	-	-	-
	Antimony (Sb)	7.5	<1.0	1.9	1.9	<1.0	<1.0	<1.0	<1.0	<1.0
	Arsenic (As)	18	10.1	3.2	**50.8**	4	1.6	6.8	4.2	5
	Barium (Ba)	390	45.2	67.3	33.6	73.6	12.2	51.7	38.2	25.9
	Beryllium (Be)	4	<0.50	<0.50	<0.50	0.61	<0.50	0.65	<0.50	<0.50
	Boron (B)	120	8.6	<5.0	7.8	5	6.2	12.2	10.1	9.3
	Cadmium (Cd)	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr)	160	16.4	14	11.4	20.5	7.3	18.3	14.6	11.2
	Cobalt (Co)	22	5.1	5.6	4.2	7	1.9	5.4	4.6	3.1
	Copper (Cu)	140	11.5	6.4	25.7	7.7	6.1	12.2	11.8	10.3
	Lead (Pb)	120	10.1	8.8	34.7	8.6	4.6	8.9	5.3	4.9
	Molybdenum (Mo)	6.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Nickel (Ni)	100	13.3	7.8	11.6	11.4	4.4	14.4	11.2	8.8
	Selenium (Se)	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Silver (Ag)	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Thallium (Tl)	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	23	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Vanadium (V)	86	27.4	28.9	18.5	34.6	9.8	29.9	22.2	19.8
	Zinc (Zn)	340	32.8	29.8	30.5	30.2	14.5	27.9	21.2	15.2
Polycyclic Aromatic Hydrocarbons (PAH)	Acenaphthene	7.9	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Acenaphthylene	0.15	<0.050	<0.050	**0.301**	<0.050	<0.050	<0.050	<0.050	<0.050
	Anthracene	0.67	<0.050	<0.050	0.165	<0.050	<0.050	<0.050	<0.050	<0.050
	Benzo(a)anthracene	0.5	<0.050	<0.050	**0.63**	<0.050	<0.050	<0.050	<0.050	<0.050
	Benzo(a)pyrene	0.3	<0.050	<0.050	**0.799**	<0.050	<0.050	<0.050	<0.050	<0.050
	Benzo(b)fluoranthene	0.78	<0.050	<0.050	**1.27**	<0.050	<0.050	<0.050	<0.050	<0.050
	Benzo(g,h,i)perylene	6.6	<0.050	<0.050	0.666	<0.050	<0.050	<0.050	<0.050	<0.050
	Benzo(k)fluoranthene	0.78	<0.050	<0.050	0.537	<0.050	<0.050	<0.050	<0.050	<0.050
	Chrysene	7	<0.050	<0.050	0.963	<0.050	<0.050	<0.050	<0.050	<0.050
	Dibenzo(ah)anthracene	0.1	<0.050	<0.050	**0.173**	<0.050	<0.050	<0.050	<0.050	<0.050
	Fluoranthene	0.69	<0.050	<0.050	**0.775**	<0.050	<0.050	<0.050	<0.050	<0.050
	Fluorene	62	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Indeno(1,2,3-cd)pyrene	0.38	<0.050	<0.050	**0.564**	<0.050	<0.050	<0.050	<0.050	<0.050
	1+2-Methylnaphthalenes	0.99	<0.042	<0.042	**1.62**	<0.042	<0.042	<0.042	<0.042	<0.042
	1-Methylnaphthalene	0.99	<0.030	<0.030	0.712	<0.030	<0.030	<0.030	<0.030	<0.030
	2-Methylnaphthalene	0.99	<0.030	<0.030	0.907	<0.030	<0.030	<0.030	<0.030	<0.030
	Naphthalene	0.6	<0.050	<0.050	**0.682**	<0.050	<0.050	<0.050	<0.050	<0.050
	Phenanthrene	6.2	<0.050	<0.050	0.634	<0.050	<0.050	<0.050	<0.050	<0.050
	Pyrene	78	<0.050	<0.050	0.842	<0.050	<0.050	<0.050	<0.050	<0.050
BTEX	Benzene	0.21	-	-	-	-	-	-	-	-
	Ethylbenzene	1.1	-	-	-	-	-	-	-	-
	Toluene	2.3	-	-	-	-	-	-	-	-
	Xylenes (Total)	3.1	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHC)	F1 (C6-C10)	55	-	-	-	-	-	-	-	-
	F1-BTEX	55	-	-	-	-	-	-	-	-
	F2 (C10-C16)	98	<10	-	<10	<10	-	-	-	-
	F3 (C16-C34)	300	<50	-	105	<50	-	-	-	-
	F4 (C34-C50)	2800	<50	-	105	<50	-	-	-	-

NOTES:

1. Units = ug/g (unless otherwise specified)
2. "-" = Parameter not included in chemical analysis
3. Test results shown in **bold and highlighted text** exceed the applicable Table 2 standard

ANALYTICAL RESULTS FOR SOIL

MOECC Soil, Ground Water and Sediment Standards

for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011

Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition for Residential/Parkland/Institutional Property Use (Coarse Textured Soil)

		Table 6 standard	1-7 (0.30-0.61 m)	1-9 (0.30-0.61 m)	1-11 (0.30-0.61 m)	1-12 (0.30-0.61 m)	2-1 (0.70-0.80 m)	2-4 (0.70-0.80 m)	2-5 (0.70-0.80 m)	2-6 (0.30-0.61 m)
Metals	pH		-	-	-	-	-	-	-	-
	Antimony (Sb)	7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Arsenic (As)	18	3.7	7.5	7.9	4.8	7.1	3.6	3.9	2
	Barium (Ba)	390	43.7	53.2	32.5	36	31.8	32.1	37.2	8.8
	Beryllium (Be)	4	<0.50	0.69	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Boron (B)	120	<5.0	11.6	6.2	8.1	7.3	6.6	6.6	6
	Cadmium (Cd)	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr)	160	15.7	19.4	10.4	12.4	11.6	14.8	15.3	6.3
	Cobalt (Co)	22	5.4	6	3.7	3.5	3.8	4.8	5.2	1.8
	Copper (Cu)	140	7.2	15.6	9.1	9.7	12	8.5	9.6	5
	Lead (Pb)	120	7.1	8.6	8.1	5.1	13.8	6.8	6.3	2.6
	Molybdenum (Mo)	6.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Nickel (Ni)	100	10.3	14.2	7.9	9.6	8.3	10	10.8	4.2
	Selenium (Se)	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Silver (Ag)	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Thallium (Tl)	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	23	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Vanadium (V)	86	28.7	32.4	17.2	20.8	19	25.5	28	10.7
	Zinc (Zn)	340	21.3	29.5	22.7	18.1	28.2	28.3	26.6	9.7
Polycyclic Aromatic Hydrocarbons (PAH)	Acenaphthene	7.9	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Acenaphthylene	0.15	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Anthracene	0.67	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Benzo(a)anthracene	0.5	<0.050	<0.050	<0.050	<0.050	0.087	<0.050	<0.050	<0.050
	Benzo(a)pyrene	0.3	<0.050	<0.050	0.054	<0.050	0.14	<0.050	<0.050	<0.050
	Benzo(b)fluoranthene	0.78	<0.050	<0.050	0.106	<0.050	0.256	<0.050	<0.050	<0.050
	Benzo(g,h,i)perylene	6.6	<0.050	<0.050	0.052	<0.050	0.131	<0.050	<0.050	<0.050
	Benzo(k)fluoranthene	0.78	<0.050	<0.050	<0.050	<0.050	0.069	<0.050	<0.050	<0.050
	Chrysene	7	<0.050	<0.050	0.053	<0.050	0.139	<0.050	<0.050	<0.050
	Dibenzo(ah)anthracene	0.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Fluoranthene	0.69	<0.050	<0.050	<0.050	<0.050	0.141	<0.050	<0.050	<0.050
	Fluorene	62	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Indeno(1,2,3-cd)pyrene	0.38	<0.050	<0.050	0.052	<0.050	0.125	<0.050	<0.050	<0.050
	1+2-Methylnaphthalenes	0.99	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
	1-Methylnaphthalene	0.99	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
	2-Methylnaphthalene	0.99	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
	Naphthalene	0.6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Phenanthrene	6.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Pyrene	78	<0.050	<0.050	<0.050	<0.050	0.152	<0.050	<0.050	<0.050
BTEX	Benzene	0.21	-	-	-	-	-	-	-	-
	Ethylbenzene	1.1	-	-	-	-	-	-	-	-
	Toluene	2.3	-	-	-	-	-	-	-	-
	Xylenes (Total)	3.1	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHC)	F1 (C6-C10)	55	-	-	-	-	-	-	-	-
	F1-BTEX	55	-	-	-	-	-	-	-	-
	F2 (C10-C16)	98	-	-	-	-	-	-	-	-
	F3 (C16-C34)	300	-	-	-	-	-	-	-	-
	F4 (C34-C50)	2800	-	-	-	-	-	-	-	-

NOTES:

1. Units = ug/g (unless otherwise specified)
2. "-" = Parameter not included in chemical analysis
3. Test results shown in **bold and highlighted text** exceed the applicable Table 2 standard

ANALYTICAL RESULTS FOR SOIL

MOECC Soil, Ground Water and Sediment Standards

for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011

Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition for Residential/Parkland/Institutional Property Use (Coarse Textured Soil)

		Table 6 standard	2-9 (0.30-0.61 m)	2-11 (0.30-0.61 m)	2-12 (0.30-0.61 m)					
Metals	pH		-	-	-					
	Antimony (Sb)	7.5	<1.0	<1.0	<1.0					
	Arsenic (As)	18	8.6	3.8	2					
	Barium (Ba)	390	32.9	21.9	14.2					
	Beryllium (Be)	4	<0.50	<0.50	<0.50					
	Boron (B)	120	10.2	6.9	5.5					
	Cadmium (Cd)	1.2	<0.50	<0.50	<0.50					
	Chromium (Cr)	160	12	10.9	8.1					
	Cobalt (Co)	22	4.1	3.3	2.3					
	Copper (Cu)	140	19.3	12.6	5.1					
	Lead (Pb)	120	22.2	6.7	3.6					
	Molybdenum (Mo)	6.9	<1.0	<1.0	<1.0					
	Nickel (Ni)	100	9.4	7	5.2					
	Selenium (Se)	2.4	<1.0	<1.0	<1.0					
	Silver (Ag)	20	<0.20	<0.20	<0.20					
	Thallium (Tl)	1	<0.50	<0.50	<0.50					
	Uranium (U)	23	<1.0	<1.0	<1.0					
	Vanadium (V)	86	19.5	18.6	13.5					
	Zinc (Zn)	340	30.3	20.1	14.3					
Polycyclic Aromatic Hydrocarbons (PAH)	Acenaphthene	7.9	<0.050	<0.050	<0.050					
	Acenaphthylene	0.15	0.065	<0.050	<0.050					
	Anthracene	0.67	<0.050	<0.050	<0.050					
	Benzo(a)anthracene	0.5	0.150 *	<0.050	<0.050					
	Benzo(a)pyrene	0.3	0.233	<0.050	<0.050					
	Benzo(b)fluoranthene	0.78	0.426	<0.050	<0.050					
	Benzo(g,h,i)perylene	6.6	0.209	<0.050	<0.050					
	Benzo(k)fluoranthene	0.78	0.12	<0.050	<0.050					
	Chrysene	7	0.237	<0.050	<0.050					
	Dibenzo(ah)anthracene	0.1	<0.050	<0.050	<0.050					
	Fluoranthene	0.69	0.226	<0.050	<0.050					
	Fluorene	62	<0.050	<0.050	<0.050					
	Indeno(1,2,3-cd)pyrene	0.38	0.213	<0.050	<0.050					
	1+2-Methylnaphthalenes	0.99	0.08	<0.042	<0.042					
	1-Methylnaphthalene	0.99	0.036	<0.030	<0.030					
	2-Methylnaphthalene	0.99	0.044	<0.030	<0.030					
	Naphthalene	0.6	<0.050	<0.050	<0.050					
	Phenanthrene	6.2	0.051	<0.050	<0.050					
	Pyrene	78	0.256	<0.050	<0.050					
BTEX	Benzene	0.21	-	-	-					
	Ethylbenzene	1.1	-	-	-					
	Toluene	2.3	-	-	-					
	Xylenes (Total)	3.1	-	-	-					
Petroleum Hydrocarbons (PHC)	F1 (C6-C10)	55	-	-	-					
	F1-BTEX	55	-	-	-					
	F2 (C10-C16)	98	-	-	-					
	F3 (C16-C34)	300	-	-	-					
	F4 (C34-C50)	2800	-	-	-					

NOTES:

1. Units = ug/g (unless otherwise specified)
2. "-" = Parameter not included in chemical analysis
3. Test results shown in **bold and highlighted text** exceed the applicable Table 2 standard

APPENDIX D
CERTIFICATES OF ANALYSIS

CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 10-MAR-17
Report Date: 20-MAR-17 10:22 (MT)
Version: FINAL

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1899793

Project P.O. #: E17383
Job Reference: MARTIN AND CORK ST. - SOIL
C of C Numbers: 15-544064
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1
L1899793-1 TP1-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						
Physical Tests						
% Moisture	13.6		0.10	%	13-MAR-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-17	7.5
Arsenic (As)	4.3		1.0	ug/g	16-MAR-17	18
Barium (Ba)	74.5		1.0	ug/g	16-MAR-17	390
Beryllium (Be)	0.55		0.50	ug/g	16-MAR-17	5
Boron (B)	10.0		5.0	ug/g	16-MAR-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-17	1.2
Chromium (Cr)	22.2		1.0	ug/g	16-MAR-17	160
Cobalt (Co)	6.9		1.0	ug/g	16-MAR-17	22
Copper (Cu)	14.7		1.0	ug/g	16-MAR-17	180
Lead (Pb)	8.0		1.0	ug/g	16-MAR-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-17	6.9
Nickel (Ni)	14.4		1.0	ug/g	16-MAR-17	130
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-17	25
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-17	1
Uranium (U)	<1.0		1.0	ug/g	16-MAR-17	23
Vanadium (V)	34.6		1.0	ug/g	16-MAR-17	86
Zinc (Zn)	49.5		5.0	ug/g	16-MAR-17	340
Hydrocarbons						
F2 (C10-C16)	<10		10	ug/g	14-MAR-17	150
F2-Naphth	<10		10	ug/g	17-MAR-17	
F3 (C16-C34)	<50		50	ug/g	14-MAR-17	1300
F3-PAH	<50		50	ug/g	17-MAR-17	
F4 (C34-C50)	<50		50	ug/g	14-MAR-17	5600
Chrom. to baseline at nC50	YES			No Unit	14-MAR-17	
Surrogate: 2-Bromobenzotrifluoride	88.7		60-140	%	14-MAR-17	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	16-MAR-17	29
Acenaphthylene	<0.050		0.050	ug/g	16-MAR-17	0.17
Anthracene	<0.050		0.050	ug/g	16-MAR-17	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	16-MAR-17	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	16-MAR-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	16-MAR-17	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.78
Chrysene	<0.050		0.050	ug/g	16-MAR-17	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	16-MAR-17	0.1
Fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.69
Fluorene	<0.050		0.050	ug/g	16-MAR-17	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	16-MAR-17	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	17-MAR-17	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	16-MAR-17	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	16-MAR-17	3.4

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

T2-Soil-Res/Park/Inst. Property Use (Fine)

#1: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1899793-1 TP1-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Polycyclic Aromatic Hydrocarbons						
Naphthalene	<0.050		0.050	ug/g	16-MAR-17	0.75
Phenanthrene	<0.050		0.050	ug/g	16-MAR-17	7.8
Pyrene	<0.050		0.050	ug/g	16-MAR-17	78
Surrogate: 2-Fluorobiphenyl	104.7		50-140	%	16-MAR-17	
Surrogate: p-Terphenyl d14	101.2		50-140	%	16-MAR-17	
L1899793-2 TP2-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	12.5		0.10	%	13-MAR-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-17	7.5
Arsenic (As)	4.5		1.0	ug/g	16-MAR-17	18
Barium (Ba)	64.6		1.0	ug/g	16-MAR-17	390
Beryllium (Be)	<0.50		0.50	ug/g	16-MAR-17	5
Boron (B)	6.3		5.0	ug/g	16-MAR-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-17	1.2
Chromium (Cr)	21.3		1.0	ug/g	16-MAR-17	160
Cobalt (Co)	7.3		1.0	ug/g	16-MAR-17	22
Copper (Cu)	12.4		1.0	ug/g	16-MAR-17	180
Lead (Pb)	8.5		1.0	ug/g	16-MAR-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-17	6.9
Nickel (Ni)	13.7		1.0	ug/g	16-MAR-17	130
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-17	25
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-17	1
Uranium (U)	<1.0		1.0	ug/g	16-MAR-17	23
Vanadium (V)	37.5		1.0	ug/g	16-MAR-17	86
Zinc (Zn)	35.7		5.0	ug/g	16-MAR-17	340
Hydrocarbons						
F2 (C10-C16)	<10		10	ug/g	14-MAR-17	150
F2-Naphth	<10		10	ug/g	17-MAR-17	
F3 (C16-C34)	<50		50	ug/g	14-MAR-17	1300
F3-PAH	<50		50	ug/g	17-MAR-17	
F4 (C34-C50)	<50		50	ug/g	14-MAR-17	5600
Chrom. to baseline at nC50	YES			No Unit	14-MAR-17	
Surrogate: 2-Bromobenzotrifluoride	86.0		60-140	%	14-MAR-17	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	16-MAR-17	29
Acenaphthylene	<0.050		0.050	ug/g	16-MAR-17	0.17
Anthracene	<0.050		0.050	ug/g	16-MAR-17	0.74
Benzo(a)anthracene	0.074		0.050	ug/g	16-MAR-17	0.63
Benzo(a)pyrene	0.124		0.050	ug/g	16-MAR-17	0.3
Benzo(b)fluoranthene	0.212		0.050	ug/g	16-MAR-17	0.78

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

T2-Soil-Res/Park/Inst. Property Use (Fine)

#1: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1899793-2 TP2-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Polycyclic Aromatic Hydrocarbons						
Benzo(g,h,i)perylene	0.118		0.050	ug/g	16-MAR-17	7.8
Benzo(k)fluoranthene	0.078		0.050	ug/g	16-MAR-17	0.78
Chrysene	0.131		0.050	ug/g	16-MAR-17	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	16-MAR-17	0.1
Fluoranthene	0.099		0.050	ug/g	16-MAR-17	0.69
Fluorene	<0.050		0.050	ug/g	16-MAR-17	69
Indeno(1,2,3-cd)pyrene	0.098		0.050	ug/g	16-MAR-17	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	17-MAR-17	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	16-MAR-17	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	16-MAR-17	3.4
Naphthalene	<0.050		0.050	ug/g	16-MAR-17	0.75
Phenanthrene	<0.050		0.050	ug/g	16-MAR-17	7.8
Pyrene	0.116		0.050	ug/g	16-MAR-17	78
Surrogate: 2-Fluorobiphenyl	106.4		50-140	%	16-MAR-17	
Surrogate: p-Terphenyl d14	100.8		50-140	%	16-MAR-17	
L1899793-3 TP3-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	11.7		0.10	%	13-MAR-17	
Metals						
Antimony (Sb)	1.1		1.0	ug/g	16-MAR-17	7.5
Arsenic (As)	33.4		1.0	ug/g	16-MAR-17	*18
Barium (Ba)	35.3		1.0	ug/g	16-MAR-17	390
Beryllium (Be)	<0.50		0.50	ug/g	16-MAR-17	5
Boron (B)	9.4		5.0	ug/g	16-MAR-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-17	1.2
Chromium (Cr)	13.4		1.0	ug/g	16-MAR-17	160
Cobalt (Co)	4.3		1.0	ug/g	16-MAR-17	22
Copper (Cu)	16.7		1.0	ug/g	16-MAR-17	180
Lead (Pb)	19.2		1.0	ug/g	16-MAR-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-17	6.9
Nickel (Ni)	9.8		1.0	ug/g	16-MAR-17	130
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-17	25
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-17	1
Uranium (U)	<1.0		1.0	ug/g	16-MAR-17	23
Vanadium (V)	21.5		1.0	ug/g	16-MAR-17	86
Zinc (Zn)	29.1		5.0	ug/g	16-MAR-17	340
Hydrocarbons						
F2 (C10-C16)	<10		10	ug/g	14-MAR-17	150
F2-Naphth	<10		10	ug/g	17-MAR-17	
F3 (C16-C34)	<50		50	ug/g	14-MAR-17	1300
F3-PAH	<50		50	ug/g	17-MAR-17	

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

T2-Soil-Res/Park/Inst. Property Use (Fine)

#1: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1899793-3 TP3-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Hydrocarbons						
F4 (C34-C50)	<50		50	ug/g	14-MAR-17	5600
Chrom. to baseline at nC50	YES			No Unit	14-MAR-17	
Surrogate: 2-Bromobenzotrifluoride	83.8		60-140	%	14-MAR-17	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	16-MAR-17	29
Acenaphthylene	0.060		0.050	ug/g	16-MAR-17	0.17
Anthracene	<0.050		0.050	ug/g	16-MAR-17	0.74
Benzo(a)anthracene	0.148		0.050	ug/g	16-MAR-17	0.63
Benzo(a)pyrene	0.200		0.050	ug/g	16-MAR-17	0.3
Benzo(b)fluoranthene	0.331		0.050	ug/g	16-MAR-17	0.78
Benzo(g,h,i)perylene	0.179		0.050	ug/g	16-MAR-17	7.8
Benzo(k)fluoranthene	0.127		0.050	ug/g	16-MAR-17	0.78
Chrysene	0.250		0.050	ug/g	16-MAR-17	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	16-MAR-17	0.1
Fluoranthene	0.239		0.050	ug/g	16-MAR-17	0.69
Fluorene	<0.050		0.050	ug/g	16-MAR-17	69
Indeno(1,2,3-cd)pyrene	0.150		0.050	ug/g	16-MAR-17	0.48
1+2-Methylnaphthalenes	0.088		0.042	ug/g	17-MAR-17	3.4
1-Methylnaphthalene	0.043		0.030	ug/g	16-MAR-17	3.4
2-Methylnaphthalene	0.046		0.030	ug/g	16-MAR-17	3.4
Naphthalene	<0.050		0.050	ug/g	16-MAR-17	0.75
Phenanthrene	0.073		0.050	ug/g	16-MAR-17	7.8
Pyrene	0.237		0.050	ug/g	16-MAR-17	78
Surrogate: 2-Fluorobiphenyl	106.7		50-140	%	16-MAR-17	
Surrogate: p-Terphenyl d14	100.3		50-140	%	16-MAR-17	
L1899793-4 TP6-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	11.0		0.10	%	13-MAR-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-17	7.5
Arsenic (As)	10.1		1.0	ug/g	16-MAR-17	18
Barium (Ba)	45.2		1.0	ug/g	16-MAR-17	390
Beryllium (Be)	<0.50		0.50	ug/g	16-MAR-17	5
Boron (B)	8.6		5.0	ug/g	16-MAR-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-17	1.2
Chromium (Cr)	16.4		1.0	ug/g	16-MAR-17	160
Cobalt (Co)	5.1		1.0	ug/g	16-MAR-17	22
Copper (Cu)	11.5		1.0	ug/g	16-MAR-17	180
Lead (Pb)	10.1		1.0	ug/g	16-MAR-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-17	6.9
Nickel (Ni)	13.3		1.0	ug/g	16-MAR-17	130
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-17	2.4

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

T2-Soil-Res/Park/Inst. Property Use (Fine)

#1: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1899793-4 TP6-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Metals						
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-17	25
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-17	1
Uranium (U)	<1.0		1.0	ug/g	16-MAR-17	23
Vanadium (V)	27.4		1.0	ug/g	16-MAR-17	86
Zinc (Zn)	32.8		5.0	ug/g	16-MAR-17	340
Hydrocarbons						
F2 (C10-C16)	<10		10	ug/g	14-MAR-17	150
F2-Naphth	<10		10	ug/g	17-MAR-17	
F3 (C16-C34)	<50		50	ug/g	14-MAR-17	1300
F3-PAH	<50		50	ug/g	17-MAR-17	
F4 (C34-C50)	<50		50	ug/g	14-MAR-17	5600
Chrom. to baseline at nC50	YES			No Unit	14-MAR-17	
Surrogate: 2-Bromobenzotrifluoride	81.7		60-140	%	14-MAR-17	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	16-MAR-17	29
Acenaphthylene	<0.050		0.050	ug/g	16-MAR-17	0.17
Anthracene	<0.050		0.050	ug/g	16-MAR-17	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	16-MAR-17	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	16-MAR-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	16-MAR-17	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.78
Chrysene	<0.050		0.050	ug/g	16-MAR-17	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	16-MAR-17	0.1
Fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.69
Fluorene	<0.050		0.050	ug/g	16-MAR-17	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	16-MAR-17	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	17-MAR-17	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	16-MAR-17	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	16-MAR-17	3.4
Naphthalene	<0.050		0.050	ug/g	16-MAR-17	0.75
Phenanthrene	<0.050		0.050	ug/g	16-MAR-17	7.8
Pyrene	<0.050		0.050	ug/g	16-MAR-17	78
Surrogate: 2-Fluorobiphenyl	105.1		50-140	%	16-MAR-17	
Surrogate: p-Terphenyl d14	99.4		50-140	%	16-MAR-17	
L1899793-5 TP8-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	13.7		0.10	%	13-MAR-17	
Metals						
Antimony (Sb)	1.9		1.0	ug/g	16-MAR-17	7.5
Arsenic (As)	50.8		1.0	ug/g	16-MAR-17	*18
Barium (Ba)	33.6		1.0	ug/g	16-MAR-17	390

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

T2-Soil-Res/Park/Inst. Property Use (Fine)

#1: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1899793-5 TP8-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						#1
Metals						
Beryllium (Be)	<0.50		0.50	ug/g	16-MAR-17	5
Boron (B)	7.8		5.0	ug/g	16-MAR-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-17	1.2
Chromium (Cr)	11.4		1.0	ug/g	16-MAR-17	160
Cobalt (Co)	4.2		1.0	ug/g	16-MAR-17	22
Copper (Cu)	25.7		1.0	ug/g	16-MAR-17	180
Lead (Pb)	34.7		1.0	ug/g	16-MAR-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-17	6.9
Nickel (Ni)	11.6		1.0	ug/g	16-MAR-17	130
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-17	25
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-17	1
Uranium (U)	<1.0		1.0	ug/g	16-MAR-17	23
Vanadium (V)	18.5		1.0	ug/g	16-MAR-17	86
Zinc (Zn)	30.5		5.0	ug/g	16-MAR-17	340
Hydrocarbons						
F2 (C10-C16)	<10		10	ug/g	17-MAR-17	150
F2-Naphth	<10		10	ug/g	20-MAR-17	
F3 (C16-C34)	105		50	ug/g	17-MAR-17	1300
F3-PAH	98		50	ug/g	20-MAR-17	
F4 (C34-C50)	57		50	ug/g	17-MAR-17	5600
Chrom. to baseline at nC50	YES			No Unit	17-MAR-17	
Surrogate: 2-Bromobenzotrifluoride	92.8		60-140	%	17-MAR-17	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	16-MAR-17	29
Acenaphthylene	0.301		0.050	ug/g	16-MAR-17	*0.17
Anthracene	0.165		0.050	ug/g	16-MAR-17	0.74
Benzo(a)anthracene	0.630	R	0.050	ug/g	16-MAR-17	0.63
Benzo(a)pyrene	0.799		0.050	ug/g	16-MAR-17	*0.3
Benzo(b)fluoranthene	1.27		0.050	ug/g	16-MAR-17	*0.78
Benzo(g,h,i)perylene	0.666		0.050	ug/g	16-MAR-17	7.8
Benzo(k)fluoranthene	0.537		0.050	ug/g	16-MAR-17	0.78
Chrysene	0.963		0.050	ug/g	16-MAR-17	7.8
Dibenzo(ah)anthracene	0.173		0.050	ug/g	16-MAR-17	*0.1
Fluoranthene	0.775		0.050	ug/g	16-MAR-17	*0.69
Fluorene	<0.050		0.050	ug/g	16-MAR-17	69
Indeno(1,2,3-cd)pyrene	0.564		0.050	ug/g	16-MAR-17	*0.48
1+2-Methylnaphthalenes	1.62		0.042	ug/g	17-MAR-17	3.4
1-Methylnaphthalene	0.712		0.030	ug/g	16-MAR-17	3.4
2-Methylnaphthalene	0.907		0.030	ug/g	16-MAR-17	3.4
Naphthalene	0.682		0.050	ug/g	16-MAR-17	0.75
Phenanthrene	0.634		0.050	ug/g	16-MAR-17	7.8
Pyrene	0.842		0.050	ug/g	16-MAR-17	78
Surrogate: 2-Fluorobiphenyl	105.3		50-140	%	16-MAR-17	
Surrogate: p-Terphenyl d14	99.2		50-140	%	16-MAR-17	

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

T2-Soil-Res/Park/Inst. Property Use (Fine)

#1: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1
L1899793-6 TP9-1						
Sampled By: CLIENT on 10-MAR-17						
Matrix: SOIL						
Physical Tests						
% Moisture	27.1		0.10	%	13-MAR-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	16-MAR-17	7.5
Arsenic (As)	4.0		1.0	ug/g	16-MAR-17	18
Barium (Ba)	73.6		1.0	ug/g	16-MAR-17	390
Beryllium (Be)	0.61		0.50	ug/g	16-MAR-17	5
Boron (B)	5.0		5.0	ug/g	16-MAR-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	16-MAR-17	1.2
Chromium (Cr)	20.5		1.0	ug/g	16-MAR-17	160
Cobalt (Co)	7.0		1.0	ug/g	16-MAR-17	22
Copper (Cu)	7.7		1.0	ug/g	16-MAR-17	180
Lead (Pb)	8.6		1.0	ug/g	16-MAR-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	16-MAR-17	6.9
Nickel (Ni)	11.4		1.0	ug/g	16-MAR-17	130
Selenium (Se)	<1.0		1.0	ug/g	16-MAR-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	16-MAR-17	25
Thallium (Tl)	<0.50		0.50	ug/g	16-MAR-17	1
Uranium (U)	<1.0		1.0	ug/g	16-MAR-17	23
Vanadium (V)	34.6		1.0	ug/g	16-MAR-17	86
Zinc (Zn)	30.2		5.0	ug/g	16-MAR-17	340
Hydrocarbons						
F2 (C10-C16)	<10		10	ug/g	17-MAR-17	150
F2-Naphth	<10		10	ug/g	20-MAR-17	
F3 (C16-C34)	<50		50	ug/g	17-MAR-17	1300
F3-PAH	<50		50	ug/g	20-MAR-17	
F4 (C34-C50)	<50		50	ug/g	17-MAR-17	5600
Chrom. to baseline at nC50	YES			No Unit	17-MAR-17	
Surrogate: 2-Bromobenzotrifluoride	94.9		60-140	%	17-MAR-17	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	16-MAR-17	29
Acenaphthylene	<0.050		0.050	ug/g	16-MAR-17	0.17
Anthracene	<0.050		0.050	ug/g	16-MAR-17	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	16-MAR-17	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	16-MAR-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	16-MAR-17	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.78
Chrysene	<0.050		0.050	ug/g	16-MAR-17	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	16-MAR-17	0.1
Fluoranthene	<0.050		0.050	ug/g	16-MAR-17	0.69
Fluorene	<0.050		0.050	ug/g	16-MAR-17	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	16-MAR-17	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	17-MAR-17	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	16-MAR-17	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	16-MAR-17	3.4

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

T2-Soil-Res/Park/Inst. Property Use (Fine)

#1: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1			
L1899793-6 TP9-1									
Sampled By: CLIENT on 10-MAR-17									
Matrix: SOIL									
Polycyclic Aromatic Hydrocarbons									
Naphthalene	<0.050		0.050	ug/g	16-MAR-17	0.75			
Phenanthrene	<0.050		0.050	ug/g	16-MAR-17	7.8			
Pyrene	<0.050		0.050	ug/g	16-MAR-17	78			
Surrogate: 2-Fluorobiphenyl	102.8		50-140	%	16-MAR-17				
Surrogate: p-Terphenyl d14	93.3		50-140	%	16-MAR-17				

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

T2-Soil-Res/Park/Inst. Property Use (Fine)

#1: T2-Soil-Res/Park/Inst. Property Use (Fine)

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S

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

Hydrocarbon results are expressed on a dry weight basis.

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

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

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

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

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1

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

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

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

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

Dried, ground and sieved soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

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

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried

Reference Information

PAH-511-WT Soil PAH-O.Reg 153/04 (July 2011) SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

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

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

Chain of Custody numbers:

15-544064

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

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

GLOSSARY OF REPORT TERMS

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.

Quality Control Report

Workorder: L1899793 Report Date: 20-MAR-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R3674790								
WG2492891-3 CRM		**ALS PHC2 IRM**						
F2 (C10-C16)			95.7		%		70-130	14-MAR-17
F3 (C16-C34)			100.0		%		70-130	14-MAR-17
F4 (C34-C50)			103.6		%		70-130	14-MAR-17
WG2492891-5 DUP		**WG2492891-4**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	14-MAR-17
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	14-MAR-17
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	14-MAR-17
WG2492891-2 LCS								
F2 (C10-C16)			110.2		%		80-120	14-MAR-17
F3 (C16-C34)			107.9		%		80-120	14-MAR-17
F4 (C34-C50)			102.5		%		80-120	14-MAR-17
WG2492891-1 MB								
F2 (C10-C16)			<10		ug/g		10	14-MAR-17
F3 (C16-C34)			<50		ug/g		50	14-MAR-17
F4 (C34-C50)			<50		ug/g		50	14-MAR-17
Surrogate: 2-Bromobenzotrifluoride			82.4		%		60-140	14-MAR-17
Batch R3679044								
WG2495184-3 CRM		**ALS PHC2 IRM**						
F2 (C10-C16)			103.1		%		70-130	17-MAR-17
F3 (C16-C34)			103.4		%		70-130	17-MAR-17
F4 (C34-C50)			104.8		%		70-130	17-MAR-17
WG2495184-5 DUP		**WG2495184-4**						
F2 (C10-C16)		15	12		ug/g	18	30	17-MAR-17
F3 (C16-C34)		68	52		ug/g	26	30	17-MAR-17
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	17-MAR-17
WG2495184-2 LCS								
F2 (C10-C16)			113.6		%		80-120	17-MAR-17
F3 (C16-C34)			110.7		%		80-120	17-MAR-17
F4 (C34-C50)			105.1		%		80-120	17-MAR-17
WG2495184-1 MB								
F2 (C10-C16)			<10		ug/g		10	17-MAR-17
F3 (C16-C34)			<50		ug/g		50	17-MAR-17
F4 (C34-C50)			<50		ug/g		50	17-MAR-17
Surrogate: 2-Bromobenzotrifluoride			93.7		%		60-140	17-MAR-17
MET-200.2-CCMS-WT	**Soil**							

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3678056								
WG2494879-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			108.0		%		70-130	16-MAR-17
Arsenic (As)			113.2		%		70-130	16-MAR-17
Barium (Ba)			121.1		%		70-130	16-MAR-17
Beryllium (Be)			88.7		%		70-130	16-MAR-17
Cadmium (Cd)			92.6		%		70-130	16-MAR-17
Chromium (Cr)			114.8		%		70-130	16-MAR-17
Cobalt (Co)			110.4		%		70-130	16-MAR-17
Copper (Cu)			104.0		%		70-130	16-MAR-17
Lead (Pb)			99.5		%		70-130	16-MAR-17
Molybdenum (Mo)			97.4		%		70-130	16-MAR-17
Nickel (Ni)			110.0		%		70-130	16-MAR-17
Selenium (Se)			112.3		%		70-130	16-MAR-17
Silver (Ag)			103.0		%		70-130	16-MAR-17
Thallium (Tl)			105.5		%		70-130	16-MAR-17
Uranium (U)			109.0		%		70-130	16-MAR-17
Vanadium (V)			118.6		%		70-130	16-MAR-17
Zinc (Zn)			105.1		%		70-130	16-MAR-17
WG2494879-5 DUP		**WG2494879-4**						
Antimony (Sb)		0.29	0.31		ug/g	6.9	30	16-MAR-17
Arsenic (As)		4.28	4.24		ug/g	0.8	30	16-MAR-17
Barium (Ba)		74.5	78.0		ug/g	4.6	40	16-MAR-17
Beryllium (Be)		0.55	0.49		ug/g	12	30	16-MAR-17
Boron (B)		10.0	8.2		ug/g	20	30	16-MAR-17
Cadmium (Cd)		0.315	0.302		ug/g	4.2	30	16-MAR-17
Chromium (Cr)		22.2	22.4		ug/g	0.7	30	16-MAR-17
Cobalt (Co)		6.87	6.98		ug/g	1.6	30	16-MAR-17
Copper (Cu)		14.7	14.6		ug/g	1.1	30	16-MAR-17
Lead (Pb)		8.02	8.00		ug/g	0.2	40	16-MAR-17
Molybdenum (Mo)		0.32	0.32		ug/g	1.4	40	16-MAR-17
Nickel (Ni)		14.4	14.8		ug/g	2.9	30	16-MAR-17
Selenium (Se)		0.38	0.33		ug/g	15	30	16-MAR-17
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	16-MAR-17
Thallium (Tl)		0.131	0.131		ug/g	0.4	30	16-MAR-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3678056								
WG2494879-5 DUP		**WG2494879-4**						
Uranium (U)		0.732	0.714		ug/g	2.5	30	16-MAR-17
Vanadium (V)		34.6	34.9		ug/g	0.9	30	16-MAR-17
Zinc (Zn)		49.5	50.3		ug/g	1.6	30	16-MAR-17
WG2494879-3 LCS								
Antimony (Sb)			103.6		%		80-120	16-MAR-17
Arsenic (As)			102.6		%		80-120	16-MAR-17
Barium (Ba)			108.3		%		80-120	16-MAR-17
Beryllium (Be)			90.2		%		80-120	16-MAR-17
Boron (B)			88.0		%		80-120	16-MAR-17
Cadmium (Cd)			106.1		%		80-120	16-MAR-17
Chromium (Cr)			101.4		%		80-120	16-MAR-17
Cobalt (Co)			101.2		%		80-120	16-MAR-17
Copper (Cu)			98.6		%		80-120	16-MAR-17
Lead (Pb)			97.5		%		80-120	16-MAR-17
Molybdenum (Mo)			95.9		%		80-120	16-MAR-17
Nickel (Ni)			100.2		%		80-120	16-MAR-17
Selenium (Se)			102.3		%		80-120	16-MAR-17
Silver (Ag)			95.7		%		80-120	16-MAR-17
Thallium (Tl)			95.8		%		80-120	16-MAR-17
Uranium (U)			94.4		%		80-120	16-MAR-17
Vanadium (V)			104.0		%		80-120	16-MAR-17
Zinc (Zn)			93.7		%		80-120	16-MAR-17
WG2494879-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	16-MAR-17
Arsenic (As)			<0.10		mg/kg		0.1	16-MAR-17
Barium (Ba)			<0.50		mg/kg		0.5	16-MAR-17
Beryllium (Be)			<0.10		mg/kg		0.1	16-MAR-17
Boron (B)			<5.0		mg/kg		5	16-MAR-17
Cadmium (Cd)			<0.020		mg/kg		0.02	16-MAR-17
Chromium (Cr)			<0.50		mg/kg		0.5	16-MAR-17
Cobalt (Co)			<0.10		mg/kg		0.1	16-MAR-17
Copper (Cu)			<0.50		mg/kg		0.5	16-MAR-17
Lead (Pb)			<0.50		mg/kg		0.5	16-MAR-17
Molybdenum (Mo)			<0.10		mg/kg		0.1	16-MAR-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3678056								
WG2494879-1 MB								
Nickel (Ni)			<0.50		mg/kg		0.5	16-MAR-17
Selenium (Se)			<0.20		mg/kg		0.2	16-MAR-17
Silver (Ag)			<0.10		mg/kg		0.1	16-MAR-17
Thallium (Tl)			<0.050		mg/kg		0.05	16-MAR-17
Uranium (U)			<0.050		mg/kg		0.05	16-MAR-17
Vanadium (V)			<0.20		mg/kg		0.2	16-MAR-17
Zinc (Zn)			<2.0		mg/kg		2	16-MAR-17
MOISTURE-WT	**Soil**							
Batch R3674324								
WG2492889-3 DUP		**L1899783-2**						
% Moisture		20.4	20.4		%	0.1	20	13-MAR-17
WG2492889-2 LCS								
% Moisture			100.1		%		90-110	13-MAR-17
WG2492889-1 MB								
% Moisture			<0.10		%		0.1	13-MAR-17
PAH-511-WT	**Soil**							
Batch R3676406								
WG2492890-4 DUP		**WG2492890-3**						
1-Methylnaphthalene		0.88	0.53	J	ug/g	0.35	0.6	16-MAR-17
2-Methylnaphthalene		1.09	0.56	J	ug/g	0.53	0.6	16-MAR-17
Acenaphthene		4.20	2.05	DUP-H	ug/g	69	40	16-MAR-17
Acenaphthylene		<0.50	<0.50	RPD-NA	ug/g	N/A	40	16-MAR-17
Anthracene		13.4	5.98	DUP-H	ug/g	76	40	16-MAR-17
Benzo(a)anthracene		27.9	9.94	DUP-H	ug/g	95	40	16-MAR-17
Benzo(a)pyrene		18.1	7.34	DUP-H	ug/g	85	40	16-MAR-17
Benzo(b)fluoranthene		24.8	8.78	DUP-H	ug/g	96	40	16-MAR-17
Benzo(g,h,i)perylene		10.5	3.79	DUP-H	ug/g	94	40	16-MAR-17
Benzo(k)fluoranthene		10.8	3.89	DUP-H	ug/g	94	40	16-MAR-17
Chrysene		27.9	9.81	DUP-H	ug/g	96	40	16-MAR-17
Dibenzo(ah)anthracene		3.14	1.15	DUP-H	ug/g	1.99	1	16-MAR-17
Fluoranthene		74.5	23.5	DUP-H	ug/g	104	40	16-MAR-17
Fluorene		4.28	2.49	DUP-H	ug/g	53	40	16-MAR-17
Indeno(1,2,3-cd)pyrene		9.90	3.70	DUP-H	ug/g	91	40	16-MAR-17
Naphthalene		1.88	0.61	DUP-H	ug/g	1.27	1	16-MAR-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3676406								
WG2492890-4 DUP		**WG2492890-3**						
Phenanthrene		58.5	23.1	DUP-H	ug/g	87	40	16-MAR-17
Pyrene		53.2	17.3	DUP-H	ug/g	102	40	16-MAR-17
WG2492890-2 LCS								
1-Methylnaphthalene			101.3		%		50-140	15-MAR-17
2-Methylnaphthalene			100.6		%		50-140	15-MAR-17
Acenaphthene			101.5		%		50-140	15-MAR-17
Acenaphthylene			100.3		%		50-140	15-MAR-17
Anthracene			102.7		%		50-140	15-MAR-17
Benzo(a)anthracene			102.4		%		50-140	15-MAR-17
Benzo(a)pyrene			100.1		%		50-140	15-MAR-17
Benzo(b)fluoranthene			105.8		%		50-140	15-MAR-17
Benzo(g,h,i)perylene			101.8		%		50-140	15-MAR-17
Benzo(k)fluoranthene			97.8		%		50-140	15-MAR-17
Chrysene			121.0		%		50-140	15-MAR-17
Dibenzo(ah)anthracene			103.5		%		50-140	15-MAR-17
Fluoranthene			91.6		%		50-140	15-MAR-17
Fluorene			97.1		%		50-140	15-MAR-17
Indeno(1,2,3-cd)pyrene			89.4		%		50-140	15-MAR-17
Naphthalene			100.5		%		50-140	15-MAR-17
Phenanthrene			102.3		%		50-140	15-MAR-17
Pyrene			93.5		%		50-140	15-MAR-17
WG2492890-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	15-MAR-17
2-Methylnaphthalene			<0.030		ug/g		0.03	15-MAR-17
Acenaphthene			<0.050		ug/g		0.05	15-MAR-17
Acenaphthylene			<0.050		ug/g		0.05	15-MAR-17
Anthracene			<0.050		ug/g		0.05	15-MAR-17
Benzo(a)anthracene			<0.050		ug/g		0.05	15-MAR-17
Benzo(a)pyrene			<0.050		ug/g		0.05	15-MAR-17
Benzo(b)fluoranthene			<0.050		ug/g		0.05	15-MAR-17
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	15-MAR-17
Benzo(k)fluoranthene			<0.050		ug/g		0.05	15-MAR-17
Chrysene			<0.050		ug/g		0.05	15-MAR-17
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	15-MAR-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3676406								
WG2492890-1 MB								
Fluoranthene			<0.050		ug/g		0.05	15-MAR-17
Fluorene			<0.050		ug/g		0.05	15-MAR-17
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	15-MAR-17
Naphthalene			<0.050		ug/g		0.05	15-MAR-17
Phenanthrene			<0.050		ug/g		0.05	15-MAR-17
Pyrene			<0.050		ug/g		0.05	15-MAR-17
Surrogate: 2-Fluorobiphenyl			101.7		%		50-140	15-MAR-17
Surrogate: p-Terphenyl d14			96.6		%		50-140	15-MAR-17
WG2492890-5 MS		**WG2492890-3**						
1-Methylnaphthalene			47.6	E	%		50-140	16-MAR-17
2-Methylnaphthalene			N/A	MS-B	%		-	16-MAR-17
Acenaphthene			N/A	MS-B	%		-	16-MAR-17
Acenaphthylene			60.4		%		50-140	16-MAR-17
Anthracene			N/A	MS-B	%		-	16-MAR-17
Benzo(a)anthracene			N/A	MS-B	%		-	16-MAR-17
Benzo(a)pyrene			N/A	MS-B	%		-	16-MAR-17
Benzo(b)fluoranthene			N/A	MS-B	%		-	16-MAR-17
Benzo(g,h,i)perylene			N/A	MS-B	%		-	16-MAR-17
Benzo(k)fluoranthene			N/A	MS-B	%		-	16-MAR-17
Chrysene			N/A	MS-B	%		-	16-MAR-17
Dibenzo(ah)anthracene			N/A	MS-B	%		-	16-MAR-17
Fluoranthene			N/A	MS-B	%		-	16-MAR-17
Fluorene			N/A	MS-B	%		-	16-MAR-17
Indeno(1,2,3-cd)pyrene			N/A	MS-B	%		-	16-MAR-17
Naphthalene			N/A	MS-B	%		-	16-MAR-17
Phenanthrene			N/A	MS-B	%		-	16-MAR-17
Pyrene			N/A	MS-B	%		-	16-MAR-17

Quality Control Report

Workorder: L1899793 Report Date: 20-MAR-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

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
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
E	Matrix Spike recovery outside ALS DQO due to heterogeneous analyte background in sample.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

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

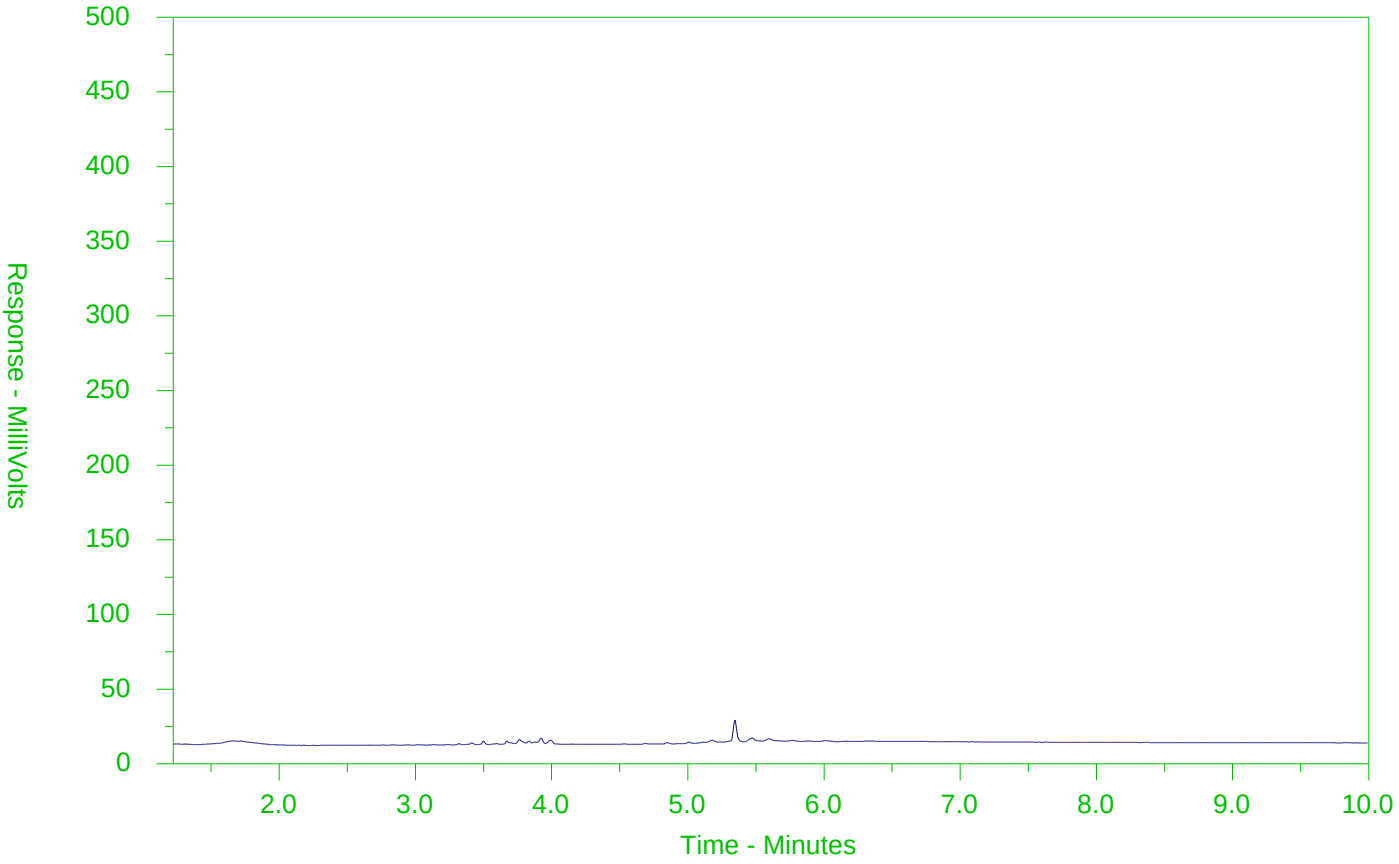
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1899793-1
Client Sample ID: TP1-1



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

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

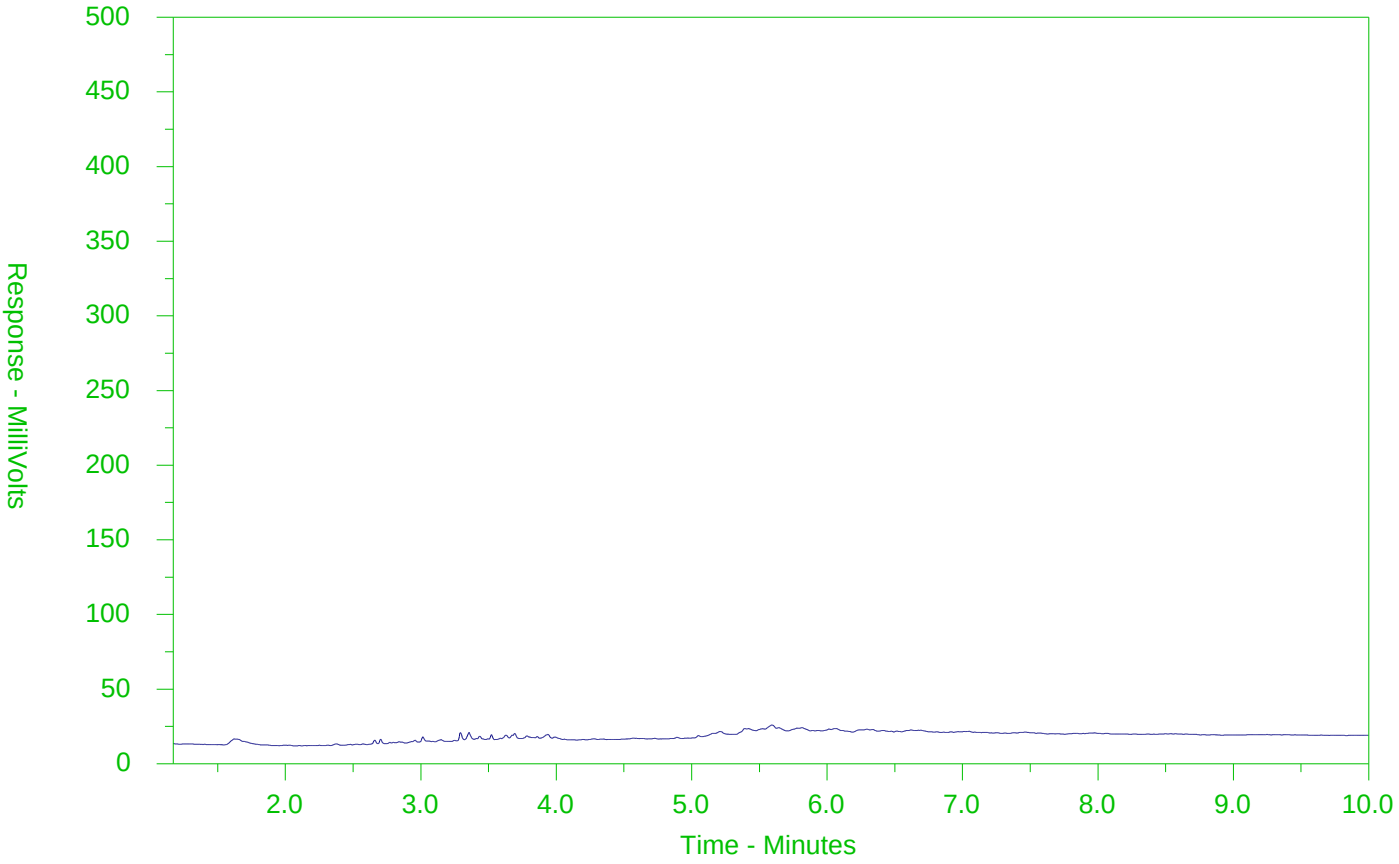
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1899793-2
Client Sample ID: TP2-1



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

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

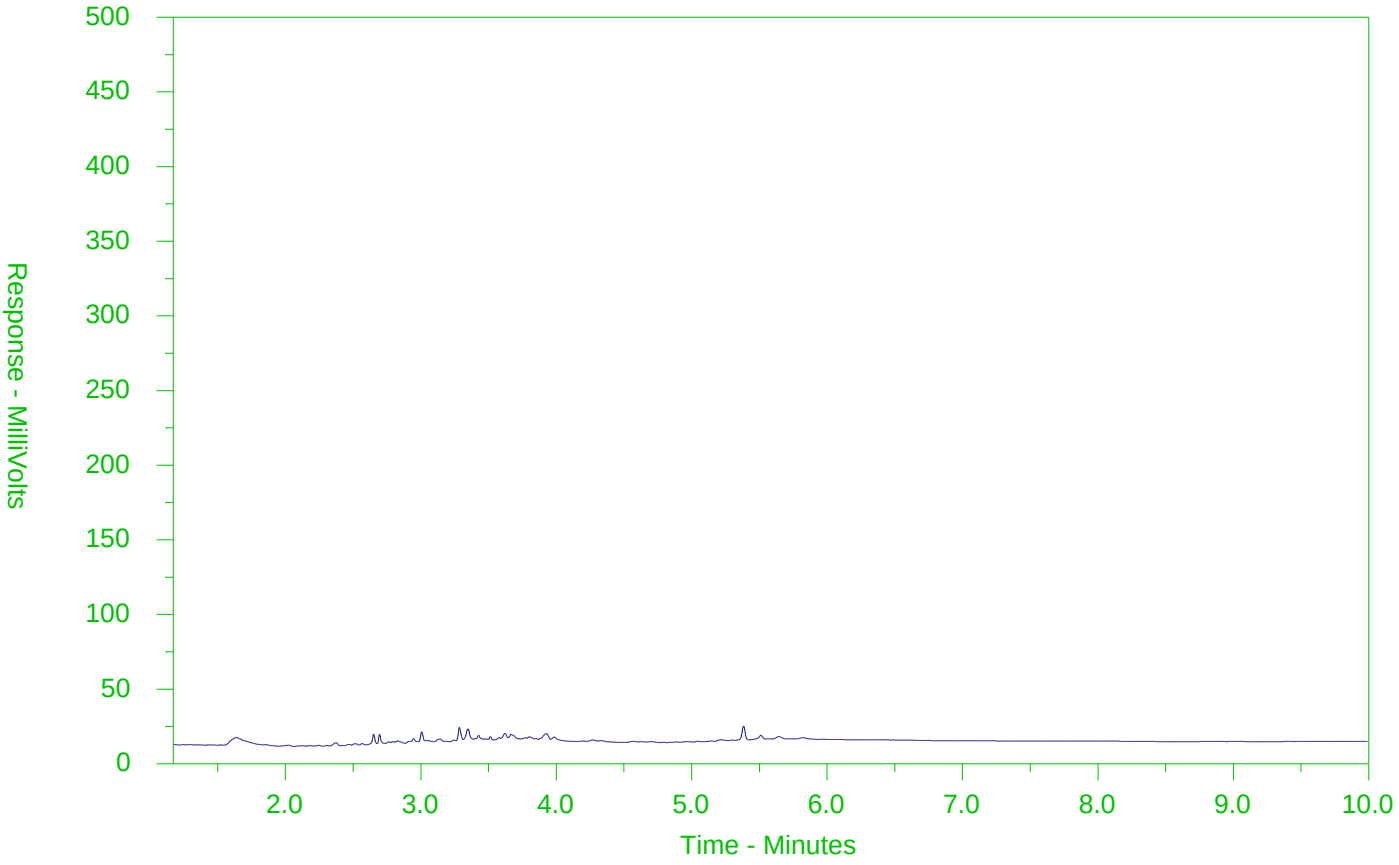
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1899793-3
Client Sample ID: TP3-1



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

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

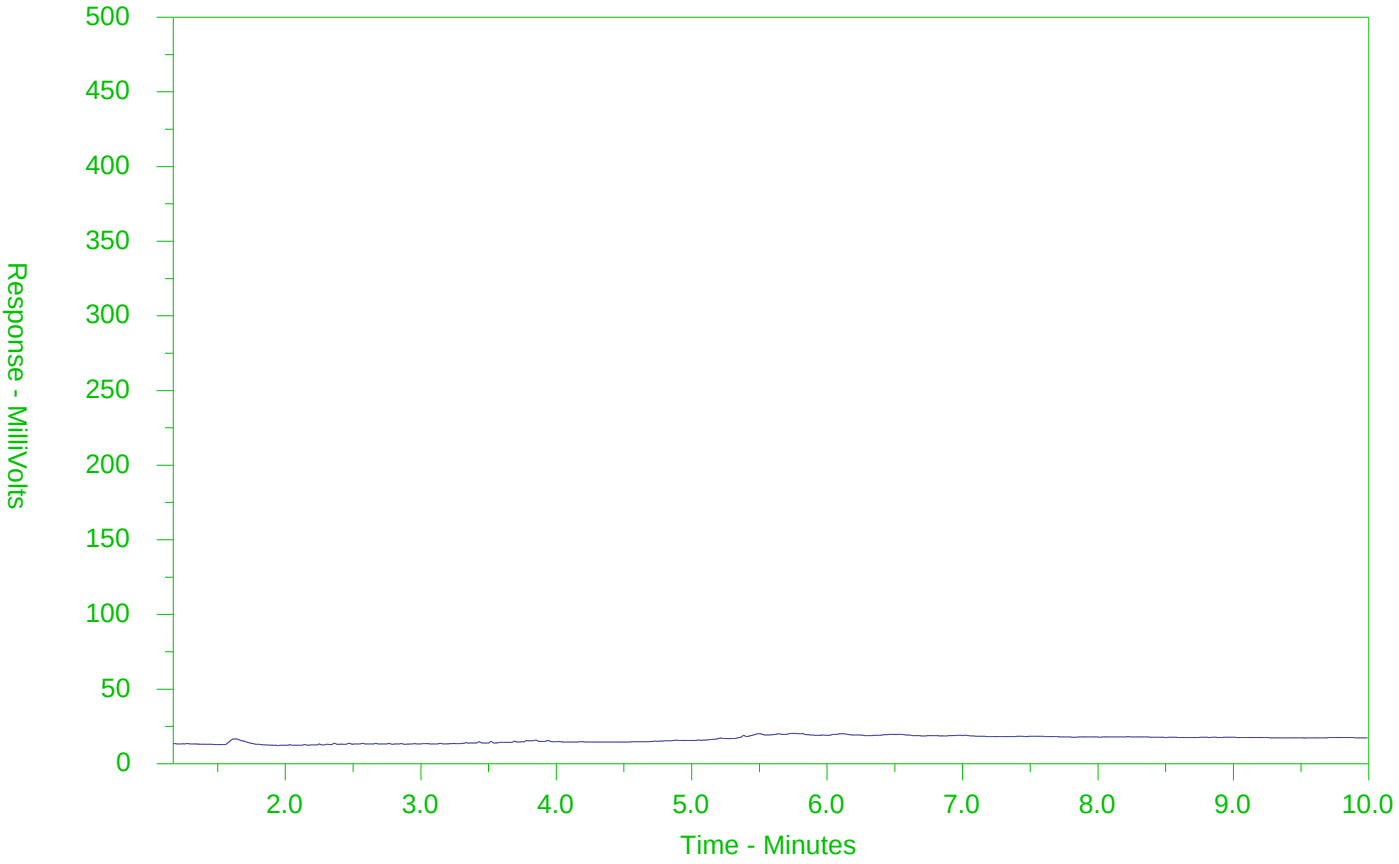
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1899793-4
Client Sample ID: TP6-1



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

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

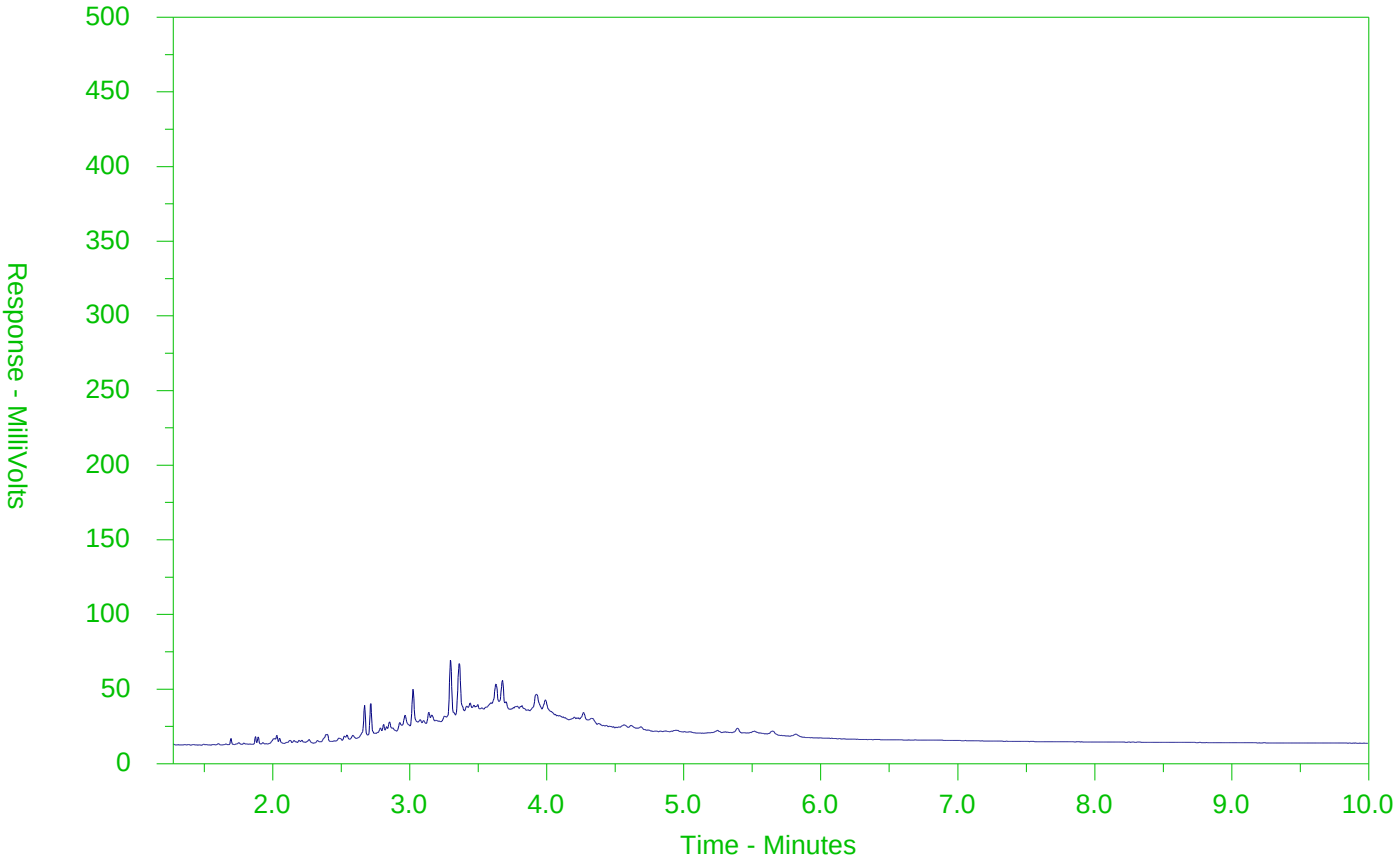
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1899793-5
Client Sample ID: TP8-1



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

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

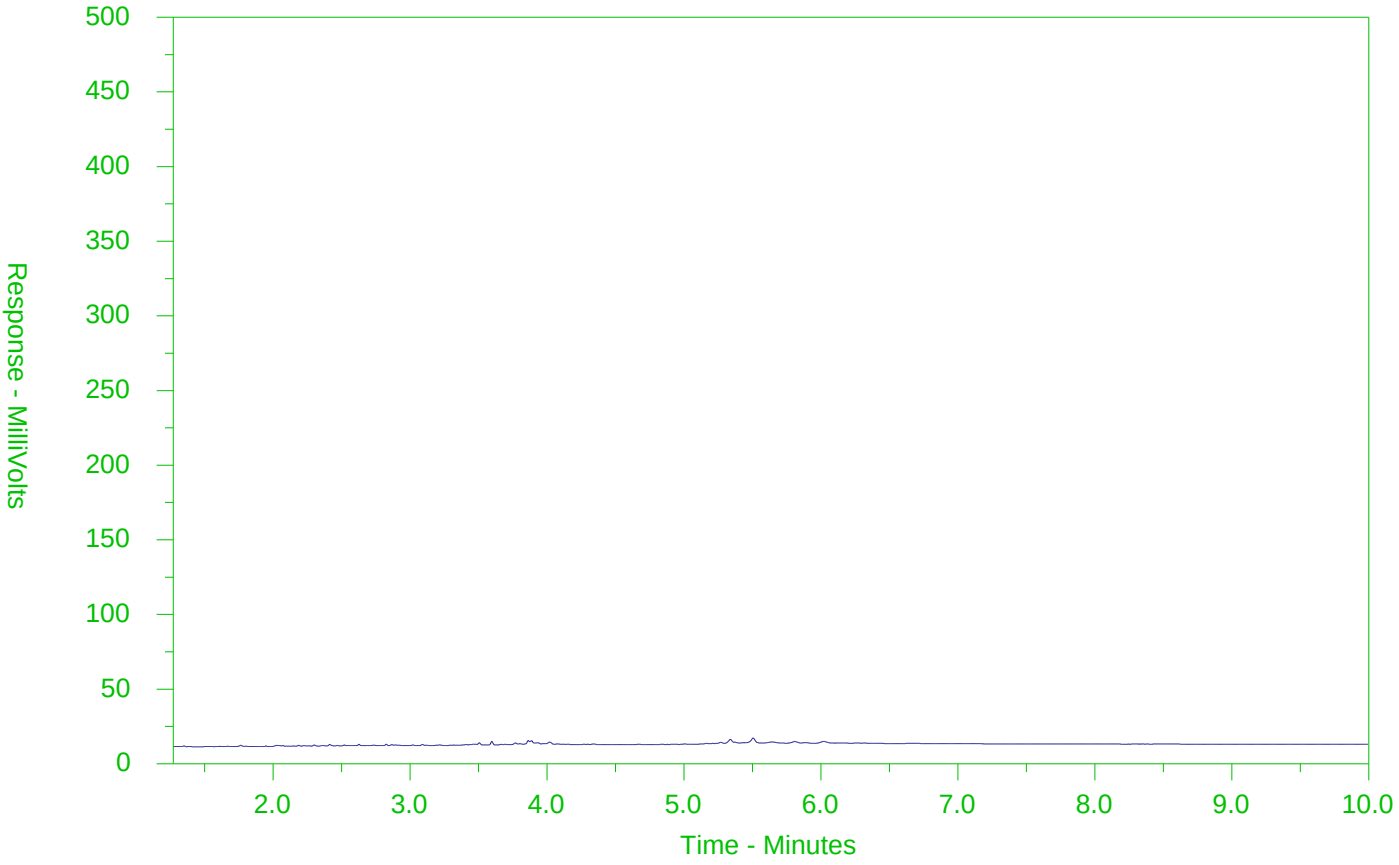
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1899793-6
Client Sample ID: TP9-1



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

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

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

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

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

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1899793-COFC

COC Number: 15 - 544064

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below — Confirm all E&P TATs with your AM - surcharges will apply
Company:	CVD	Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Peter Dao	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐ / 3 day [P3] ☐ / 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐ / Same Day, Weekend or Statutory holiday [E0] ☐
Phone:		☑ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	311 Victoria St. N	Email 1 or Fax	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Kitchener, ON	Email 2	
Postal Code:		Email 3	

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	Martin and Cork St - Soil	Major/Minor Code:	Routing Code:
PO / AFE:	E17383	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	Mar10B L1899798 af	ALS Contact: ML	Sampler: PD

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Metals	F2-F4	PAH	Number of Containers
1	TP1-1	10-03-17		Soil	✓	✓	✓	
2	TP2-1	↓		↓	✓	✓	✓	
3	TP3-1				✓	✓	✓	
4	TP6-1				✓	✓	✓	
5	TP8-1				✓	✓	✓	
6	TP9-1				✓	✓	✓	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	O. Reg 153/04 Table 2 R/P/I
Are samples for human drinking water use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			1.4		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: PD	Date: Mar 10/17	Time:	Received by:	Date:	Time:	Received by: af	Date: 10/3/17	Time: 15:55

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — OCTOBER 2015 FRONT

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

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

CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 07-JUN-17
Report Date: 12-JUN-17 09:52 (MT)
Version: FINAL

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1938025

Project P.O. #: E17383
Job Reference: MT. FOREST - MARTIN AND CORK -SOIL
C of C Numbers: 15-55968
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

MT. FOREST - MARTIN AND CORK -SOIL

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1938025-1 TP4-1						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	7.88		0.10	%	08-JUN-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	09-JUN-17	7.5
Arsenic (As)	6.2		1.0	ug/g	09-JUN-17	18
Barium (Ba)	23.5		1.0	ug/g	09-JUN-17	390
Beryllium (Be)	<0.50		0.50	ug/g	09-JUN-17	4
Boron (B)	7.2		5.0	ug/g	09-JUN-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	09-JUN-17	1.2
Chromium (Cr)	11.2		1.0	ug/g	09-JUN-17	160
Cobalt (Co)	3.9		1.0	ug/g	09-JUN-17	22
Copper (Cu)	11.8		1.0	ug/g	09-JUN-17	140
Lead (Pb)	8.9		1.0	ug/g	09-JUN-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	09-JUN-17	6.9
Nickel (Ni)	8.2		1.0	ug/g	09-JUN-17	100
Selenium (Se)	<1.0		1.0	ug/g	09-JUN-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	09-JUN-17	20
Thallium (Tl)	<0.50		0.50	ug/g	09-JUN-17	1
Uranium (U)	<1.0		1.0	ug/g	09-JUN-17	23
Vanadium (V)	19.7		1.0	ug/g	09-JUN-17	86
Zinc (Zn)	21.7		5.0	ug/g	09-JUN-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	08-JUN-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	08-JUN-17	0.15
Anthracene	<0.050		0.050	ug/g	08-JUN-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	08-JUN-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	08-JUN-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	08-JUN-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	08-JUN-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	08-JUN-17	0.78
Chrysene	<0.050		0.050	ug/g	08-JUN-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	08-JUN-17	0.1
Fluoranthene	<0.050		0.050	ug/g	08-JUN-17	0.69
Fluorene	<0.050		0.050	ug/g	08-JUN-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	08-JUN-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	08-JUN-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-17	0.99
Naphthalene	<0.050		0.050	ug/g	08-JUN-17	0.6
Phenanthrene	<0.050		0.050	ug/g	08-JUN-17	6.2
Pyrene	<0.050		0.050	ug/g	08-JUN-17	78
Surrogate: 2-Fluorobiphenyl	100.3		50-140	%	08-JUN-17	
Surrogate: p-Terphenyl d14	97.0		50-140	%	08-JUN-17	
L1938025-2 TP5-1						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L1938025-2 TP5-1									
Sampled By: P. DAO on 26-MAY-17									
Matrix: SOIL						#1			
Physical Tests									
% Moisture	9.97		0.10	%	08-JUN-17				
Metals									
Antimony (Sb)	1.1		1.0	ug/g	09-JUN-17	7.5			
Arsenic (As)	6.2		1.0	ug/g	09-JUN-17	18			
Barium (Ba)	38.7		1.0	ug/g	09-JUN-17	390			
Beryllium (Be)	<0.50		0.50	ug/g	09-JUN-17	4			
Boron (B)	8.1		5.0	ug/g	09-JUN-17	120			
Cadmium (Cd)	<0.50		0.50	ug/g	09-JUN-17	1.2			
Chromium (Cr)	15.6		1.0	ug/g	09-JUN-17	160			
Cobalt (Co)	5.0		1.0	ug/g	09-JUN-17	22			
Copper (Cu)	12.9		1.0	ug/g	09-JUN-17	140			
Lead (Pb)	9.2		1.0	ug/g	09-JUN-17	120			
Molybdenum (Mo)	<1.0		1.0	ug/g	09-JUN-17	6.9			
Nickel (Ni)	10.8		1.0	ug/g	09-JUN-17	100			
Selenium (Se)	<1.0		1.0	ug/g	09-JUN-17	2.4			
Silver (Ag)	<0.20		0.20	ug/g	09-JUN-17	20			
Thallium (Tl)	<0.50		0.50	ug/g	09-JUN-17	1			
Uranium (U)	<1.0		1.0	ug/g	09-JUN-17	23			
Vanadium (V)	26.8		1.0	ug/g	09-JUN-17	86			
Zinc (Zn)	28.7		5.0	ug/g	09-JUN-17	340			
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	08-JUN-17	7.9			
Acenaphthylene	<0.050		0.050	ug/g	08-JUN-17	0.15			
Anthracene	<0.050		0.050	ug/g	08-JUN-17	0.67			
Benzo(a)anthracene	<0.050		0.050	ug/g	08-JUN-17	0.5			
Benzo(a)pyrene	<0.050		0.050	ug/g	08-JUN-17	0.3			
Benzo(b)fluoranthene	0.057		0.050	ug/g	08-JUN-17	0.78			
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	08-JUN-17	6.6			
Benzo(k)fluoranthene	<0.050		0.050	ug/g	08-JUN-17	0.78			
Chrysene	<0.050		0.050	ug/g	08-JUN-17	7			
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	08-JUN-17	0.1			
Fluoranthene	<0.050		0.050	ug/g	08-JUN-17	0.69			
Fluorene	<0.050		0.050	ug/g	08-JUN-17	62			
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	08-JUN-17	0.38			
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	08-JUN-17	0.99			
1-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-17	0.99			
2-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-17	0.99			
Naphthalene	<0.050		0.050	ug/g	08-JUN-17	0.6			
Phenanthrene	<0.050		0.050	ug/g	08-JUN-17	6.2			
Pyrene	<0.050		0.050	ug/g	08-JUN-17	78			
Surrogate: 2-Fluorobiphenyl	102.8		50-140	%	08-JUN-17				
Surrogate: p-Terphenyl d14	100.9		50-140	%	08-JUN-17				
L1938025-3 TP7-1									
Sampled By: P. DAO on 26-MAY-17									
Matrix: SOIL						#1			

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1			
L1938025-3 TP7-1 Sampled By: P. DAO on 26-MAY-17 Matrix: SOIL									
Physical Tests									
% Moisture	23.3		0.10	%	08-JUN-17				
Metals									
Antimony (Sb)	1.9		1.0	ug/g	09-JUN-17	7.5			
Arsenic (As)	3.2		1.0	ug/g	09-JUN-17	18			
Barium (Ba)	67.3		1.0	ug/g	09-JUN-17	390			
Beryllium (Be)	<0.50		0.50	ug/g	09-JUN-17	4			
Boron (B)	<5.0		5.0	ug/g	09-JUN-17	120			
Cadmium (Cd)	<0.50		0.50	ug/g	09-JUN-17	1.2			
Chromium (Cr)	14.0		1.0	ug/g	09-JUN-17	160			
Cobalt (Co)	5.6		1.0	ug/g	09-JUN-17	22			
Copper (Cu)	6.4		1.0	ug/g	09-JUN-17	140			
Lead (Pb)	8.8		1.0	ug/g	09-JUN-17	120			
Molybdenum (Mo)	<1.0		1.0	ug/g	09-JUN-17	6.9			
Nickel (Ni)	7.8		1.0	ug/g	09-JUN-17	100			
Selenium (Se)	<1.0		1.0	ug/g	09-JUN-17	2.4			
Silver (Ag)	<0.20		0.20	ug/g	09-JUN-17	20			
Thallium (Tl)	<0.50		0.50	ug/g	09-JUN-17	1			
Uranium (U)	<1.0		1.0	ug/g	09-JUN-17	23			
Vanadium (V)	28.9		1.0	ug/g	09-JUN-17	86			
Zinc (Zn)	29.8		5.0	ug/g	09-JUN-17	340			
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	08-JUN-17	7.9			
Acenaphthylene	<0.050		0.050	ug/g	08-JUN-17	0.15			
Anthracene	<0.050		0.050	ug/g	08-JUN-17	0.67			
Benzo(a)anthracene	<0.050		0.050	ug/g	08-JUN-17	0.5			
Benzo(a)pyrene	<0.050		0.050	ug/g	08-JUN-17	0.3			
Benzo(b)fluoranthene	<0.050		0.050	ug/g	08-JUN-17	0.78			
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	08-JUN-17	6.6			
Benzo(k)fluoranthene	<0.050		0.050	ug/g	08-JUN-17	0.78			
Chrysene	<0.050		0.050	ug/g	08-JUN-17	7			
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	08-JUN-17	0.1			
Fluoranthene	<0.050		0.050	ug/g	08-JUN-17	0.69			
Fluorene	<0.050		0.050	ug/g	08-JUN-17	62			
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	08-JUN-17	0.38			
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	08-JUN-17	0.99			
1-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-17	0.99			
2-Methylnaphthalene	<0.030		0.030	ug/g	08-JUN-17	0.99			
Naphthalene	<0.050		0.050	ug/g	08-JUN-17	0.6			
Phenanthrene	<0.050		0.050	ug/g	08-JUN-17	6.2			
Pyrene	<0.050		0.050	ug/g	08-JUN-17	78			
Surrogate: 2-Fluorobiphenyl	102.3		50-140	%	08-JUN-17				
Surrogate: p-Terphenyl d14	100.0		50-140	%	08-JUN-17				

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

This method uses a heated strong acid digestion with HNO3 and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

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

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

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

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

Chain of Custody numbers:

15-55968

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

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

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

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3743910								
WG2544735-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			107.7		%		70-130	09-JUN-17
Arsenic (As)			118.9		%		70-130	09-JUN-17
Barium (Ba)			112.9		%		70-130	09-JUN-17
Beryllium (Be)			95.1		%		70-130	09-JUN-17
Cadmium (Cd)			107.5		%		70-130	09-JUN-17
Chromium (Cr)			113.8		%		70-130	09-JUN-17
Cobalt (Co)			110.6		%		70-130	09-JUN-17
Copper (Cu)			108.5		%		70-130	09-JUN-17
Lead (Pb)			101.2		%		70-130	09-JUN-17
Molybdenum (Mo)			101.8		%		70-130	09-JUN-17
Nickel (Ni)			111.8		%		70-130	09-JUN-17
Selenium (Se)			97.9		%		70-130	09-JUN-17
Silver (Ag)			109.1		%		70-130	09-JUN-17
Thallium (Tl)			111.1		%		70-130	09-JUN-17
Uranium (U)			120.8		%		70-130	09-JUN-17
Vanadium (V)			116.3		%		70-130	09-JUN-17
Zinc (Zn)			104.2		%		70-130	09-JUN-17
WG2544735-6 DUP		**WG2544735-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	09-JUN-17
Arsenic (As)		1.01	0.96		ug/g	4.7	30	09-JUN-17
Barium (Ba)		7.51	6.61		ug/g	13	40	09-JUN-17
Beryllium (Be)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	09-JUN-17
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	09-JUN-17
Cadmium (Cd)		0.021	0.021		ug/g	0.1	30	09-JUN-17
Chromium (Cr)		5.42	4.70		ug/g	14	30	09-JUN-17
Cobalt (Co)		1.68	1.41		ug/g	18	30	09-JUN-17
Copper (Cu)		2.63	2.29		ug/g	14	30	09-JUN-17
Lead (Pb)		1.96	1.61		ug/g	20	40	09-JUN-17
Molybdenum (Mo)		0.12	0.10		ug/g	14	40	09-JUN-17
Nickel (Ni)		3.30	2.79		ug/g	17	30	09-JUN-17
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	09-JUN-17
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	09-JUN-17
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	09-JUN-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3743910								
WG2544735-6 DUP		**WG2544735-5**						
Uranium (U)		0.298	0.229		ug/g	26	30	09-JUN-17
Vanadium (V)		16.5	13.8		ug/g	18	30	09-JUN-17
Zinc (Zn)		9.1	7.9		ug/g	14	30	09-JUN-17
WG2544735-4 LCS								
Antimony (Sb)			94.3		%		80-120	09-JUN-17
Arsenic (As)			93.7		%		80-120	09-JUN-17
Barium (Ba)			99.4		%		80-120	09-JUN-17
Beryllium (Be)			84.3		%		80-120	09-JUN-17
Boron (B)			81.1		%		80-120	09-JUN-17
Cadmium (Cd)			91.4		%		80-120	09-JUN-17
Chromium (Cr)			92.5		%		80-120	09-JUN-17
Cobalt (Co)			92.3		%		80-120	09-JUN-17
Copper (Cu)			90.9		%		80-120	09-JUN-17
Lead (Pb)			92.8		%		80-120	09-JUN-17
Molybdenum (Mo)			93.3		%		80-120	09-JUN-17
Nickel (Ni)			92.2		%		80-120	09-JUN-17
Selenium (Se)			93.4		%		80-120	09-JUN-17
Silver (Ag)			98.1		%		80-120	09-JUN-17
Thallium (Tl)			91.8		%		80-120	09-JUN-17
Uranium (U)			93.3		%		80-120	09-JUN-17
Vanadium (V)			95.8		%		80-120	09-JUN-17
Zinc (Zn)			85.4		%		80-120	09-JUN-17
WG2544735-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	09-JUN-17
Arsenic (As)			<0.10		mg/kg		0.1	09-JUN-17
Barium (Ba)			<0.50		mg/kg		0.5	09-JUN-17
Beryllium (Be)			<0.10		mg/kg		0.1	09-JUN-17
Boron (B)			<5.0		mg/kg		5	09-JUN-17
Cadmium (Cd)			<0.020		mg/kg		0.02	09-JUN-17
Chromium (Cr)			<0.50		mg/kg		0.5	09-JUN-17
Cobalt (Co)			<0.10		mg/kg		0.1	09-JUN-17
Copper (Cu)			<0.50		mg/kg		0.5	09-JUN-17
Lead (Pb)			<0.50		mg/kg		0.5	09-JUN-17
Molybdenum (Mo)			<0.10		mg/kg		0.1	09-JUN-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3743910								
WG2544735-1 MB								
Nickel (Ni)			<0.50		mg/kg		0.5	09-JUN-17
Selenium (Se)			<0.20		mg/kg		0.2	09-JUN-17
Silver (Ag)			<0.10		mg/kg		0.1	09-JUN-17
Thallium (Tl)			<0.050		mg/kg		0.05	09-JUN-17
Uranium (U)			<0.050		mg/kg		0.05	09-JUN-17
Vanadium (V)			<0.20		mg/kg		0.2	09-JUN-17
Zinc (Zn)			<2.0		mg/kg		2	09-JUN-17
MOISTURE-WT	**Soil**							
Batch R3742496								
WG2543533-3 DUP		**L1936623-2**						
% Moisture		15.1	15.1		%	0.2	20	08-JUN-17
WG2543533-2 LCS								
% Moisture			100.1		%		90-110	08-JUN-17
WG2543533-1 MB								
% Moisture			<0.10		%		0.1	08-JUN-17
PAH-511-WT	**Soil**							
Batch R3742890								
WG2543496-4 DUP		**WG2543496-3**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	08-JUN-17
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	08-JUN-17
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Naphthalene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17

Quality Control Report

Workorder: L1938025 Report Date: 12-JUN-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3742890								
WG2543496-4 DUP		**WG2543496-3**						
Phenanthrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-JUN-17
WG2543496-2 LCS								
1-Methylnaphthalene			90.1		%		50-140	08-JUN-17
2-Methylnaphthalene			88.9		%		50-140	08-JUN-17
Acenaphthene			90.2		%		50-140	08-JUN-17
Acenaphthylene			87.2		%		50-140	08-JUN-17
Anthracene			89.9		%		50-140	08-JUN-17
Benzo(a)anthracene			89.7		%		50-140	08-JUN-17
Benzo(a)pyrene			89.4		%		50-140	08-JUN-17
Benzo(b)fluoranthene			76.0		%		50-140	08-JUN-17
Benzo(g,h,i)perylene			91.3		%		50-140	08-JUN-17
Benzo(k)fluoranthene			101.6		%		50-140	08-JUN-17
Chrysene			98.7		%		50-140	08-JUN-17
Dibenzo(ah)anthracene			94.2		%		50-140	08-JUN-17
Fluoranthene			86.4		%		50-140	08-JUN-17
Fluorene			87.4		%		50-140	08-JUN-17
Indeno(1,2,3-cd)pyrene			91.4		%		50-140	08-JUN-17
Naphthalene			90.9		%		50-140	08-JUN-17
Phenanthrene			89.9		%		50-140	08-JUN-17
Pyrene			88.7		%		50-140	08-JUN-17
WG2543496-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	08-JUN-17
2-Methylnaphthalene			<0.030		ug/g		0.03	08-JUN-17
Acenaphthene			<0.050		ug/g		0.05	08-JUN-17
Acenaphthylene			<0.050		ug/g		0.05	08-JUN-17
Anthracene			<0.050		ug/g		0.05	08-JUN-17
Benzo(a)anthracene			<0.050		ug/g		0.05	08-JUN-17
Benzo(a)pyrene			<0.050		ug/g		0.05	08-JUN-17
Benzo(b)fluoranthene			<0.050		ug/g		0.05	08-JUN-17
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	08-JUN-17
Benzo(k)fluoranthene			<0.050		ug/g		0.05	08-JUN-17
Chrysene			<0.050		ug/g		0.05	08-JUN-17
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	08-JUN-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3742890								
WG2543496-1 MB								
Fluoranthene			<0.050		ug/g		0.05	08-JUN-17
Fluorene			<0.050		ug/g		0.05	08-JUN-17
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	08-JUN-17
Naphthalene			<0.050		ug/g		0.05	08-JUN-17
Phenanthrene			<0.050		ug/g		0.05	08-JUN-17
Pyrene			<0.050		ug/g		0.05	08-JUN-17
Surrogate: 2-Fluorobiphenyl			101.2		%		50-140	08-JUN-17
Surrogate: p-Terphenyl d14			94.7		%		50-140	08-JUN-17
WG2543496-5 MS		**WG2543496-3**						
1-Methylnaphthalene			88.6		%		50-140	08-JUN-17
2-Methylnaphthalene			89.0		%		50-140	08-JUN-17
Acenaphthene			91.1		%		50-140	08-JUN-17
Acenaphthylene			88.3		%		50-140	08-JUN-17
Anthracene			90.3		%		50-140	08-JUN-17
Benzo(a)anthracene			90.7		%		50-140	08-JUN-17
Benzo(a)pyrene			90.4		%		50-140	08-JUN-17
Benzo(b)fluoranthene			76.8		%		50-140	08-JUN-17
Benzo(g,h,i)perylene			86.1		%		50-140	08-JUN-17
Benzo(k)fluoranthene			104.6		%		50-140	08-JUN-17
Chrysene			98.7		%		50-140	08-JUN-17
Dibenzo(ah)anthracene			91.5		%		50-140	08-JUN-17
Fluoranthene			87.6		%		50-140	08-JUN-17
Fluorene			88.6		%		50-140	08-JUN-17
Indeno(1,2,3-cd)pyrene			90.1		%		50-140	08-JUN-17
Naphthalene			91.7		%		50-140	08-JUN-17
Phenanthrene			91.8		%		50-140	08-JUN-17
Pyrene			90.0		%		50-140	08-JUN-17

Quality Control Report

Workorder: L1938025 Report Date: 12-JUN-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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.

CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 26-APR-17
Report Date: 03-MAY-17 13:17 (MT)
Version: FINAL

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1917585

Project P.O. #: E17383
Job Reference: MT. FOREST- MARTIN &CORK ST.-SOIL
C of C Numbers: 14-457175
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L1917585-1	MW1-1									
Sampled By:	P. DAO on 24-APR-17									
Matrix:	SOIL						#1			
Physical Tests										
	% Moisture	26.9		0.10	%	27-APR-17				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	01-MAY-17	7.5			
	Arsenic (As)	5.5		1.0	ug/g	01-MAY-17	18			
	Barium (Ba)	79.7		1.0	ug/g	01-MAY-17	390			
	Beryllium (Be)	0.62		0.50	ug/g	01-MAY-17	4			
	Boron (B)	9.4		5.0	ug/g	01-MAY-17	120			
	Cadmium (Cd)	<0.50		0.50	ug/g	01-MAY-17	1.2			
	Chromium (Cr)	19.1		1.0	ug/g	01-MAY-17	160			
	Cobalt (Co)	6.5		1.0	ug/g	01-MAY-17	22			
	Copper (Cu)	17.1		1.0	ug/g	01-MAY-17	140			
	Lead (Pb)	8.8		1.0	ug/g	01-MAY-17	120			
	Molybdenum (Mo)	<1.0		1.0	ug/g	01-MAY-17	6.9			
	Nickel (Ni)	15.4		1.0	ug/g	01-MAY-17	100			
	Selenium (Se)	<1.0		1.0	ug/g	01-MAY-17	2.4			
	Silver (Ag)	<0.20		0.20	ug/g	01-MAY-17	20			
	Thallium (Tl)	<0.50		0.50	ug/g	01-MAY-17	1			
	Uranium (U)	<1.0		1.0	ug/g	01-MAY-17	23			
	Vanadium (V)	31.8		1.0	ug/g	01-MAY-17	86			
	Zinc (Zn)	39.0		5.0	ug/g	01-MAY-17	340			
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	<0.050		0.050	ug/g	01-MAY-17	7.9			
	Acenaphthylene	<0.050		0.050	ug/g	01-MAY-17	0.15			
	Anthracene	<0.050		0.050	ug/g	01-MAY-17	0.67			
	Benzo(a)anthracene	<0.050		0.050	ug/g	01-MAY-17	0.5			
	Benzo(a)pyrene	<0.050		0.050	ug/g	01-MAY-17	0.3			
	Benzo(b)fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.78			
	Benzo(g,h,i)perylene	<0.050		0.050	ug/g	01-MAY-17	6.6			
	Benzo(k)fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.78			
	Chrysene	<0.050		0.050	ug/g	01-MAY-17	7			
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	01-MAY-17	0.1			
	Fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.69			
	Fluorene	<0.050		0.050	ug/g	01-MAY-17	62			
	Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	01-MAY-17	0.38			
	1+2-Methylnaphthalenes	<0.042		0.042	ug/g	01-MAY-17	0.99			
	1-Methylnaphthalene	<0.030		0.030	ug/g	01-MAY-17	0.99			
	2-Methylnaphthalene	<0.030		0.030	ug/g	01-MAY-17	0.99			
	Naphthalene	<0.050		0.050	ug/g	01-MAY-17	0.6			
	Phenanthrene	<0.050		0.050	ug/g	01-MAY-17	6.2			
	Pyrene	<0.050		0.050	ug/g	01-MAY-17	78			
	Surrogate: 2-Fluorobiphenyl	98.6		50-140	%	01-MAY-17				
	Surrogate: p-Terphenyl d14	91.2		50-140	%	01-MAY-17				
L1917585-2	MW2-1									
Sampled By:	P. DAO on 24-APR-17									
Matrix:	SOIL						#1			

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L1917585-2	MW2-1									
Sampled By:	P. DAO on 24-APR-17									
Matrix:	SOIL						#1			
Physical Tests										
	% Moisture	17.5		0.10	%	27-APR-17				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	01-MAY-17	7.5			
	Arsenic (As)	5.8		1.0	ug/g	01-MAY-17	18			
	Barium (Ba)	70.4		1.0	ug/g	01-MAY-17	390			
	Beryllium (Be)	0.68		0.50	ug/g	01-MAY-17	4			
	Boron (B)	7.9		5.0	ug/g	01-MAY-17	120			
	Cadmium (Cd)	<0.50		0.50	ug/g	01-MAY-17	1.2			
	Chromium (Cr)	25.5		1.0	ug/g	01-MAY-17	160			
	Cobalt (Co)	7.5		1.0	ug/g	01-MAY-17	22			
	Copper (Cu)	12.5		1.0	ug/g	01-MAY-17	140			
	Lead (Pb)	17.2		1.0	ug/g	01-MAY-17	120			
	Molybdenum (Mo)	<1.0		1.0	ug/g	01-MAY-17	6.9			
	Nickel (Ni)	16.2		1.0	ug/g	01-MAY-17	100			
	Selenium (Se)	<1.0		1.0	ug/g	01-MAY-17	2.4			
	Silver (Ag)	<0.20		0.20	ug/g	01-MAY-17	20			
	Thallium (Tl)	<0.50		0.50	ug/g	01-MAY-17	1			
	Uranium (U)	<1.0		1.0	ug/g	01-MAY-17	23			
	Vanadium (V)	40.4		1.0	ug/g	01-MAY-17	86			
	Zinc (Zn)	46.4		5.0	ug/g	01-MAY-17	340			
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	<0.050		0.050	ug/g	01-MAY-17	7.9			
	Acenaphthylene	<0.050		0.050	ug/g	01-MAY-17	0.15			
	Anthracene	<0.050		0.050	ug/g	01-MAY-17	0.67			
	Benzo(a)anthracene	<0.050		0.050	ug/g	01-MAY-17	0.5			
	Benzo(a)pyrene	<0.050		0.050	ug/g	01-MAY-17	0.3			
	Benzo(b)fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.78			
	Benzo(g,h,i)perylene	<0.050		0.050	ug/g	01-MAY-17	6.6			
	Benzo(k)fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.78			
	Chrysene	<0.050		0.050	ug/g	01-MAY-17	7			
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	01-MAY-17	0.1			
	Fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.69			
	Fluorene	<0.050		0.050	ug/g	01-MAY-17	62			
	Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	01-MAY-17	0.38			
	1+2-Methylnaphthalenes	<0.042		0.042	ug/g	01-MAY-17	0.99			
	1-Methylnaphthalene	<0.030		0.030	ug/g	01-MAY-17	0.99			
	2-Methylnaphthalene	<0.030		0.030	ug/g	01-MAY-17	0.99			
	Naphthalene	<0.050		0.050	ug/g	01-MAY-17	0.6			
	Phenanthrene	<0.050		0.050	ug/g	01-MAY-17	6.2			
	Pyrene	<0.050		0.050	ug/g	01-MAY-17	78			
	Surrogate: 2-Fluorobiphenyl	99.2		50-140	%	01-MAY-17				
	Surrogate: p-Terphenyl d14	90.9		50-140	%	01-MAY-17				
L1917585-3	MW3-1									
Sampled By:	P. DAO on 24-APR-17									
Matrix:	SOIL						#1			

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1
L1917585-3 MW3-1						
Sampled By: P. DAO on 24-APR-17						
Matrix: SOIL						
Physical Tests						
% Moisture	14.5		0.10	%	27-APR-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-MAY-17	7.5
Arsenic (As)	4.7		1.0	ug/g	01-MAY-17	18
Barium (Ba)	57.1		1.0	ug/g	01-MAY-17	390
Beryllium (Be)	0.60		0.50	ug/g	01-MAY-17	4
Boron (B)	8.3		5.0	ug/g	01-MAY-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-MAY-17	1.2
Chromium (Cr)	23.0		1.0	ug/g	01-MAY-17	160
Cobalt (Co)	6.8		1.0	ug/g	01-MAY-17	22
Copper (Cu)	19.2		1.0	ug/g	01-MAY-17	140
Lead (Pb)	7.8		1.0	ug/g	01-MAY-17	120
Molybdenum (Mo)	1.1		1.0	ug/g	01-MAY-17	6.9
Nickel (Ni)	14.1		1.0	ug/g	01-MAY-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-MAY-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-MAY-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-MAY-17	1
Uranium (U)	<1.0		1.0	ug/g	01-MAY-17	23
Vanadium (V)	36.3		1.0	ug/g	01-MAY-17	86
Zinc (Zn)	48.8		5.0	ug/g	01-MAY-17	340
Volatile Organic Compounds						
Benzene	<0.0068		0.0068	ug/g	28-APR-17	0.21
Ethylbenzene	<0.018		0.018	ug/g	28-APR-17	1.1
Toluene	<0.080		0.080	ug/g	28-APR-17	2.3
o-Xylene	<0.020		0.020	ug/g	28-APR-17	
m+p-Xylenes	<0.030		0.030	ug/g	28-APR-17	
Xylenes (Total)	<0.050		0.050	ug/g	28-APR-17	3.1
Surrogate: 4-Bromofluorobenzene	89.6		50-140	%	28-APR-17	
Surrogate: 1,4-Difluorobenzene	95.5		50-140	%	28-APR-17	
Hydrocarbons						
F1 (C6-C10)	<5.0		5.0	ug/g	28-APR-17	55
F1-BTEX	<5.0		5.0	ug/g	01-MAY-17	55
F2 (C10-C16)	<10		10	ug/g	27-APR-17	98
F2-Naphth	<10		10	ug/g	01-MAY-17	
F3 (C16-C34)	<50		50	ug/g	27-APR-17	300
F3-PAH	<50		50	ug/g	01-MAY-17	
F4 (C34-C50)	<50		50	ug/g	27-APR-17	2800
Total Hydrocarbons (C6-C50)	<72		72	ug/g	01-MAY-17	
Chrom. to baseline at nC50	YES			No Unit	27-APR-17	
Surrogate: 2-Bromobenzotrifluoride	79.4		60-140	%	27-APR-17	
Surrogate: 3,4-Dichlorotoluene	89.3		60-140	%	28-APR-17	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	01-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	01-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	01-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	01-MAY-17	0.5

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L1917585-3 MW3-1 Sampled By: P. DAO on 24-APR-17 Matrix: SOIL						#1			
Polycyclic Aromatic Hydrocarbons									
Benzo(a)pyrene	<0.050		0.050	ug/g	01-MAY-17	0.3			
Benzo(b)fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.78			
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	01-MAY-17	6.6			
Benzo(k)fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.78			
Chrysene	<0.050		0.050	ug/g	01-MAY-17	7			
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	01-MAY-17	0.1			
Fluoranthene	<0.050		0.050	ug/g	01-MAY-17	0.69			
Fluorene	<0.050		0.050	ug/g	01-MAY-17	62			
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	01-MAY-17	0.38			
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	01-MAY-17	0.99			
1-Methylnaphthalene	<0.030		0.030	ug/g	01-MAY-17	0.99			
2-Methylnaphthalene	<0.030		0.030	ug/g	01-MAY-17	0.99			
Naphthalene	<0.050		0.050	ug/g	01-MAY-17	0.6			
Phenanthrene	<0.050		0.050	ug/g	01-MAY-17	6.2			
Pyrene	<0.050		0.050	ug/g	01-MAY-17	78			
Surrogate: 2-Fluorobiphenyl	101.1		50-140	%	01-MAY-17				
Surrogate: p-Terphenyl d14	96.2		50-140	%	01-MAY-17				
L1917585-4 MW4-1 Sampled By: P. DAO on 24-APR-17 Matrix: SOIL						#1			
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	01-MAY-17	7.5			
Arsenic (As)	3.6		1.0	ug/g	01-MAY-17	18			
Barium (Ba)	59.5		1.0	ug/g	01-MAY-17	390			
Beryllium (Be)	<0.50		0.50	ug/g	01-MAY-17	4			
Boron (B)	5.1		5.0	ug/g	01-MAY-17	120			
Cadmium (Cd)	<0.50		0.50	ug/g	01-MAY-17	1.2			
Chromium (Cr)	16.5		1.0	ug/g	01-MAY-17	160			
Cobalt (Co)	4.9		1.0	ug/g	01-MAY-17	22			
Copper (Cu)	7.8		1.0	ug/g	01-MAY-17	140			
Lead (Pb)	13.1		1.0	ug/g	01-MAY-17	120			
Molybdenum (Mo)	<1.0		1.0	ug/g	01-MAY-17	6.9			
Nickel (Ni)	9.5		1.0	ug/g	01-MAY-17	100			
Selenium (Se)	<1.0		1.0	ug/g	01-MAY-17	2.4			
Silver (Ag)	<0.20		0.20	ug/g	01-MAY-17	20			
Thallium (Tl)	<0.50		0.50	ug/g	01-MAY-17	1			
Uranium (U)	<1.0		1.0	ug/g	01-MAY-17	23			
Vanadium (V)	29.6		1.0	ug/g	01-MAY-17	86			
Zinc (Zn)	56.3		5.0	ug/g	01-MAY-17	340			
L1917585-5 MW5-1 Sampled By: P. DAO on 24-APR-17 Matrix: SOIL						#1			
Metals									

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1917585-5 MW5-1 Sampled By: P. DAO on 24-APR-17 Matrix: SOIL						#1
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-MAY-17	7.5
Arsenic (As)	2.6		1.0	ug/g	01-MAY-17	18
Barium (Ba)	33.6		1.0	ug/g	01-MAY-17	390
Beryllium (Be)	<0.50		0.50	ug/g	01-MAY-17	4
Boron (B)	8.1		5.0	ug/g	01-MAY-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-MAY-17	1.2
Chromium (Cr)	12.1		1.0	ug/g	01-MAY-17	160
Cobalt (Co)	3.9		1.0	ug/g	01-MAY-17	22
Copper (Cu)	10.1		1.0	ug/g	01-MAY-17	140
Lead (Pb)	5.6		1.0	ug/g	01-MAY-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	01-MAY-17	6.9
Nickel (Ni)	9.4		1.0	ug/g	01-MAY-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-MAY-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-MAY-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-MAY-17	1
Uranium (U)	<1.0		1.0	ug/g	01-MAY-17	23
Vanadium (V)	18.7		1.0	ug/g	01-MAY-17	86
Zinc (Zn)	29.1		5.0	ug/g	01-MAY-17	340
L1917585-6 MW501-1 Sampled By: P. DAO on 24-APR-17 Matrix: SOIL						#1
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-MAY-17	7.5
Arsenic (As)	2.9		1.0	ug/g	01-MAY-17	18
Barium (Ba)	35.6		1.0	ug/g	01-MAY-17	390
Beryllium (Be)	<0.50		0.50	ug/g	01-MAY-17	4
Boron (B)	9.2		5.0	ug/g	01-MAY-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-MAY-17	1.2
Chromium (Cr)	13.5		1.0	ug/g	01-MAY-17	160
Cobalt (Co)	4.0		1.0	ug/g	01-MAY-17	22
Copper (Cu)	10.2		1.0	ug/g	01-MAY-17	140
Lead (Pb)	5.9		1.0	ug/g	01-MAY-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	01-MAY-17	6.9
Nickel (Ni)	9.7		1.0	ug/g	01-MAY-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-MAY-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-MAY-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-MAY-17	1
Uranium (U)	<1.0		1.0	ug/g	01-MAY-17	23
Vanadium (V)	18.8		1.0	ug/g	01-MAY-17	86
Zinc (Zn)	56.7		5.0	ug/g	01-MAY-17	340

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

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

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

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

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

Hydrocarbon results are expressed on a dry weight basis.

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

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

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

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

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

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

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

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1

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

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

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

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

This method uses a heated strong acid digestion with HNO3 and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

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

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried

Reference Information

PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

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

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

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

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

Chain of Custody numbers:

14-457175

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

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

GLOSSARY OF REPORT TERMS

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.

Quality Control Report

Workorder: L1917585 Report Date: 03-MAY-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT	**Soil**							
Batch R3709540								
WG2517802-4 DUP		**WG2517802-3**						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	28-APR-17
Ethylbenzene		0.087	0.089		ug/g	2.9	40	28-APR-17
m+p-Xylenes		0.396	0.403		ug/g	1.8	40	28-APR-17
o-Xylene		0.039	0.040		ug/g	2.8	40	28-APR-17
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	28-APR-17
WG2517802-2 LCS								
Benzene			104.1		%		70-130	28-APR-17
Ethylbenzene			99.4		%		70-130	28-APR-17
m+p-Xylenes			99.7		%		70-130	28-APR-17
o-Xylene			99.98		%		70-130	28-APR-17
Toluene			102.3		%		70-130	28-APR-17
WG2517802-1 MB								
Benzene			<0.0068		ug/g		0.0068	28-APR-17
Ethylbenzene			<0.018		ug/g		0.018	28-APR-17
m+p-Xylenes			<0.030		ug/g		0.03	28-APR-17
o-Xylene			<0.020		ug/g		0.02	28-APR-17
Toluene			<0.080		ug/g		0.08	28-APR-17
Surrogate: 1,4-Difluorobenzene			96.0		%		50-140	28-APR-17
Surrogate: 4-Bromofluorobenzene			91.9		%		50-140	28-APR-17
WG2517802-5 MS		**WG2517802-3**						
Benzene			104.8		%		60-140	28-APR-17
Ethylbenzene			107.0		%		60-140	28-APR-17
m+p-Xylenes			112.6		%		60-140	28-APR-17
o-Xylene			103.7		%		60-140	28-APR-17
Toluene			105.9		%		60-140	28-APR-17
F1-HS-511-WT	**Soil**							
Batch R3709540								
WG2517802-4 DUP		**WG2517802-3**						
F1 (C6-C10)		8.0	8.4	RPD-NA	ug/g	N/A	30	28-APR-17
WG2517802-2 LCS								
F1 (C6-C10)			88.1		%		80-120	28-APR-17
WG2517802-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	28-APR-17
Surrogate: 3,4-Dichlorotoluene			101.0		%		60-140	28-APR-17
WG2517802-7 MS		**WG2517802-6**						

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R3709540								
WG2517802-7 MS		**WG2517802-6**						
F1 (C6-C10)			N/A	MS-B	%		-	28-APR-17
F2-F4-511-WT	**Soil**							
Batch R3709635								
WG2517594-3 CRM		**ALS PHC2 IRM**						
F2 (C10-C16)			92.0		%		70-130	27-APR-17
F3 (C16-C34)			98.1		%		70-130	27-APR-17
F4 (C34-C50)			103.1		%		70-130	27-APR-17
WG2517594-5 DUP		**WG2517594-4**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	27-APR-17
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	27-APR-17
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	27-APR-17
WG2517594-2 LCS								
F2 (C10-C16)			88.5		%		80-120	27-APR-17
F3 (C16-C34)			91.2		%		80-120	27-APR-17
F4 (C34-C50)			85.9		%		80-120	27-APR-17
WG2517594-1 MB								
F2 (C10-C16)			<10		ug/g		10	27-APR-17
F3 (C16-C34)			<50		ug/g		50	27-APR-17
F4 (C34-C50)			<50		ug/g		50	27-APR-17
Surrogate: 2-Bromobenzotrifluoride			76.6		%		60-140	27-APR-17
MET-200.2-CCMS-WT	**Soil**							
Batch R3711546								
WG2519658-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			105.2		%		70-130	01-MAY-17
Arsenic (As)			104.9		%		70-130	01-MAY-17
Barium (Ba)			105.2		%		70-130	01-MAY-17
Beryllium (Be)			89.7		%		70-130	01-MAY-17
Cadmium (Cd)			94.1		%		70-130	01-MAY-17
Chromium (Cr)			102.5		%		70-130	01-MAY-17
Cobalt (Co)			99.1		%		70-130	01-MAY-17
Copper (Cu)			91.9		%		70-130	01-MAY-17
Lead (Pb)			93.5		%		70-130	01-MAY-17
Molybdenum (Mo)			89.2		%		70-130	01-MAY-17
Nickel (Ni)			98.8				70-130	

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3711546								
WG2519658-2 CRM		**WT-CANMET-TILL1**						
Nickel (Ni)			98.8		%		70-130	01-MAY-17
Selenium (Se)			84.8		%		70-130	01-MAY-17
Silver (Ag)			102.2		%		70-130	01-MAY-17
Thallium (Tl)			107.4		%		70-130	01-MAY-17
Uranium (U)			107.2		%		70-130	01-MAY-17
Vanadium (V)			107.6		%		70-130	01-MAY-17
Zinc (Zn)			95.1		%		70-130	01-MAY-17
WG2519658-6 DUP		**WG2519658-5**						
Antimony (Sb)		0.21	0.19		ug/g	7.9	30	01-MAY-17
Arsenic (As)		3.47	3.56		ug/g	2.6	30	01-MAY-17
Barium (Ba)		56.3	57.4		ug/g	1.8	40	01-MAY-17
Beryllium (Be)		0.41	0.43		ug/g	3.7	30	01-MAY-17
Boron (B)		8.2	8.1		ug/g	1.6	30	01-MAY-17
Cadmium (Cd)		0.235	0.237		ug/g	0.8	30	01-MAY-17
Chromium (Cr)		14.2	15.1		ug/g	5.6	30	01-MAY-17
Cobalt (Co)		5.30	5.40		ug/g	2.0	30	01-MAY-17
Copper (Cu)		13.7	13.8		ug/g	0.6	30	01-MAY-17
Lead (Pb)		16.1	16.2		ug/g	0.5	40	01-MAY-17
Molybdenum (Mo)		0.33	0.33		ug/g	0.3	40	01-MAY-17
Nickel (Ni)		11.3	10.9		ug/g	3.5	30	01-MAY-17
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	01-MAY-17
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	01-MAY-17
Thallium (Tl)		0.101	0.103		ug/g	1.3	30	01-MAY-17
Uranium (U)		0.473	0.472		ug/g	0.2	30	01-MAY-17
Vanadium (V)		25.7	26.8		ug/g	4.2	30	01-MAY-17
Zinc (Zn)		79.8	82.4		ug/g	3.2	30	01-MAY-17
WG2519658-4 LCS								
Antimony (Sb)			97.1		%		80-120	01-MAY-17
Arsenic (As)			99.6		%		80-120	01-MAY-17
Barium (Ba)			104.9		%		80-120	01-MAY-17
Beryllium (Be)			84.5		%		80-120	01-MAY-17
Boron (B)			95.1		%		80-120	01-MAY-17
Cadmium (Cd)			90.9		%		80-120	01-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3711546								
WG2519658-4 LCS								
Chromium (Cr)			94.4		%		80-120	01-MAY-17
Cobalt (Co)			93.6		%		80-120	01-MAY-17
Copper (Cu)			89.1		%		80-120	01-MAY-17
Lead (Pb)			86.4		%		80-120	01-MAY-17
Molybdenum (Mo)			88.4		%		80-120	01-MAY-17
Nickel (Ni)			92.1		%		80-120	01-MAY-17
Selenium (Se)			89.2		%		80-120	01-MAY-17
Silver (Ag)			95.7		%		80-120	01-MAY-17
Thallium (Tl)			89.3		%		80-120	01-MAY-17
Uranium (U)			93.3		%		80-120	01-MAY-17
Vanadium (V)			99.7		%		80-120	01-MAY-17
Zinc (Zn)			86.7		%		80-120	01-MAY-17
WG2519658-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	01-MAY-17
Arsenic (As)			<0.10		mg/kg		0.1	01-MAY-17
Barium (Ba)			<0.50		mg/kg		0.5	01-MAY-17
Beryllium (Be)			<0.10		mg/kg		0.1	01-MAY-17
Boron (B)			<5.0		mg/kg		5	01-MAY-17
Cadmium (Cd)			<0.020		mg/kg		0.02	01-MAY-17
Chromium (Cr)			<0.50		mg/kg		0.5	01-MAY-17
Cobalt (Co)			<0.10		mg/kg		0.1	01-MAY-17
Copper (Cu)			<0.50		mg/kg		0.5	01-MAY-17
Lead (Pb)			<0.50		mg/kg		0.5	01-MAY-17
Molybdenum (Mo)			<0.10		mg/kg		0.1	01-MAY-17
Nickel (Ni)			<0.50		mg/kg		0.5	01-MAY-17
Selenium (Se)			<0.20		mg/kg		0.2	01-MAY-17
Silver (Ag)			<0.10		mg/kg		0.1	01-MAY-17
Thallium (Tl)			<0.050		mg/kg		0.05	01-MAY-17
Uranium (U)			<0.050		mg/kg		0.05	01-MAY-17
Vanadium (V)			<0.20		mg/kg		0.2	01-MAY-17
Zinc (Zn)			<2.0		mg/kg		2	01-MAY-17
MOISTURE-WT	**Soil**							

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	**Soil**							
Batch R3709530								
WG2517775-3 DUP		**L1913863-29**						
% Moisture		11.7	11.9		%	2.3	20	27-APR-17
WG2517775-2 LCS								
% Moisture			100.2		%		90-110	27-APR-17
PAH-511-WT	**Soil**							
Batch R3710762								
WG2517591-4 DUP		**WG2517591-3**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	01-MAY-17
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	01-MAY-17
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Naphthalene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Phenanthrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	01-MAY-17
WG2517591-2 LCS								
1-Methylnaphthalene			86.1		%		50-140	01-MAY-17
2-Methylnaphthalene			84.7		%		50-140	01-MAY-17
Acenaphthene			85.3		%		50-140	01-MAY-17
Acenaphthylene			81.7		%		50-140	01-MAY-17
Anthracene			81.2		%		50-140	01-MAY-17
Benzo(a)anthracene			85.7		%		50-140	01-MAY-17
Benzo(a)pyrene			84.5		%		50-140	01-MAY-17
Benzo(b)fluoranthene			89.0		%		50-140	01-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3710762								
WG2517591-2 LCS								
Benzo(g,h,i)perylene			78.0		%		50-140	01-MAY-17
Benzo(k)fluoranthene			86.5		%		50-140	01-MAY-17
Chrysene			100.5		%		50-140	01-MAY-17
Dibenzo(ah)anthracene			78.7		%		50-140	01-MAY-17
Fluoranthene			77.4		%		50-140	01-MAY-17
Fluorene			82.5		%		50-140	01-MAY-17
Indeno(1,2,3-cd)pyrene			76.8		%		50-140	01-MAY-17
Naphthalene			87.9		%		50-140	01-MAY-17
Phenanthrene			85.2		%		50-140	01-MAY-17
Pyrene			80.1		%		50-140	01-MAY-17
WG2517591-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	01-MAY-17
2-Methylnaphthalene			<0.030		ug/g		0.03	01-MAY-17
Acenaphthene			<0.050		ug/g		0.05	01-MAY-17
Acenaphthylene			<0.050		ug/g		0.05	01-MAY-17
Anthracene			<0.050		ug/g		0.05	01-MAY-17
Benzo(a)anthracene			<0.050		ug/g		0.05	01-MAY-17
Benzo(a)pyrene			<0.050		ug/g		0.05	01-MAY-17
Benzo(b)fluoranthene			<0.050		ug/g		0.05	01-MAY-17
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	01-MAY-17
Benzo(k)fluoranthene			<0.050		ug/g		0.05	01-MAY-17
Chrysene			<0.050		ug/g		0.05	01-MAY-17
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	01-MAY-17
Fluoranthene			<0.050		ug/g		0.05	01-MAY-17
Fluorene			<0.050		ug/g		0.05	01-MAY-17
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	01-MAY-17
Naphthalene			<0.050		ug/g		0.05	01-MAY-17
Phenanthrene			<0.050		ug/g		0.05	01-MAY-17
Pyrene			<0.050		ug/g		0.05	01-MAY-17
Surrogate: 2-Fluorobiphenyl			99.0		%		50-140	01-MAY-17
Surrogate: p-Terphenyl d14			90.6		%		50-140	01-MAY-17
WG2517591-5 MS		**WG2517591-3**						
1-Methylnaphthalene			86.3		%		50-140	01-MAY-17
2-Methylnaphthalene			85.1		%		50-140	01-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3710762								
WG2517591-5 MS		**WG2517591-3**						
Acenaphthene			85.2		%		50-140	01-MAY-17
Acenaphthylene			80.1		%		50-140	01-MAY-17
Anthracene			78.7		%		50-140	01-MAY-17
Benzo(a)anthracene			85.3		%		50-140	01-MAY-17
Benzo(a)pyrene			83.4		%		50-140	01-MAY-17
Benzo(b)fluoranthene			82.8		%		50-140	01-MAY-17
Benzo(g,h,i)perylene			75.4		%		50-140	01-MAY-17
Benzo(k)fluoranthene			95.4		%		50-140	01-MAY-17
Chrysene			99.9		%		50-140	01-MAY-17
Dibenzo(ah)anthracene			76.2		%		50-140	01-MAY-17
Fluoranthene			78.0		%		50-140	01-MAY-17
Fluorene			82.5		%		50-140	01-MAY-17
Indeno(1,2,3-cd)pyrene			68.1		%		50-140	01-MAY-17
Naphthalene			87.7		%		50-140	01-MAY-17
Phenanthrene			85.1		%		50-140	01-MAY-17
Pyrene			80.0		%		50-140	01-MAY-17

Quality Control Report

Workorder: L1917585 Report Date: 03-MAY-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

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
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.

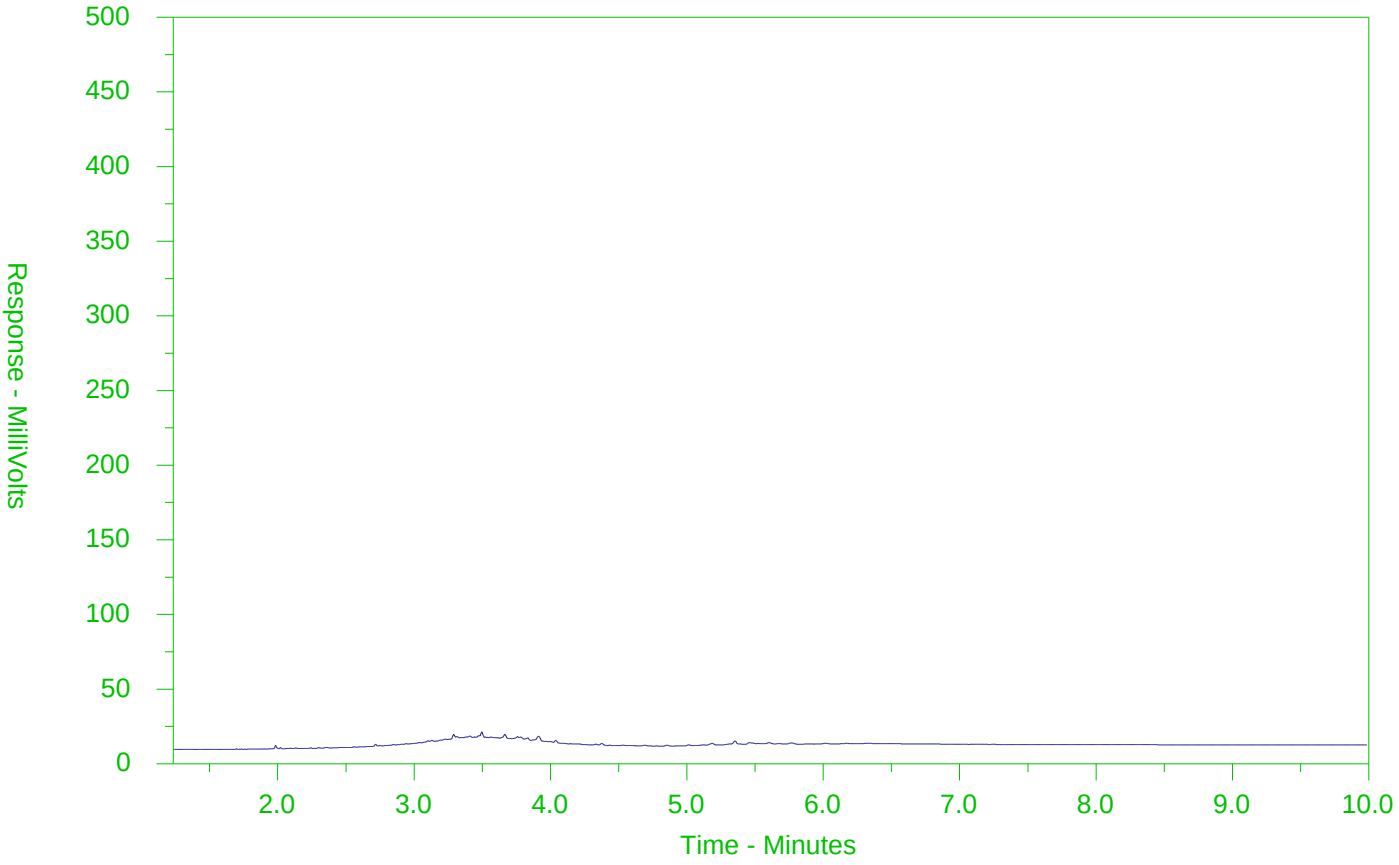
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where 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: L1917585-3
Client Sample ID: MW3-1



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

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

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

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

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

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1917585-COFC

COC Number: 14 - 457175

Page 1 of 1

Report To		Report Format / Distribution		Turnaround Time (TAT) is not available for all tests
Company:	CVD	Select Report Format:	☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3pm)
Contact:	Peter Dao	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐ Priority (2-4 business days if received by 3pm)
Address:	311 Victoria St. N, Kitchener, ON	☑ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 business days if received by 3pm)
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.
Phone:		Email 1 or Fax		Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To	☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report	☐ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Company:			Email 1 or Fax	
Contact:			Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	Mt. Forest - Martin & Cork St. - Soil	GL Account:	Routing Code:
PO / AFE:	E17383	Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L1917585 CA — ALS Contact: ML — Sampler: PD

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	PAH	Metals	BTEX + F1-F4	Number of Containers
1	MW1-1	24-04-17		Soil	✓	✓		
2	MW2-1	↓		↓	✓	✓		
3	MW3-1				✓	✓	✓	
4	MW4-1					✓		
5	MW5-1					✓		
6	MW501-1					✓		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No	O. Reg 153/04 Table 2 R/P/I
Are samples for human drinking water use? ☐ Yes ☑ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐			SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☐	No ☐		Custody seal intact	Yes ☐	No ☐	
Cooling Initiated	☐						

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			1.8		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: PD	Date: Apr 26/17	Time:	Received by:	Date:	Time:	Received by:	Date: 26/4/17	Time: 11:15

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY

NA-FM-0326a v08 Front03 October 2013

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

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

CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 01-MAY-17
Report Date: 06-MAY-17 06:45 (MT)
Version: FINAL

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1919362

Project P.O. #: E17383
Job Reference: MT.FOREST - MARTIN & CORK ST - WATER
C of C Numbers: 15-555840
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

MT.FOREST - MARTIN & CORK ST - WATER

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L1919362-1 MW1									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
Dissolved Metals									
Dissolved Metals Filtration Location	FIELD			No Unit	01-MAY-17				
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	01-MAY-17	6	6		
Arsenic (As)-Dissolved	0.24		0.10	ug/L	01-MAY-17	25	25		
Barium (Ba)-Dissolved	25.2		0.10	ug/L	01-MAY-17	1000	1000		
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	01-MAY-17	4	4		
Boron (B)-Dissolved	14		10	ug/L	01-MAY-17	5000	5000		
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	01-MAY-17	2.7	2.7		
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	50	50		
Cobalt (Co)-Dissolved	0.27		0.10	ug/L	01-MAY-17	3.8	3.8		
Copper (Cu)-Dissolved	0.67		0.20	ug/L	01-MAY-17	87	87		
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	10	10		
Molybdenum (Mo)-Dissolved	3.14		0.050	ug/L	01-MAY-17	70	70		
Nickel (Ni)-Dissolved	0.58		0.50	ug/L	01-MAY-17	100	100		
Selenium (Se)-Dissolved	0.310		0.050	ug/L	01-MAY-17	10	10		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	1.5	1.5		
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	01-MAY-17	2	2		
Uranium (U)-Dissolved	0.498		0.010	ug/L	01-MAY-17	20	20		
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	6.2	6.2		
Zinc (Zn)-Dissolved	2.3		1.0	ug/L	01-MAY-17	1100	1100		
Volatile Organic Compounds									
Benzene	<0.50		0.50	ug/L	02-MAY-17	5	5		
Ethylbenzene	<0.50		0.50	ug/L	02-MAY-17	2.4	2.4		
Toluene	<0.50		0.50	ug/L	02-MAY-17	24	24		
o-Xylene	<0.30		0.30	ug/L	02-MAY-17				
m+p-Xylenes	<0.40		0.40	ug/L	02-MAY-17				
Xylenes (Total)	<0.50		0.50	ug/L	02-MAY-17	300	300		
Surrogate: 4-Bromofluorobenzene	103.6		70-130	%	02-MAY-17				
Surrogate: 1,4-Difluorobenzene	102.1		70-130	%	02-MAY-17				
Hydrocarbons									
F1 (C6-C10)	<25		25	ug/L	02-MAY-17	750	750		
F1-BTEX	<25		25	ug/L	05-MAY-17	750	750		
F2 (C10-C16)	<100		100	ug/L	05-MAY-17	150	150		
F2-Naphth	<100		100	ug/L	05-MAY-17				
F3 (C16-C34)	350		250	ug/L	05-MAY-17	500	500		
F3-PAH	350		250	ug/L	05-MAY-17				
F4 (C34-C50)	<250		250	ug/L	05-MAY-17	500	500		
Total Hydrocarbons (C6-C50)	<370		370	ug/L	05-MAY-17				
Chrom. to baseline at nC50	YES			No Unit	05-MAY-17				
Surrogate: 2-Bromobenzotrifluoride	111.4		60-140	%	05-MAY-17				
Surrogate: 3,4-Dichlorotoluene	94.3		60-140	%	02-MAY-17				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.020		0.020	ug/L	05-MAY-17	4.1	4.1		
Acenaphthylene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Anthracene	<0.020		0.020	ug/L	05-MAY-17	2.4	2.4		
Benzo(a)anthracene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Benzo(a)pyrene	<0.010		0.010	ug/L	05-MAY-17	0.01	0.01		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T2-POTABLE-GROUNDWATER-ALL-TYPES-OF-PROPERTY-USE

#1: T2-Ground Water (Coarse Soil)-All Types of Property Use

#2: T2-Ground Water (Fine Soil)-All Types of Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L1919362-1 MW1									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
Polycyclic Aromatic Hydrocarbons									
Benzo(b)fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
Benzo(k)fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Chrysene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
Fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.41	0.41		
Fluorene	<0.020		0.020	ug/L	05-MAY-17	120	120		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	05-MAY-17	3.2	3.2		
1-Methylnaphthalene	<0.020		0.020	ug/L	05-MAY-17	3.2	3.2		
2-Methylnaphthalene	<0.020		0.020	ug/L	05-MAY-17	3.2	3.2		
Naphthalene	<0.050		0.050	ug/L	05-MAY-17	11	11		
Phenanthrene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Pyrene	<0.020		0.020	ug/L	05-MAY-17	4.1	4.1		
Surrogate: d10-Acenaphthene	94.9		60-140	%	05-MAY-17				
Surrogate: d12-Chrysene	93.7		60-140	%	05-MAY-17				
Surrogate: d8-Naphthalene	89.3		60-140	%	05-MAY-17				
Surrogate: d10-Phenanthrene	95.6		60-140	%	05-MAY-17				
L1919362-2 MW2									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
						#1	#2		
Dissolved Metals									
Dissolved Metals Filtration Location	FIELD			No Unit	01-MAY-17				
Antimony (Sb)-Dissolved	0.25		0.10	ug/L	01-MAY-17	6	6		
Arsenic (As)-Dissolved	0.28		0.10	ug/L	01-MAY-17	25	25		
Barium (Ba)-Dissolved	69.3		0.10	ug/L	01-MAY-17	1000	1000		
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	01-MAY-17	4	4		
Boron (B)-Dissolved	19		10	ug/L	01-MAY-17	5000	5000		
Cadmium (Cd)-Dissolved	0.018		0.010	ug/L	01-MAY-17	2.7	2.7		
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	50	50		
Cobalt (Co)-Dissolved	0.73		0.10	ug/L	01-MAY-17	3.8	3.8		
Copper (Cu)-Dissolved	0.69		0.20	ug/L	01-MAY-17	87	87		
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	10	10		
Molybdenum (Mo)-Dissolved	44.1		0.050	ug/L	01-MAY-17	70	70		
Nickel (Ni)-Dissolved	1.28		0.50	ug/L	01-MAY-17	100	100		
Selenium (Se)-Dissolved	0.177		0.050	ug/L	01-MAY-17	10	10		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	1.5	1.5		
Thallium (Tl)-Dissolved	0.013		0.010	ug/L	01-MAY-17	2	2		
Uranium (U)-Dissolved	0.881		0.010	ug/L	01-MAY-17	20	20		
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	6.2	6.2		
Zinc (Zn)-Dissolved	7.9		1.0	ug/L	01-MAY-17	1100	1100		
Volatile Organic Compounds									
Benzene	<0.50		0.50	ug/L	02-MAY-17	5	5		
Ethylbenzene	<0.50		0.50	ug/L	02-MAY-17	2.4	2.4		
Toluene	<0.50		0.50	ug/L	02-MAY-17	24	24		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T2-POTABLE-GROUNDWATER-ALL-TYPES-OF-PROPERTY-USE

#1: T2-Ground Water (Coarse Soil)-All Types of Property Use

#2: T2-Ground Water (Fine Soil)-All Types of Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L1919362-2 MW2									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
Volatile Organic Compounds									
o-Xylene	<0.30		0.30	ug/L	02-MAY-17				
m+p-Xylenes	<0.40		0.40	ug/L	02-MAY-17				
Xylenes (Total)	<0.50		0.50	ug/L	02-MAY-17	300	300		
Surrogate: 4-Bromofluorobenzene	103.7		70-130	%	02-MAY-17				
Surrogate: 1,4-Difluorobenzene	104.4		70-130	%	02-MAY-17				
Hydrocarbons									
F1 (C6-C10)	<25		25	ug/L	02-MAY-17	750	750		
F1-BTEX	<25		25	ug/L	05-MAY-17	750	750		
F2 (C10-C16)	<100		100	ug/L	05-MAY-17	150	150		
F2-Naphth	<100		100	ug/L	05-MAY-17				
F3 (C16-C34)	<250		250	ug/L	05-MAY-17	500	500		
F3-PAH	<250		250	ug/L	05-MAY-17				
F4 (C34-C50)	<250		250	ug/L	05-MAY-17	500	500		
Total Hydrocarbons (C6-C50)	<370		370	ug/L	05-MAY-17				
Chrom. to baseline at nC50	YES			No Unit	05-MAY-17				
Surrogate: 2-Bromobenzotrifluoride	107.4		60-140	%	05-MAY-17				
Surrogate: 3,4-Dichlorotoluene	92.7		60-140	%	02-MAY-17				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.020		0.020	ug/L	05-MAY-17	4.1	4.1		
Acenaphthylene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Anthracene	<0.020		0.020	ug/L	05-MAY-17	2.4	2.4		
Benzo(a)anthracene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Benzo(a)pyrene	<0.010		0.010	ug/L	05-MAY-17	0.01	0.01		
Benzo(b)fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
Benzo(k)fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Chrysene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
Fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.41	0.41		
Fluorene	<0.020		0.020	ug/L	05-MAY-17	120	120		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	05-MAY-17	3.2	3.2		
1-Methylnaphthalene	<0.020		0.020	ug/L	05-MAY-17	3.2	3.2		
2-Methylnaphthalene	0.021		0.020	ug/L	05-MAY-17	3.2	3.2		
Naphthalene	<0.050		0.050	ug/L	05-MAY-17	11	11		
Phenanthrene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Pyrene	<0.020		0.020	ug/L	05-MAY-17	4.1	4.1		
Surrogate: d10-Acenaphthene	93.5		60-140	%	05-MAY-17				
Surrogate: d12-Chrysene	93.8		60-140	%	05-MAY-17				
Surrogate: d8-Naphthalene	96.6		60-140	%	05-MAY-17				
Surrogate: d10-Phenanthrene	95.6		60-140	%	05-MAY-17				
L1919362-3 MW3									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER						#1	#2		
Dissolved Metals									

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

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T2-POTABLE-GROUNDWATER-ALL-TYPES-OF-PROPERTY-USE

#1: T2-Ground Water (Coarse Soil)-All Types of Property Use **#2: T2-Ground Water (Fine Soil)-All Types of Property Use**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L1919362-3 MW3									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
Dissolved Metals									
Dissolved Metals Filtration Location	FIELD			No Unit	01-MAY-17				
Antimony (Sb)-Dissolved	0.14		0.10	ug/L	01-MAY-17	6	6		
Arsenic (As)-Dissolved	0.43		0.10	ug/L	01-MAY-17	25	25		
Barium (Ba)-Dissolved	76.8		0.10	ug/L	01-MAY-17	1000	1000		
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	01-MAY-17	4	4		
Boron (B)-Dissolved	27		10	ug/L	01-MAY-17	5000	5000		
Cadmium (Cd)-Dissolved	0.021		0.010	ug/L	01-MAY-17	2.7	2.7		
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	50	50		
Cobalt (Co)-Dissolved	0.50		0.10	ug/L	01-MAY-17	3.8	3.8		
Copper (Cu)-Dissolved	2.57		0.20	ug/L	01-MAY-17	87	87		
Lead (Pb)-Dissolved	0.191		0.050	ug/L	01-MAY-17	10	10		
Molybdenum (Mo)-Dissolved	32.8		0.050	ug/L	01-MAY-17	70	70		
Nickel (Ni)-Dissolved	1.50		0.50	ug/L	01-MAY-17	100	100		
Selenium (Se)-Dissolved	0.124		0.050	ug/L	01-MAY-17	10	10		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	1.5	1.5		
Thallium (Tl)-Dissolved	0.014		0.010	ug/L	01-MAY-17	2	2		
Uranium (U)-Dissolved	1.95		0.010	ug/L	01-MAY-17	20	20		
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	6.2	6.2		
Zinc (Zn)-Dissolved	9.5		1.0	ug/L	01-MAY-17	1100	1100		
Volatile Organic Compounds									
Benzene	<0.50		0.50	ug/L	02-MAY-17	5	5		
Ethylbenzene	<0.50		0.50	ug/L	02-MAY-17	2.4	2.4		
Toluene	<0.50		0.50	ug/L	02-MAY-17	24	24		
o-Xylene	<0.30		0.30	ug/L	02-MAY-17				
m+p-Xylenes	<0.40		0.40	ug/L	02-MAY-17				
Xylenes (Total)	<0.50		0.50	ug/L	02-MAY-17	300	300		
Surrogate: 4-Bromofluorobenzene	102.3		70-130	%	02-MAY-17				
Surrogate: 1,4-Difluorobenzene	106.2		70-130	%	02-MAY-17				
Hydrocarbons									
F1 (C6-C10)	<25		25	ug/L	02-MAY-17	750	750		
F1-BTEX	<25		25	ug/L	05-MAY-17	750	750		
F2 (C10-C16)	<100		100	ug/L	05-MAY-17	150	150		
F2-Naphth	<100		100	ug/L	05-MAY-17				
F3 (C16-C34)	<250		250	ug/L	05-MAY-17	500	500		
F3-PAH	<250		250	ug/L	05-MAY-17				
F4 (C34-C50)	<250		250	ug/L	05-MAY-17	500	500		
Total Hydrocarbons (C6-C50)	<370		370	ug/L	05-MAY-17				
Chrom. to baseline at nC50	YES			No Unit	05-MAY-17				
Surrogate: 2-Bromobenzotrifluoride	110.4		60-140	%	05-MAY-17				
Surrogate: 3,4-Dichlorotoluene	94.2		60-140	%	02-MAY-17				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.020		0.020	ug/L	05-MAY-17	4.1	4.1		
Acenaphthylene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Anthracene	<0.020		0.020	ug/L	05-MAY-17	2.4	2.4		
Benzo(a)anthracene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Benzo(a)pyrene	<0.010		0.010	ug/L	05-MAY-17	0.01	0.01		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T2-POTABLE-GROUNDWATER-ALL-TYPES-OF-PROPERTY-USE

#1: T2-Ground Water (Coarse Soil)-All Types of Property Use

#2: T2-Ground Water (Fine Soil)-All Types of Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L1919362-3 MW3									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
Polycyclic Aromatic Hydrocarbons									
Benzo(b)fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
Benzo(k)fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Chrysene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
Fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.41	0.41		
Fluorene	<0.020		0.020	ug/L	05-MAY-17	120	120		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	05-MAY-17	3.2	3.2		
1-Methylnaphthalene	<0.020		0.020	ug/L	05-MAY-17	3.2	3.2		
2-Methylnaphthalene	<0.020		0.020	ug/L	05-MAY-17	3.2	3.2		
Naphthalene	<0.050		0.050	ug/L	05-MAY-17	11	11		
Phenanthrene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Pyrene	<0.020		0.020	ug/L	05-MAY-17	4.1	4.1		
Surrogate: d10-Acenaphthene	90.2		60-140	%	05-MAY-17				
Surrogate: d12-Chrysene	92.4		60-140	%	05-MAY-17				
Surrogate: d8-Naphthalene	91.4		60-140	%	05-MAY-17				
Surrogate: d10-Phenanthrene	94.8		60-140	%	05-MAY-17				
L1919362-4 MW5									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
						#1	#2		
Dissolved Metals									
Dissolved Metals Filtration Location	FIELD			No Unit	01-MAY-17				
Antimony (Sb)-Dissolved	<0.10		0.10	ug/L	01-MAY-17	6	6		
Arsenic (As)-Dissolved	0.25		0.10	ug/L	01-MAY-17	25	25		
Barium (Ba)-Dissolved	40.4		0.10	ug/L	01-MAY-17	1000	1000		
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	01-MAY-17	4	4		
Boron (B)-Dissolved	<10		10	ug/L	01-MAY-17	5000	5000		
Cadmium (Cd)-Dissolved	<0.010		0.010	ug/L	01-MAY-17	2.7	2.7		
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	50	50		
Cobalt (Co)-Dissolved	0.13		0.10	ug/L	01-MAY-17	3.8	3.8		
Copper (Cu)-Dissolved	<0.20		0.20	ug/L	01-MAY-17	87	87		
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	10	10		
Molybdenum (Mo)-Dissolved	1.40		0.050	ug/L	02-MAY-17	70	70		
Nickel (Ni)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	100	100		
Selenium (Se)-Dissolved	0.054		0.050	ug/L	01-MAY-17	10	10		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	1.5	1.5		
Thallium (Tl)-Dissolved	<0.010		0.010	ug/L	01-MAY-17	2	2		
Uranium (U)-Dissolved	0.549		0.010	ug/L	01-MAY-17	20	20		
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	6.2	6.2		
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	01-MAY-17	1100	1100		
Volatile Organic Compounds									
Benzene	<0.50		0.50	ug/L	02-MAY-17	5	5		
Ethylbenzene	<0.50		0.50	ug/L	02-MAY-17	2.4	2.4		
Toluene	<0.50		0.50	ug/L	02-MAY-17	24	24		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T2-POTABLE-GROUNDWATER-ALL-TYPES-OF-PROPERTY-USE

#1: T2-Ground Water (Coarse Soil)-All Types of Property Use

#2: T2-Ground Water (Fine Soil)-All Types of Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2		
L1919362-4 MW5									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
Volatile Organic Compounds									
o-Xylene	<0.30		0.30	ug/L	02-MAY-17				
m+p-Xylenes	<0.40		0.40	ug/L	02-MAY-17				
Xylenes (Total)	<0.50		0.50	ug/L	02-MAY-17	300	300		
Surrogate: 4-Bromofluorobenzene	104.9		70-130	%	02-MAY-17				
Surrogate: 1,4-Difluorobenzene	104.5		70-130	%	02-MAY-17				
Hydrocarbons									
F1 (C6-C10)	<25		25	ug/L	02-MAY-17	750	750		
F1-BTEX	<25		25	ug/L	05-MAY-17	750	750		
F2 (C10-C16)	<100		100	ug/L	05-MAY-17	150	150		
F2-Naphth	<100		100	ug/L	05-MAY-17				
F3 (C16-C34)	<250		250	ug/L	05-MAY-17	500	500		
F3-PAH	<250		250	ug/L	05-MAY-17				
F4 (C34-C50)	<250		250	ug/L	05-MAY-17	500	500		
Total Hydrocarbons (C6-C50)	<370		370	ug/L	05-MAY-17				
Chrom. to baseline at nC50	YES			No Unit	05-MAY-17				
Surrogate: 2-Bromobenzotrifluoride	107.8		60-140	%	05-MAY-17				
Surrogate: 3,4-Dichlorotoluene	102.3		60-140	%	02-MAY-17				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.020		0.020	ug/L	05-MAY-17	4.1	4.1		
Acenaphthylene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Anthracene	<0.020		0.020	ug/L	05-MAY-17	2.4	2.4		
Benzo(a)anthracene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Benzo(a)pyrene	<0.010		0.010	ug/L	05-MAY-17	0.01	0.01		
Benzo(b)fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
Benzo(k)fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Chrysene	<0.020		0.020	ug/L	05-MAY-17	0.1	0.1		
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
Fluoranthene	<0.020		0.020	ug/L	05-MAY-17	0.41	0.41		
Fluorene	<0.020		0.020	ug/L	05-MAY-17	120	120		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	05-MAY-17	0.2	0.2		
1+2-Methylnaphthalenes	<0.028		0.028	ug/L	05-MAY-17	3.2	3.2		
1-Methylnaphthalene	<0.020		0.020	ug/L	05-MAY-17	3.2	3.2		
2-Methylnaphthalene	<0.020		0.020	ug/L	05-MAY-17	3.2	3.2		
Naphthalene	<0.050		0.050	ug/L	05-MAY-17	11	11		
Phenanthrene	<0.020		0.020	ug/L	05-MAY-17	1	1		
Pyrene	<0.020		0.020	ug/L	05-MAY-17	4.1	4.1		
Surrogate: d10-Acenaphthene	94.4		60-140	%	05-MAY-17				
Surrogate: d12-Chrysene	89.4		60-140	%	05-MAY-17				
Surrogate: d8-Naphthalene	89.6		60-140	%	05-MAY-17				
Surrogate: d10-Phenanthrene	95.2		60-140	%	05-MAY-17				
L1919362-5 MW301									
Sampled By: P. DAO on 28-APR-17									
Matrix: WATER									
Dissolved Metals									

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

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T2-POTABLE-GROUNDWATER-ALL-TYPES-OF-PROPERTY-USE

#1: T2-Ground Water (Coarse Soil)-All Types of Property Use **#2: T2-Ground Water (Fine Soil)-All Types of Property Use**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2		
L1919362-5 MW301 Sampled By: P. DAO on 28-APR-17 Matrix: WATER									
Dissolved Metals									
Dissolved Metals Filtration Location	FIELD			No Unit	01-MAY-17				
Antimony (Sb)-Dissolved	0.11		0.10	ug/L	01-MAY-17	6	6		
Arsenic (As)-Dissolved	0.43		0.10	ug/L	01-MAY-17	25	25		
Barium (Ba)-Dissolved	72.8		0.10	ug/L	01-MAY-17	1000	1000		
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	01-MAY-17	4	4		
Boron (B)-Dissolved	22		10	ug/L	01-MAY-17	5000	5000		
Cadmium (Cd)-Dissolved	0.017		0.010	ug/L	01-MAY-17	2.7	2.7		
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	50	50		
Cobalt (Co)-Dissolved	0.55		0.10	ug/L	01-MAY-17	3.8	3.8		
Copper (Cu)-Dissolved	0.56		0.20	ug/L	01-MAY-17	87	87		
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	10	10		
Molybdenum (Mo)-Dissolved	23.9		0.050	ug/L	01-MAY-17	70	70		
Nickel (Ni)-Dissolved	1.41		0.50	ug/L	01-MAY-17	100	100		
Selenium (Se)-Dissolved	0.117		0.050	ug/L	01-MAY-17	10	10		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	01-MAY-17	1.5	1.5		
Thallium (Tl)-Dissolved	0.011		0.010	ug/L	01-MAY-17	2	2		
Uranium (U)-Dissolved	1.54		0.010	ug/L	01-MAY-17	20	20		
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	01-MAY-17	6.2	6.2		
Zinc (Zn)-Dissolved	7.1		1.0	ug/L	01-MAY-17	1100	1100		

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

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T2-POTABLE-GROUNDWATER-ALL-TYPES-OF-PROPERTY-USE

#1: T2-Ground Water (Coarse Soil)-All Types of Property Use

#2: T2-Ground Water (Fine Soil)-All Types of Property Use

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
BTX-511-HS-WT	Water	BTEX by Headspace	SW846 8260 (511)

BTX is determined by analyzing by headspace-GC/MS.

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

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

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

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

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

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

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

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

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

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1

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

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

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

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

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

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

Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

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

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

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

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

Chain of Custody numbers:

15-555840

Reference Information

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

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

GLOSSARY OF REPORT TERMS

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.

Quality Control Report

Workorder: L1919362 Report Date: 06-MAY-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT	**Water**							
Batch R3710921								
WG2518555-4 DUP		**WG2518555-3**						
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	01-MAY-17
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	01-MAY-17
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	01-MAY-17
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	01-MAY-17
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	01-MAY-17
WG2518555-1 LCS								
Benzene			99.2		%		70-130	01-MAY-17
Ethylbenzene			98.0		%		70-130	01-MAY-17
m+p-Xylenes			98.1		%		70-130	01-MAY-17
o-Xylene			99.2		%		70-130	01-MAY-17
Toluene			97.3		%		70-130	01-MAY-17
WG2518555-2 MB								
Benzene			<0.50		ug/L		0.5	01-MAY-17
Ethylbenzene			<0.50		ug/L		0.5	01-MAY-17
m+p-Xylenes			<0.40		ug/L		0.4	01-MAY-17
o-Xylene			<0.30		ug/L		0.3	01-MAY-17
Toluene			<0.50		ug/L		0.5	01-MAY-17
Surrogate: 1,4-Difluorobenzene			102.6		%		70-130	01-MAY-17
Surrogate: 4-Bromofluorobenzene			104.0		%		70-130	01-MAY-17
WG2518555-5 MS		**WG2518555-3**						
Benzene			98.8		%		50-140	01-MAY-17
Ethylbenzene			97.4		%		50-140	01-MAY-17
m+p-Xylenes			97.7		%		50-140	01-MAY-17
o-Xylene			98.2		%		50-140	01-MAY-17
Toluene			97.4		%		50-140	01-MAY-17
F1-HS-511-WT	**Water**							
Batch R3710921								
WG2518555-4 DUP		**WG2518555-3**						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	01-MAY-17
WG2518555-1 LCS								
F1 (C6-C10)			100.6		%		80-120	01-MAY-17
WG2518555-2 MB								
F1 (C6-C10)			<25		ug/L		25	01-MAY-17
Surrogate: 3,4-Dichlorotoluene			111.0		%		60-140	01-MAY-17
WG2518555-5 MS		**WG2518555-3**						

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Water**							
Batch R3710921								
WG2518555-5 MS		**WG2518555-3**						
F1 (C6-C10)			85.0		%		60-140	01-MAY-17
F2-F4-511-WT	**Water**							
Batch R3715783								
WG2521867-2 LCS								
F2 (C10-C16)			113.9		%		70-130	05-MAY-17
F3 (C16-C34)			114.3		%		70-130	05-MAY-17
F4 (C34-C50)			118.4		%		70-130	05-MAY-17
WG2521867-1 MB								
F2 (C10-C16)			<100		ug/L		100	05-MAY-17
F3 (C16-C34)			<250		ug/L		250	05-MAY-17
F4 (C34-C50)			<250		ug/L		250	05-MAY-17
Surrogate: 2-Bromobenzotrifluoride			110.9		%		60-140	05-MAY-17
MET-D-UG/L-MS-WT	**Water**							
Batch R3711448								
WG2520266-4 DUP		**WG2520266-3**						
Antimony (Sb)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	01-MAY-17
Arsenic (As)-Dissolved		0.24	0.24		ug/L	3.2	20	01-MAY-17
Barium (Ba)-Dissolved		25.2	25.0		ug/L	0.6	20	01-MAY-17
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	01-MAY-17
Boron (B)-Dissolved		14	14		ug/L	1.4	20	01-MAY-17
Cadmium (Cd)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	01-MAY-17
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	01-MAY-17
Cobalt (Co)-Dissolved		0.27	0.28		ug/L	3.3	20	01-MAY-17
Copper (Cu)-Dissolved		0.67	0.68		ug/L	2.0	20	01-MAY-17
Lead (Pb)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	01-MAY-17
Molybdenum (Mo)-Dissolved		3.14	3.09		ug/L	1.6	20	01-MAY-17
Nickel (Ni)-Dissolved		0.58	0.58		ug/L	0.5	20	01-MAY-17
Selenium (Se)-Dissolved		0.310	0.309		ug/L	0.3	20	01-MAY-17
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	01-MAY-17
Thallium (Tl)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	01-MAY-17
Uranium (U)-Dissolved		0.498	0.476		ug/L	4.5	20	01-MAY-17
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	01-MAY-17
Zinc (Zn)-Dissolved		2.3	2.4		ug/L	1.6	20	01-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch	**R3711448**							
WG2520266-2	**LCS**							
Antimony (Sb)-Dissolved			99.8		%		80-120	01-MAY-17
Arsenic (As)-Dissolved			96.8		%		80-120	01-MAY-17
Barium (Ba)-Dissolved			96.6		%		80-120	01-MAY-17
Beryllium (Be)-Dissolved			96.8		%		80-120	01-MAY-17
Boron (B)-Dissolved			100.1		%		80-120	01-MAY-17
Cadmium (Cd)-Dissolved			102.7		%		80-120	01-MAY-17
Chromium (Cr)-Dissolved			95.9		%		80-120	01-MAY-17
Cobalt (Co)-Dissolved			97.0		%		80-120	01-MAY-17
Copper (Cu)-Dissolved			95.1		%		80-120	01-MAY-17
Lead (Pb)-Dissolved			102.5		%		80-120	01-MAY-17
Molybdenum (Mo)-Dissolved			95.9		%		80-120	01-MAY-17
Nickel (Ni)-Dissolved			95.4		%		80-120	01-MAY-17
Selenium (Se)-Dissolved			96.4		%		80-120	01-MAY-17
Silver (Ag)-Dissolved			101.9		%		80-120	01-MAY-17
Thallium (Tl)-Dissolved			99.4		%		80-120	01-MAY-17
Uranium (U)-Dissolved			105.3		%		80-120	01-MAY-17
Vanadium (V)-Dissolved			98.2		%		80-120	01-MAY-17
Zinc (Zn)-Dissolved			90.1		%		80-120	01-MAY-17
WG2520266-1	**MB**							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	01-MAY-17
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	01-MAY-17
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	01-MAY-17
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	01-MAY-17
Boron (B)-Dissolved			<10		ug/L		10	01-MAY-17
Cadmium (Cd)-Dissolved			<0.010		ug/L		0.01	01-MAY-17
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	01-MAY-17
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	01-MAY-17
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	01-MAY-17
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	01-MAY-17
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	01-MAY-17
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	01-MAY-17
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	01-MAY-17
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	01-MAY-17
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	01-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R3711448								
WG2520266-1 MB								
Uranium (U)-Dissolved			<0.010		ug/L		0.01	01-MAY-17
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	01-MAY-17
Zinc (Zn)-Dissolved			<1.0		ug/L		1	01-MAY-17
WG2520266-5 MS		**WG2520266-3**						
Antimony (Sb)-Dissolved			103.0		%		70-130	01-MAY-17
Arsenic (As)-Dissolved			106.0		%		70-130	01-MAY-17
Barium (Ba)-Dissolved			N/A	MS-B	%		-	01-MAY-17
Beryllium (Be)-Dissolved			99.7		%		70-130	01-MAY-17
Boron (B)-Dissolved			95.3		%		70-130	01-MAY-17
Cadmium (Cd)-Dissolved			102.1		%		70-130	01-MAY-17
Chromium (Cr)-Dissolved			95.7		%		70-130	01-MAY-17
Cobalt (Co)-Dissolved			94.2		%		70-130	01-MAY-17
Copper (Cu)-Dissolved			91.9		%		70-130	01-MAY-17
Lead (Pb)-Dissolved			98.6		%		70-130	01-MAY-17
Molybdenum (Mo)-Dissolved			95.5		%		70-130	01-MAY-17
Nickel (Ni)-Dissolved			92.8		%		70-130	01-MAY-17
Selenium (Se)-Dissolved			117.8		%		70-130	01-MAY-17
Silver (Ag)-Dissolved			99.97		%		70-130	01-MAY-17
Thallium (Tl)-Dissolved			99.3		%		70-130	01-MAY-17
Uranium (U)-Dissolved			N/A	MS-B	%		-	01-MAY-17
Vanadium (V)-Dissolved			98.2		%		70-130	01-MAY-17
Zinc (Zn)-Dissolved			94.8		%		70-130	01-MAY-17
PAH-511-WT	**Water**							
Batch R3712386								
WG2520315-2 LCS								
1-Methylnaphthalene			82.4		%		50-140	02-MAY-17
2-Methylnaphthalene			85.5		%		50-140	02-MAY-17
Acenaphthene			85.3		%		50-140	02-MAY-17
Acenaphthylene			84.4		%		50-140	02-MAY-17
Anthracene			90.7		%		50-140	02-MAY-17
Benzo(a)anthracene			88.6		%		50-140	02-MAY-17
Benzo(a)pyrene			89.4		%		50-140	02-MAY-17
Benzo(b)fluoranthene			83.9		%		50-140	02-MAY-17
Benzo(g,h,i)perylene			90.2		%		50-140	02-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R3712386								
WG2520315-2 LCS								
Benzo(k)fluoranthene			86.0		%		50-140	02-MAY-17
Chrysene			88.6		%		50-140	02-MAY-17
Dibenzo(ah)anthracene			92.2		%		50-140	02-MAY-17
Fluoranthene			90.3		%		50-140	02-MAY-17
Fluorene			86.5		%		50-140	02-MAY-17
Indeno(1,2,3-cd)pyrene			86.3		%		50-140	02-MAY-17
Naphthalene			81.2		%		50-140	02-MAY-17
Phenanthrene			88.6		%		50-140	02-MAY-17
Pyrene			93.3		%		50-140	02-MAY-17
WG2520315-3 LCSD		**WG2520315-2**						
1-Methylnaphthalene		82.4	90.1		%	8.9	50	02-MAY-17
2-Methylnaphthalene		85.5	91.8		%	7.1	50	02-MAY-17
Acenaphthene		85.3	92.1		%	7.6	50	02-MAY-17
Acenaphthylene		84.4	91.9		%	8.6	50	02-MAY-17
Anthracene		90.7	97.7		%	7.4	50	02-MAY-17
Benzo(a)anthracene		88.6	96.8		%	8.8	50	02-MAY-17
Benzo(a)pyrene		89.4	98.7		%	9.9	50	02-MAY-17
Benzo(b)fluoranthene		83.9	93.7		%	11	50	02-MAY-17
Benzo(g,h,i)perylene		90.2	99.8		%	10	50	02-MAY-17
Benzo(k)fluoranthene		86.0	96.4		%	11	50	02-MAY-17
Chrysene		88.6	96.8		%	8.8	50	02-MAY-17
Dibenzo(ah)anthracene		92.2	101.4		%	9.6	50	02-MAY-17
Fluoranthene		90.3	98.7		%	8.9	50	02-MAY-17
Fluorene		86.5	94.8		%	9.2	50	02-MAY-17
Indeno(1,2,3-cd)pyrene		86.3	95.2		%	9.8	50	02-MAY-17
Naphthalene		81.2	86.8		%	6.7	50	02-MAY-17
Phenanthrene		88.6	95.7		%	7.7	50	02-MAY-17
Pyrene		93.3	101.9		%	8.8	50	02-MAY-17
WG2520315-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	02-MAY-17
2-Methylnaphthalene			<0.020		ug/L		0.02	02-MAY-17
Acenaphthene			<0.020		ug/L		0.02	02-MAY-17
Acenaphthylene			<0.020		ug/L		0.02	02-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R3712386								
WG2520315-1 MB								
Anthracene			<0.020		ug/L		0.02	02-MAY-17
Benzo(a)anthracene			<0.020		ug/L		0.02	02-MAY-17
Benzo(a)pyrene			<0.010		ug/L		0.01	02-MAY-17
Benzo(b)fluoranthene			<0.020		ug/L		0.02	02-MAY-17
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	02-MAY-17
Benzo(k)fluoranthene			<0.020		ug/L		0.02	02-MAY-17
Chrysene			<0.020		ug/L		0.02	02-MAY-17
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	02-MAY-17
Fluoranthene			<0.020		ug/L		0.02	02-MAY-17
Fluorene			<0.020		ug/L		0.02	02-MAY-17
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	02-MAY-17
Naphthalene			<0.050		ug/L		0.05	02-MAY-17
Phenanthrene			<0.020		ug/L		0.02	02-MAY-17
Pyrene			<0.020		ug/L		0.02	02-MAY-17
Surrogate: d8-Naphthalene			91.5		%		60-140	02-MAY-17
Surrogate: d10-Phenanthrene			94.5		%		60-140	02-MAY-17
Surrogate: d12-Chrysene			92.9		%		60-140	02-MAY-17
Surrogate: d10-Acenaphthene			96.1		%		60-140	02-MAY-17

Quality Control Report

Workorder: L1919362 Report Date: 06-MAY-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

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
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.

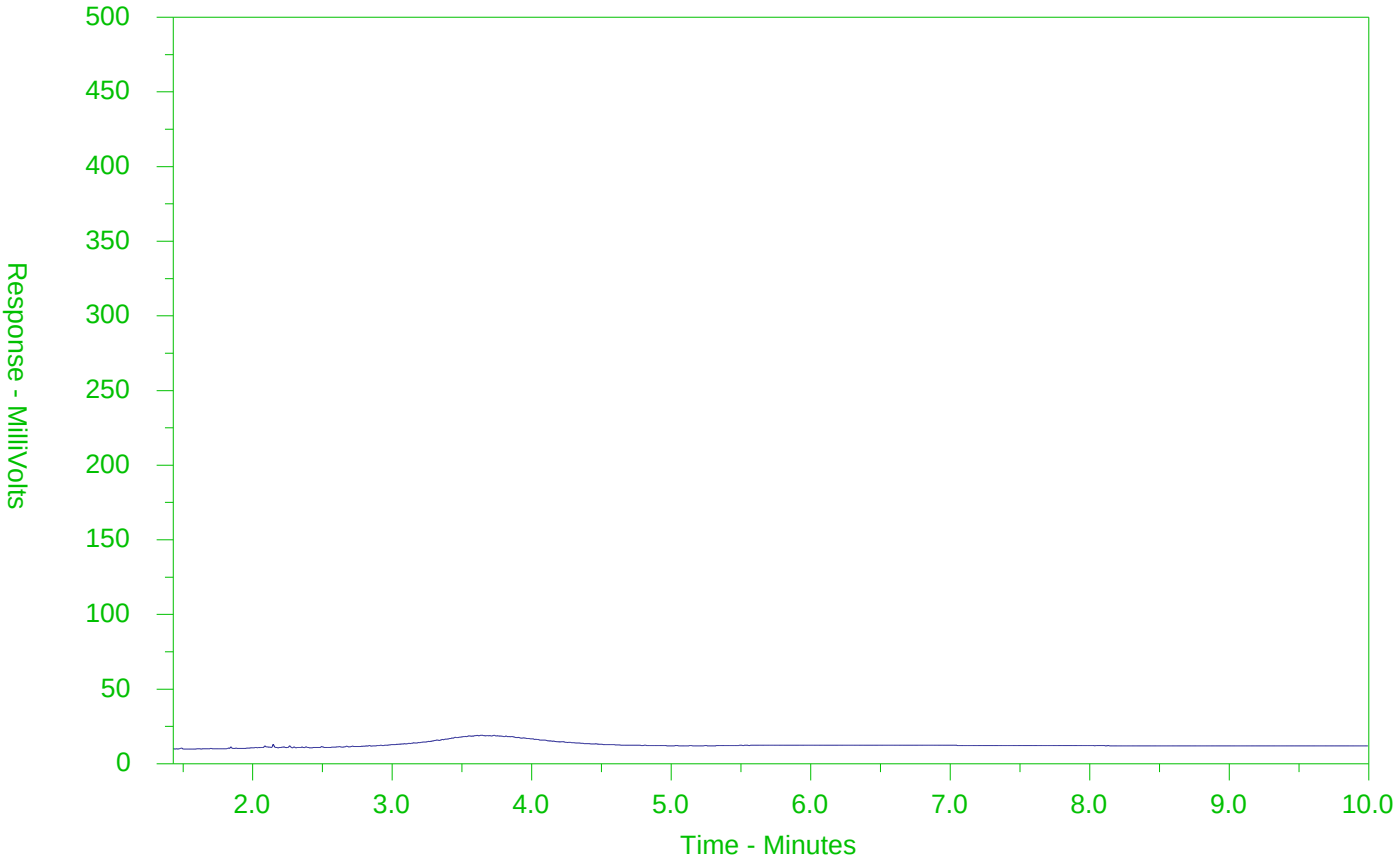
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where 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: L1919362-1
Client Sample ID: MW1



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

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

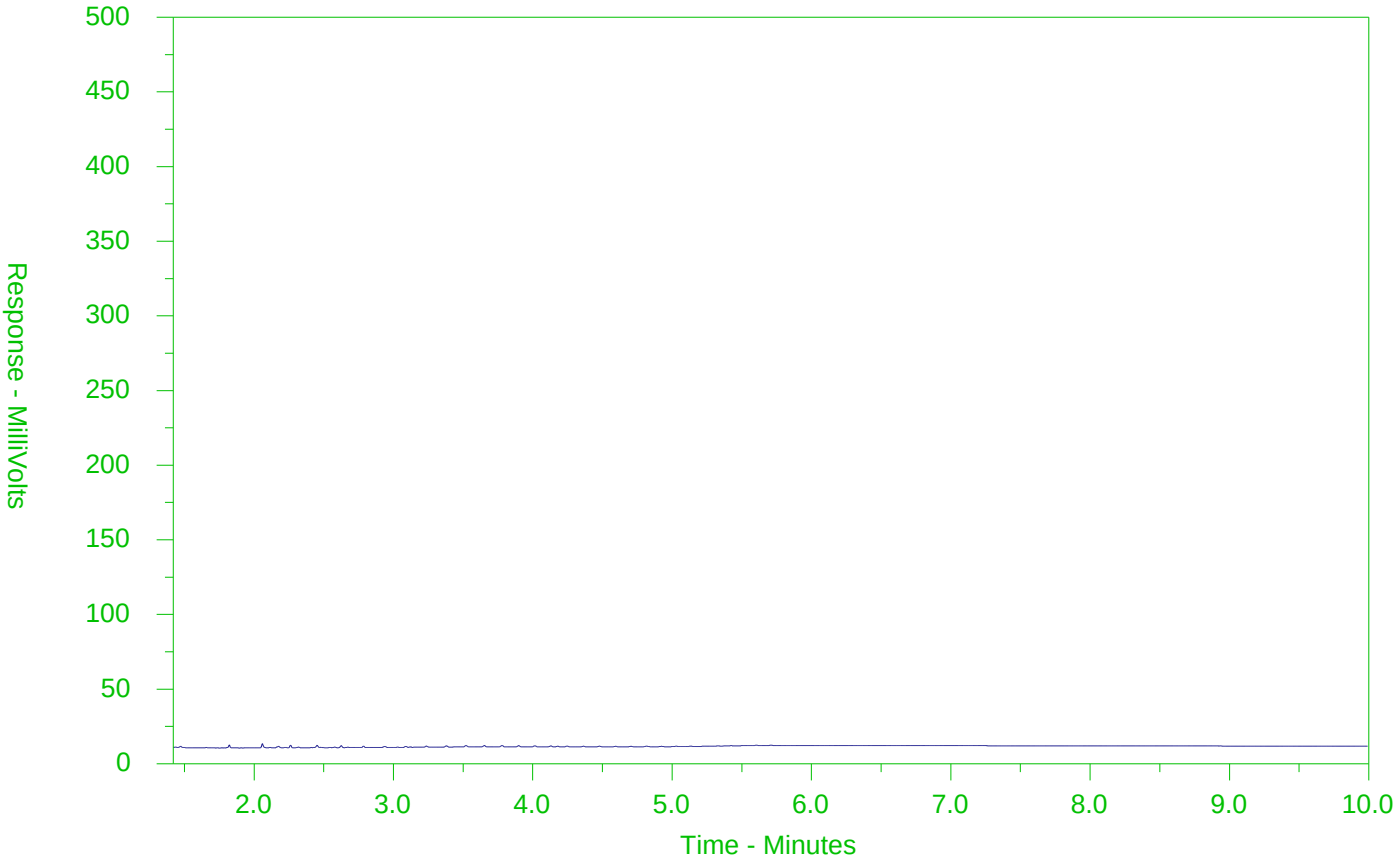
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1919362-2
Client Sample ID: MW2



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

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

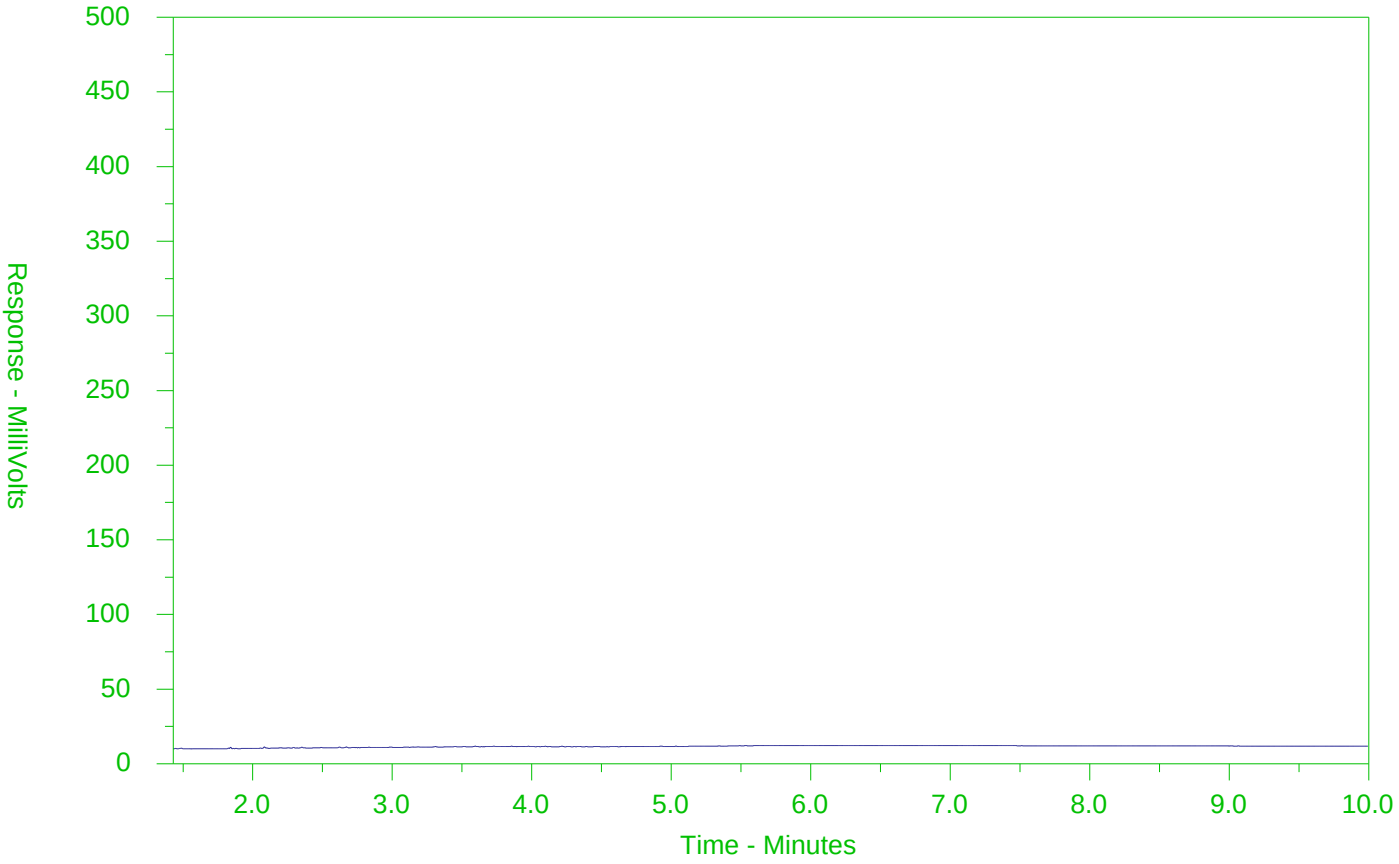
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1919362-3
Client Sample ID: MW3



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

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

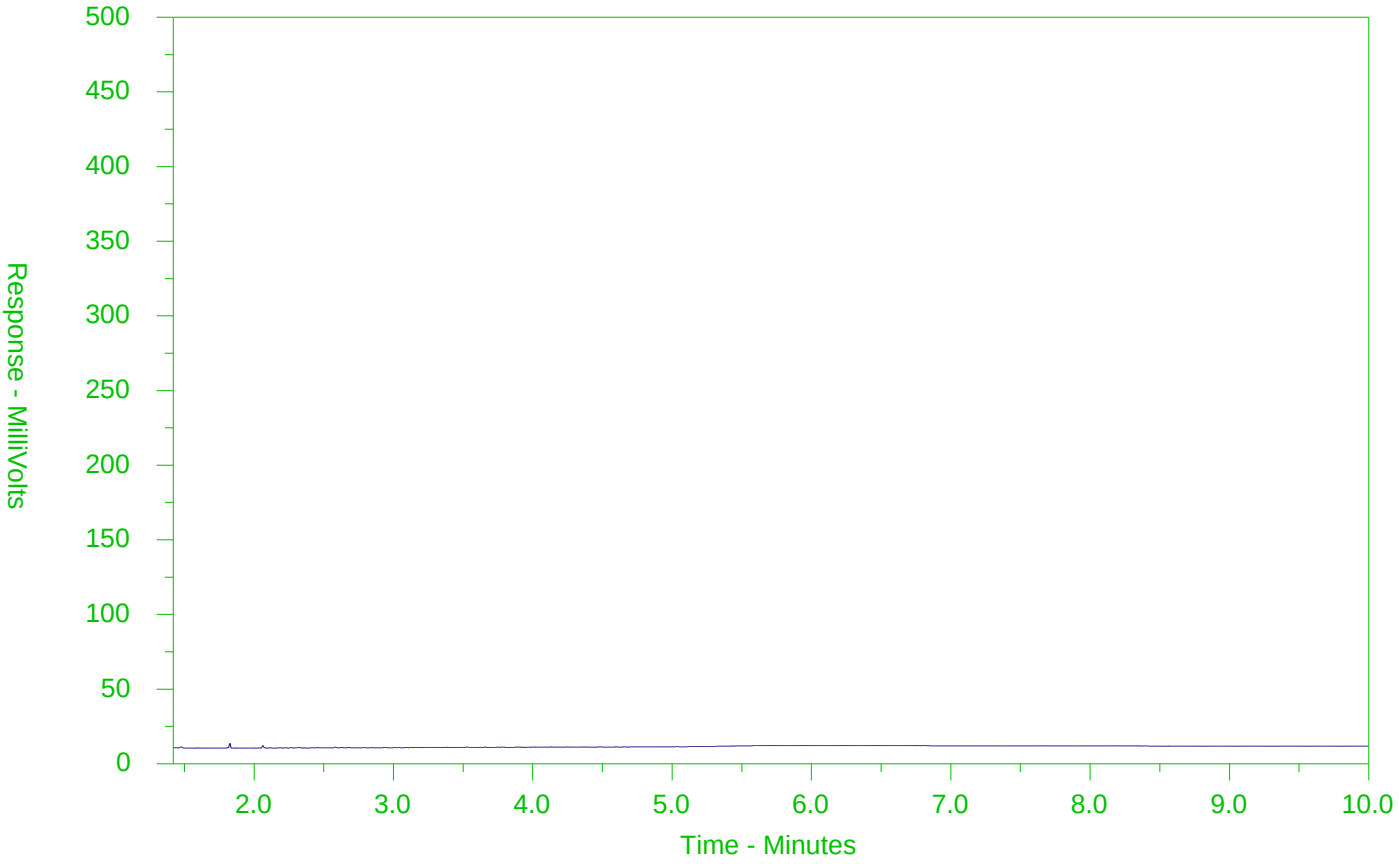
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1919362-4
Client Sample ID: MW5



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

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

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

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

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

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1919362-COFC

COC Number: 15 - 555840

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	CVD
Contact:	Peter Duo
Phone:	
	Company address below will appear on the final report
Street:	311 Victoria St. N
City/Province:	Kitchener, ON
Postal Code:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☐ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	
Email 3	

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Business day [E1] ☐
	3 day [P3] ☐		Same Day, Weekend or Statutory holiday [E0] ☐
	2 day [P2] ☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

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

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

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

Project Information	
ALS Account # / Quote #:	
Job #:	Mt. Forest - Martin & Cork St - Water
PO /AFE:	E17383
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): L1919362 SH 01B

ALS Contact: ML

Sampler: PD

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BTEX + F1-F4	Metals	PAH	Number of Containers
1	MW1	28-04-17		Water	/	/	/	
2	MW2	↓		↓	/	/	/	
3	MW3				/	/	/	
4	MW5				/	/	/	
5	MW301					/		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	O. Reg 153/04 Table 2
Are samples for human drinking water use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ — SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ — Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			2.4 °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: PD	Date: May 1/17	Time:	Received by:	Date:	Time:	Received by:	Date: 1 MAY 17	Time: 1320.

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 29-MAY-17
Report Date: 02-JUN-17 12:05 (MT)
Version: FINAL

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1932767

Project P.O. #: E17383
Job Reference: MT. FOREST EXCAVATION - SOIL
C of C Numbers: 15-555980, 15--555981
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-1 1-1						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	23.5		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	31-MAY-17	7.5
Arsenic (As)	6.8		1.0	ug/g	31-MAY-17	18
Barium (Ba)	51.7		1.0	ug/g	31-MAY-17	390
Beryllium (Be)	0.65		0.50	ug/g	31-MAY-17	4
Boron (B)	12.2		5.0	ug/g	31-MAY-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	31-MAY-17	1.2
Chromium (Cr)	18.3		1.0	ug/g	31-MAY-17	160
Cobalt (Co)	5.4		1.0	ug/g	31-MAY-17	22
Copper (Cu)	12.2		1.0	ug/g	31-MAY-17	140
Lead (Pb)	8.9		1.0	ug/g	31-MAY-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	31-MAY-17	6.9
Nickel (Ni)	14.4		1.0	ug/g	31-MAY-17	100
Selenium (Se)	<1.0		1.0	ug/g	31-MAY-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	31-MAY-17	20
Thallium (Tl)	<0.50		0.50	ug/g	31-MAY-17	1
Uranium (U)	<1.0		1.0	ug/g	31-MAY-17	23
Vanadium (V)	29.9		1.0	ug/g	31-MAY-17	86
Zinc (Zn)	27.9		5.0	ug/g	31-MAY-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	94.8		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	101.3		50-140	%	31-MAY-17	
L1932767-2 1-4						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-2 1-4						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	15.9		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	31-MAY-17	7.5
Arsenic (As)	4.2		1.0	ug/g	31-MAY-17	18
Barium (Ba)	38.2		1.0	ug/g	31-MAY-17	390
Beryllium (Be)	<0.50		0.50	ug/g	31-MAY-17	4
Boron (B)	10.1		5.0	ug/g	31-MAY-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	31-MAY-17	1.2
Chromium (Cr)	14.6		1.0	ug/g	31-MAY-17	160
Cobalt (Co)	4.6		1.0	ug/g	31-MAY-17	22
Copper (Cu)	11.8		1.0	ug/g	31-MAY-17	140
Lead (Pb)	5.3		1.0	ug/g	31-MAY-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	31-MAY-17	6.9
Nickel (Ni)	11.2		1.0	ug/g	31-MAY-17	100
Selenium (Se)	<1.0		1.0	ug/g	31-MAY-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	31-MAY-17	20
Thallium (Tl)	<0.50		0.50	ug/g	31-MAY-17	1
Uranium (U)	<1.0		1.0	ug/g	31-MAY-17	23
Vanadium (V)	22.2		1.0	ug/g	31-MAY-17	86
Zinc (Zn)	21.2		5.0	ug/g	31-MAY-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	94.4		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	99.2		50-140	%	31-MAY-17	
L1932767-3 1-5						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-3 1-5						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	19.5		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	31-MAY-17	7.5
Arsenic (As)	5.0		1.0	ug/g	31-MAY-17	18
Barium (Ba)	25.9		1.0	ug/g	31-MAY-17	390
Beryllium (Be)	<0.50		0.50	ug/g	31-MAY-17	4
Boron (B)	9.3		5.0	ug/g	31-MAY-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	31-MAY-17	1.2
Chromium (Cr)	11.2		1.0	ug/g	31-MAY-17	160
Cobalt (Co)	3.1		1.0	ug/g	31-MAY-17	22
Copper (Cu)	10.3		1.0	ug/g	31-MAY-17	140
Lead (Pb)	4.9		1.0	ug/g	31-MAY-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	31-MAY-17	6.9
Nickel (Ni)	8.8		1.0	ug/g	31-MAY-17	100
Selenium (Se)	<1.0		1.0	ug/g	31-MAY-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	31-MAY-17	20
Thallium (Tl)	<0.50		0.50	ug/g	31-MAY-17	1
Uranium (U)	<1.0		1.0	ug/g	31-MAY-17	23
Vanadium (V)	19.8		1.0	ug/g	31-MAY-17	86
Zinc (Zn)	15.2		5.0	ug/g	31-MAY-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	93.8		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	98.9		50-140	%	31-MAY-17	
L1932767-4 1-7						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-4	1-7						
Sampled By:	P. DAO on 26-MAY-17						
Matrix:	SOIL						#1
Physical Tests							
	% Moisture	22.7		0.10	%	30-MAY-17	
Metals							
	Antimony (Sb)	<1.0		1.0	ug/g	31-MAY-17	7.5
	Arsenic (As)	3.7		1.0	ug/g	31-MAY-17	18
	Barium (Ba)	43.7		1.0	ug/g	31-MAY-17	390
	Beryllium (Be)	<0.50		0.50	ug/g	31-MAY-17	4
	Boron (B)	<5.0		5.0	ug/g	31-MAY-17	120
	Cadmium (Cd)	<0.50		0.50	ug/g	31-MAY-17	1.2
	Chromium (Cr)	15.7		1.0	ug/g	31-MAY-17	160
	Cobalt (Co)	5.4		1.0	ug/g	31-MAY-17	22
	Copper (Cu)	7.2		1.0	ug/g	31-MAY-17	140
	Lead (Pb)	7.1		1.0	ug/g	31-MAY-17	120
	Molybdenum (Mo)	<1.0		1.0	ug/g	31-MAY-17	6.9
	Nickel (Ni)	10.3		1.0	ug/g	31-MAY-17	100
	Selenium (Se)	<1.0		1.0	ug/g	31-MAY-17	2.4
	Silver (Ag)	<0.20		0.20	ug/g	31-MAY-17	20
	Thallium (Tl)	<0.50		0.50	ug/g	31-MAY-17	1
	Uranium (U)	<1.0		1.0	ug/g	31-MAY-17	23
	Vanadium (V)	28.7		1.0	ug/g	31-MAY-17	86
	Zinc (Zn)	21.3		5.0	ug/g	31-MAY-17	340
Polycyclic Aromatic Hydrocarbons							
	Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
	Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
	Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
	Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
	Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
	Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
	Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
	Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
	Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
	Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
	Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
	Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
	1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
	1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
	2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
	Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
	Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
	Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
	Surrogate: 2-Fluorobiphenyl	96.8		50-140	%	31-MAY-17	
	Surrogate: p-Terphenyl d14	99.2		50-140	%	31-MAY-17	
L1932767-5	1-9						
Sampled By:	P. DAO on 26-MAY-17						
Matrix:	SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-5 1-9						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	14.3		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	31-MAY-17	7.5
Arsenic (As)	7.5		1.0	ug/g	31-MAY-17	18
Barium (Ba)	53.2		1.0	ug/g	31-MAY-17	390
Beryllium (Be)	0.69		0.50	ug/g	31-MAY-17	4
Boron (B)	11.6		5.0	ug/g	31-MAY-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	31-MAY-17	1.2
Chromium (Cr)	19.4		1.0	ug/g	31-MAY-17	160
Cobalt (Co)	6.0		1.0	ug/g	31-MAY-17	22
Copper (Cu)	15.6		1.0	ug/g	31-MAY-17	140
Lead (Pb)	8.6		1.0	ug/g	31-MAY-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	31-MAY-17	6.9
Nickel (Ni)	14.2		1.0	ug/g	31-MAY-17	100
Selenium (Se)	<1.0		1.0	ug/g	31-MAY-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	31-MAY-17	20
Thallium (Tl)	<0.50		0.50	ug/g	31-MAY-17	1
Uranium (U)	<1.0		1.0	ug/g	31-MAY-17	23
Vanadium (V)	32.4		1.0	ug/g	31-MAY-17	86
Zinc (Zn)	29.5		5.0	ug/g	31-MAY-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	96.1		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	100.5		50-140	%	31-MAY-17	
L1932767-6 1-11						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L1932767-6	1-11									
Sampled By:	P. DAO on 26-MAY-17									
Matrix:	SOIL						#1			
Physical Tests										
	% Moisture	18.5		0.10	%	30-MAY-17				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	31-MAY-17	7.5			
	Arsenic (As)	7.9		1.0	ug/g	31-MAY-17	18			
	Barium (Ba)	32.5		1.0	ug/g	31-MAY-17	390			
	Beryllium (Be)	<0.50		0.50	ug/g	31-MAY-17	4			
	Boron (B)	6.2		5.0	ug/g	31-MAY-17	120			
	Cadmium (Cd)	<0.50		0.50	ug/g	31-MAY-17	1.2			
	Chromium (Cr)	10.4		1.0	ug/g	31-MAY-17	160			
	Cobalt (Co)	3.7		1.0	ug/g	31-MAY-17	22			
	Copper (Cu)	9.1		1.0	ug/g	31-MAY-17	140			
	Lead (Pb)	8.1		1.0	ug/g	31-MAY-17	120			
	Molybdenum (Mo)	<1.0		1.0	ug/g	31-MAY-17	6.9			
	Nickel (Ni)	7.9		1.0	ug/g	31-MAY-17	100			
	Selenium (Se)	<1.0		1.0	ug/g	31-MAY-17	2.4			
	Silver (Ag)	<0.20		0.20	ug/g	31-MAY-17	20			
	Thallium (Tl)	<0.50		0.50	ug/g	31-MAY-17	1			
	Uranium (U)	<1.0		1.0	ug/g	31-MAY-17	23			
	Vanadium (V)	17.2		1.0	ug/g	31-MAY-17	86			
	Zinc (Zn)	22.7		5.0	ug/g	31-MAY-17	340			
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9			
	Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15			
	Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67			
	Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5			
	Benzo(a)pyrene	0.054		0.050	ug/g	31-MAY-17	0.3			
	Benzo(b)fluoranthene	0.106		0.050	ug/g	31-MAY-17	0.78			
	Benzo(g,h,i)perylene	0.052		0.050	ug/g	31-MAY-17	6.6			
	Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78			
	Chrysene	0.053		0.050	ug/g	31-MAY-17	7			
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1			
	Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69			
	Fluorene	<0.050		0.050	ug/g	31-MAY-17	62			
	Indeno(1,2,3-cd)pyrene	0.052		0.050	ug/g	31-MAY-17	0.38			
	1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99			
	1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99			
	2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99			
	Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6			
	Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2			
	Pyrene	<0.050		0.050	ug/g	31-MAY-17	78			
	Surrogate: 2-Fluorobiphenyl	98.4		50-140	%	31-MAY-17				
	Surrogate: p-Terphenyl d14	100.9		50-140	%	31-MAY-17				
L1932767-7	1-12									
Sampled By:	P. DAO on 26-MAY-17									
Matrix:	SOIL						#1			

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-7 1-12						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	17.2		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	31-MAY-17	7.5
Arsenic (As)	4.8		1.0	ug/g	31-MAY-17	18
Barium (Ba)	36.0		1.0	ug/g	31-MAY-17	390
Beryllium (Be)	<0.50		0.50	ug/g	31-MAY-17	4
Boron (B)	8.1		5.0	ug/g	31-MAY-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	31-MAY-17	1.2
Chromium (Cr)	12.4		1.0	ug/g	31-MAY-17	160
Cobalt (Co)	3.5		1.0	ug/g	31-MAY-17	22
Copper (Cu)	9.7		1.0	ug/g	31-MAY-17	140
Lead (Pb)	5.1		1.0	ug/g	31-MAY-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	31-MAY-17	6.9
Nickel (Ni)	9.6		1.0	ug/g	31-MAY-17	100
Selenium (Se)	<1.0		1.0	ug/g	31-MAY-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	31-MAY-17	20
Thallium (Tl)	<0.50		0.50	ug/g	31-MAY-17	1
Uranium (U)	<1.0		1.0	ug/g	31-MAY-17	23
Vanadium (V)	20.8		1.0	ug/g	31-MAY-17	86
Zinc (Zn)	18.1		5.0	ug/g	31-MAY-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	92.2		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	94.7		50-140	%	31-MAY-17	
L1932767-8 2-1						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-8 2-1						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	17.0		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-JUN-17	7.5
Arsenic (As)	7.1		1.0	ug/g	01-JUN-17	18
Barium (Ba)	31.8		1.0	ug/g	01-JUN-17	390
Beryllium (Be)	<0.50		0.50	ug/g	01-JUN-17	4
Boron (B)	7.3		5.0	ug/g	01-JUN-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-JUN-17	1.2
Chromium (Cr)	11.6		1.0	ug/g	01-JUN-17	160
Cobalt (Co)	3.8		1.0	ug/g	01-JUN-17	22
Copper (Cu)	12.0		1.0	ug/g	01-JUN-17	140
Lead (Pb)	13.8		1.0	ug/g	01-JUN-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	01-JUN-17	6.9
Nickel (Ni)	8.3		1.0	ug/g	01-JUN-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-JUN-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-JUN-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-JUN-17	1
Uranium (U)	<1.0		1.0	ug/g	01-JUN-17	23
Vanadium (V)	19.0		1.0	ug/g	01-JUN-17	86
Zinc (Zn)	28.2		5.0	ug/g	01-JUN-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	0.087	R	0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	0.140		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	0.256		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	0.131		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	0.069		0.050	ug/g	31-MAY-17	0.78
Chrysene	0.139		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	0.141		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	0.125		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	0.152		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	96.3		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	104.3		50-140	%	31-MAY-17	
L1932767-9 2-4						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-9 2-4						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	15.9		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-JUN-17	7.5
Arsenic (As)	3.6		1.0	ug/g	01-JUN-17	18
Barium (Ba)	32.1		1.0	ug/g	01-JUN-17	390
Beryllium (Be)	<0.50		0.50	ug/g	01-JUN-17	4
Boron (B)	6.6		5.0	ug/g	01-JUN-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-JUN-17	1.2
Chromium (Cr)	14.8		1.0	ug/g	01-JUN-17	160
Cobalt (Co)	4.8		1.0	ug/g	01-JUN-17	22
Copper (Cu)	8.5		1.0	ug/g	01-JUN-17	140
Lead (Pb)	6.8		1.0	ug/g	01-JUN-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	01-JUN-17	6.9
Nickel (Ni)	10.0		1.0	ug/g	01-JUN-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-JUN-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-JUN-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-JUN-17	1
Uranium (U)	<1.0		1.0	ug/g	01-JUN-17	23
Vanadium (V)	25.5		1.0	ug/g	01-JUN-17	86
Zinc (Zn)	28.3		5.0	ug/g	01-JUN-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	96.1		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	101.0		50-140	%	31-MAY-17	
L1932767-10 2-5						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-10 2-5						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	21.9		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-JUN-17	7.5
Arsenic (As)	3.9		1.0	ug/g	01-JUN-17	18
Barium (Ba)	37.2		1.0	ug/g	01-JUN-17	390
Beryllium (Be)	<0.50		0.50	ug/g	01-JUN-17	4
Boron (B)	6.6		5.0	ug/g	01-JUN-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-JUN-17	1.2
Chromium (Cr)	15.3		1.0	ug/g	01-JUN-17	160
Cobalt (Co)	5.2		1.0	ug/g	01-JUN-17	22
Copper (Cu)	9.6		1.0	ug/g	01-JUN-17	140
Lead (Pb)	6.3		1.0	ug/g	01-JUN-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	01-JUN-17	6.9
Nickel (Ni)	10.8		1.0	ug/g	01-JUN-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-JUN-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-JUN-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-JUN-17	1
Uranium (U)	<1.0		1.0	ug/g	01-JUN-17	23
Vanadium (V)	28.0		1.0	ug/g	01-JUN-17	86
Zinc (Zn)	26.6		5.0	ug/g	01-JUN-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	97.5		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	101.5		50-140	%	31-MAY-17	
L1932767-11 2-6						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-11 2-6						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	5.73		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-JUN-17	7.5
Arsenic (As)	2.0		1.0	ug/g	01-JUN-17	18
Barium (Ba)	8.8		1.0	ug/g	01-JUN-17	390
Beryllium (Be)	<0.50		0.50	ug/g	01-JUN-17	4
Boron (B)	6.0		5.0	ug/g	01-JUN-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-JUN-17	1.2
Chromium (Cr)	6.3		1.0	ug/g	01-JUN-17	160
Cobalt (Co)	1.8		1.0	ug/g	01-JUN-17	22
Copper (Cu)	5.0		1.0	ug/g	01-JUN-17	140
Lead (Pb)	2.6		1.0	ug/g	01-JUN-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	01-JUN-17	6.9
Nickel (Ni)	4.2		1.0	ug/g	01-JUN-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-JUN-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-JUN-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-JUN-17	1
Uranium (U)	<1.0		1.0	ug/g	01-JUN-17	23
Vanadium (V)	10.7		1.0	ug/g	01-JUN-17	86
Zinc (Zn)	9.7		5.0	ug/g	01-JUN-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	94.6		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	97.9		50-140	%	31-MAY-17	
L1932767-12 2-9						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-12 2-9						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	12.2		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-JUN-17	7.5
Arsenic (As)	8.6		1.0	ug/g	01-JUN-17	18
Barium (Ba)	32.9		1.0	ug/g	01-JUN-17	390
Beryllium (Be)	<0.50		0.50	ug/g	01-JUN-17	4
Boron (B)	10.2		5.0	ug/g	01-JUN-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-JUN-17	1.2
Chromium (Cr)	12.0		1.0	ug/g	01-JUN-17	160
Cobalt (Co)	4.1		1.0	ug/g	01-JUN-17	22
Copper (Cu)	19.3		1.0	ug/g	01-JUN-17	140
Lead (Pb)	22.2		1.0	ug/g	01-JUN-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	01-JUN-17	6.9
Nickel (Ni)	9.4		1.0	ug/g	01-JUN-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-JUN-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-JUN-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-JUN-17	1
Uranium (U)	<1.0		1.0	ug/g	01-JUN-17	23
Vanadium (V)	19.5		1.0	ug/g	01-JUN-17	86
Zinc (Zn)	30.3		5.0	ug/g	01-JUN-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	0.065		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	0.150	R	0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	0.233		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	0.426		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	0.209		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	0.120		0.050	ug/g	31-MAY-17	0.78
Chrysene	0.237		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	0.226		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	0.213		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	0.080		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	0.036		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	0.044		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	0.051		0.050	ug/g	31-MAY-17	6.2
Pyrene	0.256		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	97.7		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	104.3		50-140	%	31-MAY-17	
L1932767-13 2-11						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits
L1932767-13 2-11						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1
Physical Tests						
% Moisture	9.25		0.10	%	30-MAY-17	
Metals						
Antimony (Sb)	<1.0		1.0	ug/g	01-JUN-17	7.5
Arsenic (As)	3.8		1.0	ug/g	01-JUN-17	18
Barium (Ba)	21.9		1.0	ug/g	01-JUN-17	390
Beryllium (Be)	<0.50		0.50	ug/g	01-JUN-17	4
Boron (B)	6.9		5.0	ug/g	01-JUN-17	120
Cadmium (Cd)	<0.50		0.50	ug/g	01-JUN-17	1.2
Chromium (Cr)	10.9		1.0	ug/g	01-JUN-17	160
Cobalt (Co)	3.3		1.0	ug/g	01-JUN-17	22
Copper (Cu)	12.6		1.0	ug/g	01-JUN-17	140
Lead (Pb)	6.7		1.0	ug/g	01-JUN-17	120
Molybdenum (Mo)	<1.0		1.0	ug/g	01-JUN-17	6.9
Nickel (Ni)	7.0		1.0	ug/g	01-JUN-17	100
Selenium (Se)	<1.0		1.0	ug/g	01-JUN-17	2.4
Silver (Ag)	<0.20		0.20	ug/g	01-JUN-17	20
Thallium (Tl)	<0.50		0.50	ug/g	01-JUN-17	1
Uranium (U)	<1.0		1.0	ug/g	01-JUN-17	23
Vanadium (V)	18.6		1.0	ug/g	01-JUN-17	86
Zinc (Zn)	20.1		5.0	ug/g	01-JUN-17	340
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78
Surrogate: 2-Fluorobiphenyl	91.8		50-140	%	31-MAY-17	
Surrogate: p-Terphenyl d14	96.8		50-140	%	31-MAY-17	
L1932767-14 2-12						
Sampled By: P. DAO on 26-MAY-17						
Matrix: SOIL						#1

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1			
L1932767-14 2-12									
Sampled By: P. DAO on 26-MAY-17									
Matrix: SOIL									
Physical Tests									
% Moisture	10.6		0.10	%	30-MAY-17				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	01-JUN-17	7.5			
Arsenic (As)	2.0		1.0	ug/g	01-JUN-17	18			
Barium (Ba)	14.2		1.0	ug/g	01-JUN-17	390			
Beryllium (Be)	<0.50		0.50	ug/g	01-JUN-17	4			
Boron (B)	5.5		5.0	ug/g	01-JUN-17	120			
Cadmium (Cd)	<0.50		0.50	ug/g	01-JUN-17	1.2			
Chromium (Cr)	8.1		1.0	ug/g	01-JUN-17	160			
Cobalt (Co)	2.3		1.0	ug/g	01-JUN-17	22			
Copper (Cu)	5.1		1.0	ug/g	01-JUN-17	140			
Lead (Pb)	3.6		1.0	ug/g	01-JUN-17	120			
Molybdenum (Mo)	<1.0		1.0	ug/g	01-JUN-17	6.9			
Nickel (Ni)	5.2		1.0	ug/g	01-JUN-17	100			
Selenium (Se)	<1.0		1.0	ug/g	01-JUN-17	2.4			
Silver (Ag)	<0.20		0.20	ug/g	01-JUN-17	20			
Thallium (Tl)	<0.50		0.50	ug/g	01-JUN-17	1			
Uranium (U)	<1.0		1.0	ug/g	01-JUN-17	23			
Vanadium (V)	13.5		1.0	ug/g	01-JUN-17	86			
Zinc (Zn)	14.3		5.0	ug/g	01-JUN-17	340			
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	31-MAY-17	7.9			
Acenaphthylene	<0.050		0.050	ug/g	31-MAY-17	0.15			
Anthracene	<0.050		0.050	ug/g	31-MAY-17	0.67			
Benzo(a)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.5			
Benzo(a)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.3			
Benzo(b)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78			
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	31-MAY-17	6.6			
Benzo(k)fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.78			
Chrysene	<0.050		0.050	ug/g	31-MAY-17	7			
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	31-MAY-17	0.1			
Fluoranthene	<0.050		0.050	ug/g	31-MAY-17	0.69			
Fluorene	<0.050		0.050	ug/g	31-MAY-17	62			
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	31-MAY-17	0.38			
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	31-MAY-17	0.99			
1-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99			
2-Methylnaphthalene	<0.030		0.030	ug/g	31-MAY-17	0.99			
Naphthalene	<0.050		0.050	ug/g	31-MAY-17	0.6			
Phenanthrene	<0.050		0.050	ug/g	31-MAY-17	6.2			
Pyrene	<0.050		0.050	ug/g	31-MAY-17	78			
Surrogate: 2-Fluorobiphenyl	91.7		50-140	%	31-MAY-17				
Surrogate: p-Terphenyl d14	95.3		50-140	%	31-MAY-17				

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

T2-Soil-Res/Park/Inst. Property Use (Coarse)

#1: T2-Soil-Res/Park/Inst. Property Use (Coarse)

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

This method uses a heated strong acid digestion with HNO3 and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

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

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

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

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

Chain of Custody numbers:

15--555981 15-555980

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

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

GLOSSARY OF REPORT TERMS

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

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

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information.

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3736946								
WG2537932-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			97.0		%		70-130	31-MAY-17
Arsenic (As)			114.2		%		70-130	31-MAY-17
Barium (Ba)			122.9		%		70-130	31-MAY-17
Beryllium (Be)			98.1		%		70-130	31-MAY-17
Cadmium (Cd)			104.5		%		70-130	31-MAY-17
Chromium (Cr)			113.3		%		70-130	31-MAY-17
Cobalt (Co)			109.4		%		70-130	31-MAY-17
Copper (Cu)			107.5		%		70-130	31-MAY-17
Lead (Pb)			97.1		%		70-130	31-MAY-17
Molybdenum (Mo)			101.5		%		70-130	31-MAY-17
Nickel (Ni)			110.9		%		70-130	31-MAY-17
Selenium (Se)			101.6		%		70-130	31-MAY-17
Silver (Ag)			108.2		%		70-130	31-MAY-17
Thallium (Tl)			101.1		%		70-130	31-MAY-17
Uranium (U)			104.0		%		70-130	31-MAY-17
Vanadium (V)			115.7		%		70-130	31-MAY-17
Zinc (Zn)			105.6		%		70-130	31-MAY-17
WG2537932-6 DUP		**WG2537932-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	31-MAY-17
Arsenic (As)		1.22	1.24		ug/g	2.0	30	31-MAY-17
Barium (Ba)		14.4	14.2		ug/g	1.6	40	31-MAY-17
Beryllium (Be)		0.14	0.13		ug/g	11	30	31-MAY-17
Boron (B)		5.1	<5.0	RPD-NA	ug/g	N/A	30	31-MAY-17
Cadmium (Cd)		0.054	0.052		ug/g	3.7	30	31-MAY-17
Chromium (Cr)		7.04	6.82		ug/g	3.2	30	31-MAY-17
Cobalt (Co)		2.04	2.02		ug/g	1.1	30	31-MAY-17
Copper (Cu)		6.07	5.90		ug/g	2.9	30	31-MAY-17
Lead (Pb)		4.12	4.07		ug/g	1.1	40	31-MAY-17
Molybdenum (Mo)		0.19	0.17		ug/g	10	40	31-MAY-17
Nickel (Ni)		4.38	4.19		ug/g	4.5	30	31-MAY-17
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	31-MAY-17
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	31-MAY-17
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	31-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3736946								
WG2537932-6 DUP		**WG2537932-5**						
Uranium (U)		0.387	0.388		ug/g	0.3	30	31-MAY-17
Vanadium (V)		12.6	12.0		ug/g	4.6	30	31-MAY-17
Zinc (Zn)		20.3	20.3		ug/g	0.0	30	31-MAY-17
WG2537932-4 LCS								
Antimony (Sb)			99.2		%		80-120	31-MAY-17
Arsenic (As)			101.9		%		80-120	31-MAY-17
Barium (Ba)			108.0		%		80-120	31-MAY-17
Beryllium (Be)			93.2		%		80-120	31-MAY-17
Boron (B)			94.0		%		80-120	31-MAY-17
Cadmium (Cd)			100.2		%		80-120	31-MAY-17
Chromium (Cr)			99.4		%		80-120	31-MAY-17
Cobalt (Co)			99.8		%		80-120	31-MAY-17
Copper (Cu)			97.3		%		80-120	31-MAY-17
Lead (Pb)			102.0		%		80-120	31-MAY-17
Molybdenum (Mo)			100.3		%		80-120	31-MAY-17
Nickel (Ni)			99.3		%		80-120	31-MAY-17
Selenium (Se)			102.6		%		80-120	31-MAY-17
Silver (Ag)			99.5		%		80-120	31-MAY-17
Thallium (Tl)			101.1		%		80-120	31-MAY-17
Uranium (U)			100.6		%		80-120	31-MAY-17
Vanadium (V)			102.9		%		80-120	31-MAY-17
Zinc (Zn)			93.1		%		80-120	31-MAY-17
WG2537932-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	31-MAY-17
Arsenic (As)			<0.10		mg/kg		0.1	31-MAY-17
Barium (Ba)			<0.50		mg/kg		0.5	31-MAY-17
Beryllium (Be)			<0.10		mg/kg		0.1	31-MAY-17
Boron (B)			<5.0		mg/kg		5	31-MAY-17
Cadmium (Cd)			<0.020		mg/kg		0.02	31-MAY-17
Chromium (Cr)			<0.50		mg/kg		0.5	31-MAY-17
Cobalt (Co)			<0.10		mg/kg		0.1	31-MAY-17
Copper (Cu)			<0.50		mg/kg		0.5	31-MAY-17
Lead (Pb)			<0.50		mg/kg		0.5	31-MAY-17
Molybdenum (Mo)			<0.10		mg/kg		0.1	31-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3736946								
WG2537932-1 MB								
Nickel (Ni)			<0.50		mg/kg		0.5	31-MAY-17
Selenium (Se)			<0.20		mg/kg		0.2	31-MAY-17
Silver (Ag)			<0.10		mg/kg		0.1	31-MAY-17
Thallium (Tl)			<0.050		mg/kg		0.05	31-MAY-17
Uranium (U)			<0.050		mg/kg		0.05	31-MAY-17
Vanadium (V)			<0.20		mg/kg		0.2	31-MAY-17
Zinc (Zn)			<2.0		mg/kg		2	31-MAY-17
Batch R3737951								
WG2538809-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			94.9		%		70-130	01-JUN-17
Arsenic (As)			109.7		%		70-130	01-JUN-17
Barium (Ba)			114.0		%		70-130	01-JUN-17
Beryllium (Be)			94.7		%		70-130	01-JUN-17
Cadmium (Cd)			100.9		%		70-130	01-JUN-17
Chromium (Cr)			104.8		%		70-130	01-JUN-17
Cobalt (Co)			104.2		%		70-130	01-JUN-17
Copper (Cu)			99.6		%		70-130	01-JUN-17
Lead (Pb)			89.0		%		70-130	01-JUN-17
Molybdenum (Mo)			95.9		%		70-130	01-JUN-17
Nickel (Ni)			104.7		%		70-130	01-JUN-17
Selenium (Se)			92.2		%		70-130	01-JUN-17
Silver (Ag)			101.3		%		70-130	01-JUN-17
Thallium (Tl)			92.5		%		70-130	01-JUN-17
Uranium (U)			100.1		%		70-130	01-JUN-17
Vanadium (V)			107.9		%		70-130	01-JUN-17
Zinc (Zn)			100.1		%		70-130	01-JUN-17
WG2538809-6 DUP		**WG2538809-5**						
Antimony (Sb)		0.11	0.11		ug/g	1.5	30	01-JUN-17
Arsenic (As)		5.29	5.35		ug/g	1.0	30	01-JUN-17
Barium (Ba)		61.6	61.6		ug/g	0.0	40	01-JUN-17
Beryllium (Be)		0.64	0.63		ug/g	0.5	30	01-JUN-17
Boron (B)		9.0	8.6		ug/g	4.8	30	01-JUN-17
Cadmium (Cd)		0.097	0.103		ug/g	5.9	30	01-JUN-17
Chromium (Cr)		21.8	21.4		ug/g	1.8	30	01-JUN-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3737951								
WG2538809-6 DUP		**WG2538809-5**						
Cobalt (Co)		12.1	11.9		ug/g	1.0	30	01-JUN-17
Copper (Cu)		27.3	27.2		ug/g	0.3	30	01-JUN-17
Lead (Pb)		9.88	10.2		ug/g	2.8	40	01-JUN-17
Molybdenum (Mo)		0.41	0.43		ug/g	3.9	40	01-JUN-17
Nickel (Ni)		25.9	26.0		ug/g	0.3	30	01-JUN-17
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	01-JUN-17
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	01-JUN-17
Thallium (Tl)		0.138	0.142		ug/g	2.8	30	01-JUN-17
Uranium (U)		0.603	0.617		ug/g	2.2	30	01-JUN-17
Vanadium (V)		29.6	28.7		ug/g	2.9	30	01-JUN-17
Zinc (Zn)		54.9	54.7		ug/g	0.3	30	01-JUN-17
WG2538809-4 LCS								
Antimony (Sb)			91.0		%		80-120	01-JUN-17
Arsenic (As)			99.7		%		80-120	01-JUN-17
Barium (Ba)			99.4		%		80-120	01-JUN-17
Beryllium (Be)			85.1		%		80-120	01-JUN-17
Boron (B)			83.7		%		80-120	01-JUN-17
Cadmium (Cd)			94.1		%		80-120	01-JUN-17
Chromium (Cr)			111.1		%		80-120	01-JUN-17
Cobalt (Co)			97.7		%		80-120	01-JUN-17
Copper (Cu)			95.6		%		80-120	01-JUN-17
Lead (Pb)			85.1		%		80-120	01-JUN-17
Molybdenum (Mo)			89.9		%		80-120	01-JUN-17
Nickel (Ni)			101.3		%		80-120	01-JUN-17
Selenium (Se)			96.1		%		80-120	01-JUN-17
Silver (Ag)			89.4		%		80-120	01-JUN-17
Thallium (Tl)			84.8		%		80-120	01-JUN-17
Uranium (U)			94.8		%		80-120	01-JUN-17
Vanadium (V)			100.2		%		80-120	01-JUN-17
Zinc (Zn)			92.0		%		80-120	01-JUN-17
WG2538809-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	01-JUN-17
Arsenic (As)			<0.10		mg/kg		0.1	01-JUN-17
Barium (Ba)			<0.50		mg/kg		0.5	

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3737951								
WG2538809-1 MB								
Barium (Ba)			<0.50		mg/kg		0.5	01-JUN-17
Beryllium (Be)			<0.10		mg/kg		0.1	01-JUN-17
Boron (B)			<5.0		mg/kg		5	01-JUN-17
Cadmium (Cd)			<0.020		mg/kg		0.02	01-JUN-17
Chromium (Cr)			<0.50		mg/kg		0.5	01-JUN-17
Cobalt (Co)			<0.10		mg/kg		0.1	01-JUN-17
Copper (Cu)			<0.50		mg/kg		0.5	01-JUN-17
Lead (Pb)			<0.50		mg/kg		0.5	01-JUN-17
Molybdenum (Mo)			<0.10		mg/kg		0.1	01-JUN-17
Nickel (Ni)			<0.50		mg/kg		0.5	01-JUN-17
Selenium (Se)			<0.20		mg/kg		0.2	01-JUN-17
Silver (Ag)			<0.10		mg/kg		0.1	01-JUN-17
Thallium (Tl)			<0.050		mg/kg		0.05	01-JUN-17
Uranium (U)			<0.050		mg/kg		0.05	01-JUN-17
Vanadium (V)			<0.20		mg/kg		0.2	01-JUN-17
Zinc (Zn)			<2.0		mg/kg		2	01-JUN-17
MOISTURE-WT	**Soil**							
Batch R3735307								
WG2536485-3 DUP		**L1932552-8**						
% Moisture		19.7	19.5		%	1.1	20	30-MAY-17
WG2536485-2 LCS								
% Moisture			100.2		%		90-110	30-MAY-17
WG2536485-1 MB								
% Moisture			<0.10		%		0.1	30-MAY-17
Batch R3735310								
WG2537021-3 DUP		**L1932059-14**						
% Moisture		16.8	15.7		%	6.6	20	30-MAY-17
WG2537021-2 LCS								
% Moisture			99.98		%		90-110	30-MAY-17
WG2537021-1 MB								
% Moisture			<0.10		%		0.1	30-MAY-17
PAH-511-WT	**Soil**							

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3735574								
WG2536769-4 DUP		**WG2536769-3**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	30-MAY-17
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	30-MAY-17
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	30-MAY-17
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	30-MAY-17
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	30-MAY-17
Benzo(a)anthracene		0.066	0.072		ug/g	8.7	40	30-MAY-17
Benzo(a)pyrene		0.076	0.083		ug/g	8.8	40	30-MAY-17
Benzo(b)fluoranthene		0.127	0.137		ug/g	8.0	40	30-MAY-17
Benzo(g,h,i)perylene		0.065	0.071		ug/g	8.9	40	30-MAY-17
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	30-MAY-17
Chrysene		0.077	0.081		ug/g	4.9	40	30-MAY-17
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	30-MAY-17
Fluoranthene		0.169	0.174		ug/g	2.6	40	30-MAY-17
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	30-MAY-17
Indeno(1,2,3-cd)pyrene		0.062	0.074		ug/g	18	40	30-MAY-17
Naphthalene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	30-MAY-17
Phenanthrene		0.082	0.082		ug/g	0.3	40	30-MAY-17
Pyrene		0.136	0.142		ug/g	4.1	40	30-MAY-17
WG2536769-2 LCS								
1-Methylnaphthalene			85.7		%		50-140	30-MAY-17
2-Methylnaphthalene			83.5		%		50-140	30-MAY-17
Acenaphthene			85.4		%		50-140	30-MAY-17
Acenaphthylene			82.3		%		50-140	30-MAY-17
Anthracene			76.4		%		50-140	30-MAY-17
Benzo(a)anthracene			83.0		%		50-140	30-MAY-17
Benzo(a)pyrene			82.8		%		50-140	30-MAY-17
Benzo(b)fluoranthene			83.1		%		50-140	30-MAY-17
Benzo(g,h,i)perylene			84.8		%		50-140	30-MAY-17
Benzo(k)fluoranthene			89.3		%		50-140	30-MAY-17
Chrysene			85.1		%		50-140	30-MAY-17
Dibenzo(ah)anthracene			86.8		%		50-140	30-MAY-17
Fluoranthene			83.0		%		50-140	30-MAY-17
Fluorene			83.0		%		50-140	30-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3735574								
WG2536769-2 LCS								
Indeno(1,2,3-cd)pyrene			81.3		%		50-140	30-MAY-17
Naphthalene			87.7		%		50-140	30-MAY-17
Phenanthrene			88.1		%		50-140	30-MAY-17
Pyrene			85.7		%		50-140	30-MAY-17
WG2536769-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	30-MAY-17
2-Methylnaphthalene			<0.030		ug/g		0.03	30-MAY-17
Acenaphthene			<0.050		ug/g		0.05	30-MAY-17
Acenaphthylene			<0.050		ug/g		0.05	30-MAY-17
Anthracene			<0.050		ug/g		0.05	30-MAY-17
Benzo(a)anthracene			<0.050		ug/g		0.05	30-MAY-17
Benzo(a)pyrene			<0.050		ug/g		0.05	30-MAY-17
Benzo(b)fluoranthene			<0.050		ug/g		0.05	30-MAY-17
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	30-MAY-17
Benzo(k)fluoranthene			<0.050		ug/g		0.05	30-MAY-17
Chrysene			<0.050		ug/g		0.05	30-MAY-17
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	30-MAY-17
Fluoranthene			<0.050		ug/g		0.05	30-MAY-17
Fluorene			<0.050		ug/g		0.05	30-MAY-17
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	30-MAY-17
Naphthalene			<0.050		ug/g		0.05	30-MAY-17
Phenanthrene			<0.050		ug/g		0.05	30-MAY-17
Pyrene			<0.050		ug/g		0.05	30-MAY-17
Surrogate: 2-Fluorobiphenyl			97.3		%		50-140	30-MAY-17
Surrogate: p-Terphenyl d14			98.6		%		50-140	30-MAY-17
WG2536769-5 MS		**WG2536769-3**						
1-Methylnaphthalene			88.0		%		50-140	30-MAY-17
2-Methylnaphthalene			86.6		%		50-140	30-MAY-17
Acenaphthene			89.7		%		50-140	30-MAY-17
Acenaphthylene			84.7		%		50-140	30-MAY-17
Anthracene			85.7		%		50-140	30-MAY-17
Benzo(a)anthracene			89.3		%		50-140	30-MAY-17
Benzo(a)pyrene			84.9		%		50-140	30-MAY-17
Benzo(b)fluoranthene			85.9		%		50-140	30-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3735574								
WG2536769-5 MS		**WG2536769-3**						
Benzo(g,h,i)perylene			80.5		%		50-140	30-MAY-17
Benzo(k)fluoranthene			89.0		%		50-140	30-MAY-17
Chrysene			94.1		%		50-140	30-MAY-17
Dibenzo(ah)anthracene			85.9		%		50-140	30-MAY-17
Fluoranthene			88.5		%		50-140	30-MAY-17
Fluorene			88.0		%		50-140	30-MAY-17
Indeno(1,2,3-cd)pyrene			81.7		%		50-140	30-MAY-17
Naphthalene			89.4		%		50-140	30-MAY-17
Phenanthrene			88.5		%		50-140	30-MAY-17
Pyrene			90.2		%		50-140	30-MAY-17
Batch R3736366								
WG2537122-4 DUP		**WG2537122-3**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	31-MAY-17
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	31-MAY-17
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Naphthalene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Phenanthrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-MAY-17
WG2537122-2 LCS								
1-Methylnaphthalene			84.1		%		50-140	31-MAY-17
2-Methylnaphthalene			82.6		%		50-140	31-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3736366								
WG2537122-2 LCS								
Acenaphthene			84.3		%		50-140	31-MAY-17
Acenaphthylene			81.5		%		50-140	31-MAY-17
Anthracene			82.2		%		50-140	31-MAY-17
Benzo(a)anthracene			81.4		%		50-140	31-MAY-17
Benzo(a)pyrene			80.9		%		50-140	31-MAY-17
Benzo(b)fluoranthene			84.0		%		50-140	31-MAY-17
Benzo(g,h,i)perylene			79.1		%		50-140	31-MAY-17
Benzo(k)fluoranthene			86.6		%		50-140	31-MAY-17
Chrysene			89.2		%		50-140	31-MAY-17
Dibenzo(ah)anthracene			81.2		%		50-140	31-MAY-17
Fluoranthene			82.1		%		50-140	31-MAY-17
Fluorene			82.0		%		50-140	31-MAY-17
Indeno(1,2,3-cd)pyrene			77.4		%		50-140	31-MAY-17
Naphthalene			87.0		%		50-140	31-MAY-17
Phenanthrene			85.5		%		50-140	31-MAY-17
Pyrene			84.4		%		50-140	31-MAY-17
WG2537122-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	31-MAY-17
2-Methylnaphthalene			<0.030		ug/g		0.03	31-MAY-17
Acenaphthene			<0.050		ug/g		0.05	31-MAY-17
Acenaphthylene			<0.050		ug/g		0.05	31-MAY-17
Anthracene			<0.050		ug/g		0.05	31-MAY-17
Benzo(a)anthracene			<0.050		ug/g		0.05	31-MAY-17
Benzo(a)pyrene			<0.050		ug/g		0.05	31-MAY-17
Benzo(b)fluoranthene			<0.050		ug/g		0.05	31-MAY-17
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	31-MAY-17
Benzo(k)fluoranthene			<0.050		ug/g		0.05	31-MAY-17
Chrysene			<0.050		ug/g		0.05	31-MAY-17
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	31-MAY-17
Fluoranthene			<0.050		ug/g		0.05	31-MAY-17
Fluorene			<0.050		ug/g		0.05	31-MAY-17
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	31-MAY-17
Naphthalene			<0.050		ug/g		0.05	31-MAY-17
Phenanthrene			<0.050		ug/g		0.05	31-MAY-17

Quality Control Report

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R3736366								
WG2537122-1 MB								
Pyrene			<0.050		ug/g		0.05	31-MAY-17
Surrogate: 2-Fluorobiphenyl			94.7		%		50-140	31-MAY-17
Surrogate: p-Terphenyl d14			97.8		%		50-140	31-MAY-17
WG2537122-5 MS		**WG2537122-3**						
1-Methylnaphthalene			82.2		%		50-140	31-MAY-17
2-Methylnaphthalene			80.8		%		50-140	31-MAY-17
Acenaphthene			82.5		%		50-140	31-MAY-17
Acenaphthylene			78.1		%		50-140	31-MAY-17
Anthracene			81.2		%		50-140	31-MAY-17
Benzo(a)anthracene			80.1		%		50-140	31-MAY-17
Benzo(a)pyrene			79.1		%		50-140	31-MAY-17
Benzo(b)fluoranthene			81.1		%		50-140	31-MAY-17
Benzo(g,h,i)perylene			76.5		%		50-140	31-MAY-17
Benzo(k)fluoranthene			86.3		%		50-140	31-MAY-17
Chrysene			89.4		%		50-140	31-MAY-17
Dibenzo(ah)anthracene			79.1		%		50-140	31-MAY-17
Fluoranthene			81.1		%		50-140	31-MAY-17
Fluorene			80.0		%		50-140	31-MAY-17
Indeno(1,2,3-cd)pyrene			74.1		%		50-140	31-MAY-17
Naphthalene			85.2		%		50-140	31-MAY-17
Phenanthrene			84.7		%		50-140	31-MAY-17
Pyrene			83.5		%		50-140	31-MAY-17

Quality Control Report

Workorder: L1932767 Report Date: 02-JUN-17

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1932767-COFC

COC Number: 15 - 555980

Report To	Contact and company name below will appear on the final report
Company:	CVD
Contact:	Peter Dao
Phone:	
	Company address below will appear on the final report
Street:	311 Victoria St. N
City/Province:	Kitchener, ON
Postal Code:	N2H 5E1

Report Format / Distribution	
Select Report Format:	☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	
Email 3	

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

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

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

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

Project Information	
ALS Account # / Quote #:	
Job #:	Mt. Forest Excavation - Soil
PO / AFE:	E17383
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): L1932767

ALS Contact: ML

Sampler: PD

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Metals	PAH	Number of Containers
1	1-1	26-05-17		Soil	✓	✓	
2	1-4				✓	✓	
3	1-5				✓	✓	
4	1-7				✓	✓	
5	1-9				✓	✓	
6	1-11				✓	✓	
7	1-12				✓	✓	
8	2-1				✓	✓	
9	2-4				✓	✓	
10	2-5				✓	✓	
11	2-6				✓	✓	
12	2-9				✓	✓	

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

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

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

O. Reg 153/04 Tab 6.2 R/P/I

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☐ | Ice Cubes ☑ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			2.9		

SHIPMENT RELEASE (client use)		
Released by: PD	Date: May 29/17	Time:

INITIAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)		
Received by: SH	Date: 29.MAY.17	Time: 1407

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1932767-COFC

COC Number: 15 - 555981

Report To	Contact and company name below will appear on the final report
Company:	CVD
Contact:	Peter Dao
Phone:	
	Company address below will appear on the final report
Street:	311 Victoria St. N
City/Province:	Kitchener, ON
Postal Code:	N2H 5E1
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	
Email 3	
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply			
Regular [R]	☑	Standard TAT if received by 3 pm - business days - no surcharges apply	
PRIORITY (Business Days) 4 day [P4]	☐	EMERGENCY 1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		
Date and Time Required for all E&P TATs:		dd-mmm-yy hh:mm	
For tests that can not be performed according to the service level selected, you will be contacted.			

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	Mt. Forest Excavation - Soil	Major/Minor Code:	Routing Code:
PO / AFE:	E17383	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	L1932767	ALS Contact: ML	Sampler: PD

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Metals	PAH	Number of Containers
13	2-11	26-05-17		Soil	/	/	
14	2-12	↓		↓	/	/	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	O. Reg 153/04 Table 2 R/P/I
Are samples for human drinking water use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			2.9		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: PD	Date: May 29/17	Time:	Received by:	Date:	Time:	Received by:	Date: 29-MAY-17	Time: 1407

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

CHUNG AND VANDER DOELEN
ATTN: PETER DAO
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1

Date Received: 18-JUL-17
Report Date: 20-JUL-17 13:29 (MT)
Version: FINAL

Client Phone: 519-742-8979

Certificate of Analysis

Lab Work Order #: L1960263

Project P.O. #: E17383
Job Reference: MT. FOREST - PH
C of C Numbers: 15-555996
Legal Site Desc:

Mary-Lynn Pike
Client Services Supervisor

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1960263-1 TP3-2 Sampled By: PD on 17-JUL-17 Matrix: SOIL							
Physical Tests							
pH	7.44		0.10	pH units		19-JUL-17	R3777701

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PH-WT	Soil	pH	MOEE E3137A

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

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

** 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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

15-555996

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 weight of sample
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

Client: CHUNG AND VANDER DOELEN
311 VICTORIA ST. N.
KITCHENER ON N2H 5E1
Contact: PETER DAO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WT	**Soil**							
Batch R3777701								
WG2573228-1 LCS								
pH			6.98		pH units		6.7-7.3	19-JUL-17

Quality Control Report

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

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1960263-COFC

COC Number: 15 - 555996

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply
Company:	CVD	Select Report Format: ☑ PDF ☐ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Peter Dao	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐ / 3 day [P3] ☐ / 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐ / Same Day, Weekend or Statutory holiday [E0] ☐
Phone:		☑ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Street:	311 Victoria St. N	Email 1 or Fax	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:		Email 2	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:		Email 3	

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#:
Job #: - Mt. Forest - pH		Major/Minor Code:	Routing Code:
PO / AFE:	E17383	Requisitioner:	
LSD:	-	Location:	

ALS Lab Work Order # (lab use only): L1960263 (BB AP)

ALS Contact: ML

Sampler: PD

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	H a	Number of Containers
	TP3-2	17-7-17		Soil	✓	

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

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6.6		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: PD	Date: July 18/17	Time:	Received by:	Date:	Time:	Received by:	Date: July 18, 17	Time: 12:40

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

APPENDIX E
BILLS OF LADING

CURRAN RECYCLING

MAILING ADDRESS:
283 Confederation Street
P.O. Box 940
Sarnia, ON
N7T 7K2

SITE ADDRESS:
526 McGregor Sideroad
Sarnia, ON
N7T 7H5
Tel: 519-332-0849 - Fax: 519-332-4062

TICKETS WILL NOT BE ISSUED TO OVERLOADED TRUCKS

CONSIGNED TO: RCT Bins

DATE: 30-May-17

DELIVERED TO: TRANSFER STATION

Gross: 65680

Tare: 19580

Net: 46100 KGS

TONNES: 46.1

TONS: 50.83

11:19 AM

Trucker: CHITTICK C-6 ONTARIO

HST No 899006167

Driver's Signature

PO#/JOB

MOUNT FOREST REF # 07117

46.1 TONNES SOIL NON -HAZ SOLID WASTE

0.00

I certify that this waste originate in the Province of Ontario

TICKET NO:

189721

CURRAN RECYCLING

MAILING ADDRESS:
283 Confederation Street
P.O. Box 940
Sarnia, ON
N7T 7K2

SITE ADDRESS:
526 McGregor Sideroad
Sarnia, ON
N7T 7H5
Tel: 519-332-0849 - Fax: 519-332-4062

TICKETS WILL NOT BE ISSUED TO OVERLOADED TRUCKS

CONSIGNED TO: RCT Bins

DATE: 30-May-17

DELIVERED TO: TRANSFER STATION

Gross: 59860

Tare: 19060

Net: 40800 KGS

TONNES: 40.8

TONS: 44.98

11:26 AM

PO#/JOB

MOUNT FOREST REF # 07628

Trucker: CHITTICK C-14 ONTARIO

HST No 899006167

Driver's Signature

40.8 TONNES SOIL NON -HAZ SOLID WASTE

0.00

I certify that this waste originate in the Province of Ontario

TICKET NO:

189723

CURRAN RECYCLING

MAILING ADDRESS:
283 Confederation Street
P.O. Box 940
Sarnia, ON
N7T 7K2

SITE ADDRESS:
526 McGregor Sideroad
Sarnia, ON
N7T 7H5
Tel: 519-332-0849 - Fax: 519-332-4062

TICKETS WILL NOT BE ISSUED TO OVERLOADED TRUCKS

CONSIGNED TO: RCT Bins

DATE: 30-May-17

DELIVERED TO: TRANSFER STATION

Gross: 53630

Tare: 18000

Net: 35630 KGS

TONNES: 35.63

TONS: 39.28

11:35 AM

PO#/JOB

MOUNT FOREST REF # 06395

Trucker: DJ JACKSON 82 ONTARIO

HST No 899006167

Driver's Signature

35.63 TONNES SOIL NON -HAZ SOLID WASTE

0.00

I certify that this waste originate in the Province of Ontario

TICKET NO:

189727

CURRAN RECYCLING

MAILING ADDRESS:
283 Confederation Street
P.O. Box 940
Sarnia, ON
N7T 7K2

SITE ADDRESS:
526 McGregor Sideroad
Sarnia, ON
N7T 7H5
Tel: 519-332-0849 - Fax: 519-332-4062

TICKETS WILL NOT BE ISSUED TO OVERLOADED TRUCKS

CONSIGNED TO: RCT Bins

DATE: 30-May-17

DELIVERED TO: TRANSFER STATION

Gross: 54670

Tare: 19080

Net: 35590 KGS

TONNES: 35.59

TONS: 39.24

11:44 AM

PO#/JOB

MOUNT FOREST REF # 06394

Trucker: DJ JACKSON 72 ONTARIO

HST No 899006167

Driver's Signature

35.59 TONNES SOIL NON -HAZ SOLID WASTE

0.00

I certify that this waste originate in the Province of Ontario

TICKET NO:

189733

CURRAN RECYCLING

MAILING ADDRESS:
283 Confederation Street
P.O. Box 940
Sarnia, ON
N7T 7K2

SITE ADDRESS:
526 McGregor Sideroad
Sarnia, ON
N7T 7H5
Tel: 519-332-0849 - Fax: 519-332-4062

TICKETS WILL NOT BE ISSUED TO OVERLOADED TRUCKS

CONSIGNED TO: RCT Bins

DATE: 30-May-17

DELIVERED TO: TRANSFER STATION

Gross: 61020

Tare: 19080

Net: 41940 KGS

TONNES: 41.94

TONS: 46.24

11:46 AM

PO#/JOB

MOUNT FOREST REF # 07453

Trucker: CHTTICK C-13 ONTARIO

HST No 899006167

Driver's Signature

41.94 TONNES SOIL NON -HAZ SOLID WASTE

0.00

I certify that this waste originate in the Province of Ontario

TICKET NO:

189734

MENT

AN

Petrolia LF
4092 Oil Heritage Road
Petrolia, ON, N0N1R0
Ph: (519) 882-3044

Original
Ticket# 3E4332

Customer Name WASTEAWAYRECYCLING 1045760N W
Ticket Date 06/19/2017
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 02656
Destination
PO
Profile 1045760N (OIL IMPACTED SOIL)
Generator 199-JOHNPADFIELD 700 MARTIN ST

Carrier RCT
Vehicle# RCT 12-10
Container
Driver
Check#
Billing # 0003330
Gen EPA ID
Grid

Volume

	Time	Scale	Operator
In	06/19/2017 10:13:53	Scale	
Out	06/19/2017 10:13:53		

Inbound

gross	68720 kg	
tare	20220 kg	
net	48500 kg	
metric ton	48.50 t	
Inbound gross 133683.31 lbs	tare 44577.01 lbs	net 89086.30 l tons 44.53 T

Comments

HST#875294844

	Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1	Cont Soil PCB-Matr	100	48.50	t				MOUNT FORE
2	EVFt-P10-Environme	100		%				MOUNT FORE
3	RCRt-P-Regulatory	100		%				MOUNT FORE

IGNED

WE CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS SOLID NON HAZARDOUS WASTE MATERIALS OR PRECLEARED SPECIAL WASTE AS EACH OF THESE DEFINED BELOW:

olid Non-Hazardous Waste" means commercial solid waste (including trash, refuse and garbage) and construction & demolition waste that has the characteristics of Solid on-Hazardous Waste normally produced by apartments, stores, offices, other commercial buildings and schools, provided that under no circumstances shall Solid Non-Hazardous aste include waste or other material (a) which is in whole or any part, Asbestos, liquid, radioactive, polychlorinated biphenyl, reactive, ignitable, flammable, corrosive, pathological, or herwise defined as hazardous or dangerous by federal, provincial or local laws or regulations, (b) requires special handling, or (c) which may present an occupational health hazard to nployees, representatives or agents of Waste Management of Canada Corporation; and "Precleared Special Waste" means waste or other material which is Asbestos or otherwise quires special handling, but only if its composition has been comprehensively disclosed in writing to, and accepted in advance in writing by, Waste Management of Canada Corporation.

FOR YOUR SAFETY WEAR HARD HATS AND SAFETY BOOTS

Total Fees
Total Ticket

Recycled Paper

Final Disposal By:		Other		
Recycling			Date	6/19/17
Secure Landfill			Time Received	10:14
Incineration			Receiving No.	A03303
Other (Specify)			Quantity	

SECTION D: TDGA INFORMATION (If Applicable)

Physical State	Shipping Name of Waste	Waste Identification		Quantity Shipped (litres of kilograms)	Class	Packaging Group	Packaging Contents	
		Provincial #	TDGA Pin				No.	Codes

02656

APPENDIX F
SAMPLING AND ANALYSIS PLAN

Sampling and Analysis Plan

Cork Street Railway Lands, Mount Forest, Ontario (Site)

Purpose and Objective

The purpose of the Phase Two ESA was to investigate the soil and ground water conditions at the Site based on the findings of the concurrent Phase One ESA completed and reported under a separate cover by CVD. It is our understanding that the Phase Two ESA is part of the due diligence requirements to support the residential development of the Site and the filing of a Record of Site Condition (RSC). Potentially contaminating activities (PCAs) and associated APECs identified during the previous Phase One ESA are summarized below:

Areas of Potential Environmental Concern (APECs)

Area of Potential Environmental Concern (APEC)	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Site or off-Site)	Contaminants of Potential Environmental Concern	Media Potentially Impacted (ground water, soil and/or sediment
APEC-1	Site	PCA No. 30 - Importation of Fill Material of Unknown Quality	On-Site	Metals, As, Sb, Se, PAHs	Soil & Groundwater
APEC-2	Site	PCA No. 46 – Rail Yards, Tracks and Spurs	On-Site	Metals, As, Sb, Se, PAHs	Soil & Groundwater

Sampling Rationale and Procedures

To meet the desired objectives, the investigation will include the drilling of boreholes, the installation of ground water monitoring wells, collection of representative soil and ground water samples, and the chemical analysis of soil and ground water samples.

The sampling programs will employ a judgemental sampling approach with borehole and monitoring wells being targeted to assess potential areas/depths of contamination to provide delineation/assessment based on the findings of the Phase I ESA conducted at the Site. No sediment or surface water exists at the Site therefore sampling and analyses of these media are not required.

Three (3) boreholes (MW1 to MW3) with monitoring well installation will be advanced at the Site. The sampling locations have been chosen on the basis of areas of potential environmental concern identified at the Site.

Ten (10) test pits (TP1 to TP10) will be excavated along the length of the Site at regular intervals to characterize the underlying soil conditions.

The boreholes/monitoring wells and test pits will be advanced as follows:

- MW1 will be advanced on the northern part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole will be completed with a monitoring well installation to assess the general groundwater condition at the Site.

- MW2 will be advanced on the central part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole will be completed with a monitoring well installation to assess the general groundwater condition at the Site.

- MW3 will be advanced on the southern part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole will be completed with a monitoring well installation to assess the general groundwater condition at the Site.

- Test pits TP1 to TP10 will be excavated along the length of the Site to investigate potential environmental impacts related to residual railway ballast.

A plan showing the proposed test pit, borehole and monitoring well locations is provided on Figure 1. The borehole location shall be marked in the field to accommodate utility locates and clearances. The boreholes may be re-located as necessary based on underground utility locations. The boreholes shall be advanced using a direct push Geoprobe drill rig. The test pits shall be advanced using a track-mounted excavator.

Soil samples collected during borehole drilling and test pit excavation will be screened in the field for evidence of negative impact using visual/olfactory observations and soil sample headspace screening measurements of combustible and total organic vapours using a photoionization detector (e.g. MiniRAE 3000). The instrument shall be calibrated daily using known standards.

The monitoring well shall be constructed using commercially available 38 mm diameter PVC monitoring well supplies. The monitoring well shall be constructed with a 1.5 m screen to intersect the water table. Ground water samples are to be collected after the wells have been both developed subsequent to installation and purged prior to sampling.

Ground surface elevations for all proposed borehole/monitoring well locations shall be referenced to a permanent monument (catch basin on the northbound land of Watson Parkway North, adjacent to the west of the Site) with a geodetic elevation of 329.30 m.

Soil samples shall be submitted for analysis from depths of previously identified impacts as well as depth below this zone to achieve horizontal and vertical delineation of contaminants. Additional samples may be submitted on the basis of the visual or olfactory evidence of contamination and field screening results (VOCs).

A summary of the soil analytical schedule is provided in the table below. Soil samples selected for analysis shall be based on worse case results of the sample screening. Where no elevated vapours or other obvious indicators (staining/odours) exist, samples selections shall be based on presence of deleterious materials (e.g. ashes, cinders, coal fragments, waste materials).

Soil Sample Laboratory Analytical Schedule

Media / Sample Area	Parameters
	Metals and PAHs
Total Soil Samples	**4**
One (1) borehole over the northern end of the Site	1
One (1) borehole over the central part of the Site	1
One (1) borehole over the southern end of the Site	1
QA/QC – Duplicate	1

Soil samples to be analyzed for VOCs must be preserved in the field using methanol field preservation procedures in accordance with the revised Analytical Protocol. The QP shall be notified where additional laboratory analyses are warranted based on visual/olfactory observations and/or soil sample headspace measurements.

Ground water sampling will be conducted at each of the proposed monitoring wells. Each monitoring well will be sampled for PAHs and metals.

A summary of the proposed ground water analytical schedule is provided below.

Proposed Ground Water Sample Laboratory Analytical Schedule

Media / Sample Area	Parameters
	Metals and PAHs
Total Ground Water Samples	**5**
One (1) borehole over the northern end of the Site	1
One (1) borehole over the central part of the Site	1
One (1) borehole over the southern end of the Site	1
QA/QC – Duplicate	1
Field Blank	1
Trip Blank	1

Excess purge water generated during well development and sampling will be stored in containers on-Site pending off-Site disposal by a licensed water hauler or re-infiltration into the Site. Samples are to be submitted for analysis with the Chain of Custody clearly marked “O.Reg. 153/04” and with Table 2 selected as the applicable criteria. Any deviations from the planned scope of work and the rationale for the deviation(s) are to be approved and are to be recorded in the field notes.

Quality Assurance/Quality Control Plan

Quality is controlled through the establishment of plans and procedures to perform, examine, measure, monitor and evaluate the work in progress. Quality is verified through inspection, testing, checking, review, and audit of the work activities and documentation. A strict QA/QC plan will be implemented and maintained throughout the project to ensure the Site data to be unbiased and representative of the actual Site conditions.

The QA/QC plan provides a method of documented checks to assess the precision and accuracy of collected data. The QA/QC plan includes a set of standard operating procedures or protocols to be followed throughout the investigations. To this end, CVD field and QA/QC protocols have been developed to meet or exceed those defined in the MOECC documents entitled Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04 (June 2011) and Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario (1996).

The field QA/QC plan included the following components:

- The use of personnel protective equipment including hard hats, safety glasses, safety work boots, and chemically resistant nitrile gloves for sample handling;
- Thorough documentation of all field activities and sample handling practices including field notes, photographs, chain of custody forms, memos to file, etc;
- Thorough decontamination of all sampling equipment employed in all investigation phases;
- The incorporation of blind duplicate samples, field blanks and trip blanks into the sampling and analytical programs to assess the validity of the data received from the analytical laboratory; and,
- The use of laboratory analytical protocols and method detection limits that have been established in accordance with regulatory requirements for the province of Ontario.

During the sampling process, strict adherence to established QA/QC protocol ensures the integrity of the samples collected and the validity of analytical data generated. Field sampling is of great importance, both in terms of the accuracy of the results and the defence of the final data set. This will be addressed for sample tracking, labelling and chain of custody protocols and the provision for an appropriate number of field duplicates, trips blanks and field blanks, which will be used to validate the data and ensure that the data obtained from the laboratory is reliable and defensible.

Specifications regarding sampling procedures, well installations, instrument calibration, filed measurements, collection of blind duplicate samples, etc., are provided in the SOP.

Attachments (1) Figure 1 Proposed Borehole and Monitoring Well Location Plan.

APPENDIX G
PHASE TWO CONCEPTUAL SITE MODEL

CHUNG & VANDER DOELEN
ENGINEERING LTD.

PHASE TWO CONCEPTUAL SITE MODEL

CORK STREET RAILWAY LANDS
(BETWEEN MARTIN STREET AND PRINCESS STREET)

MOUNT FOREST, ONTARIO

FILE NO. / E17383 / September, 2017

Introduction

This Phase Two Conceptual Site Model has been prepared, in accordance with Schedule E, Part V, Table 1, S6(x) of Ontario Regulation 153/04 (as amended), as part of the Phase Two Environmental Site Assessment (ESA) by Chung & Vander Doelen Engineering Ltd. (CVD) for the RSC Property (Cork Street Railway Lands) located west of Cork Street, between Princess Street and Martin Street, in Mount Forest, Ontario (hereinafter referred to as the "Phase Two Property").

The Phase Two Conceptual Site Model (CSM) is based on the findings of the Phase One ESA (dated June 23, 2017) and the Phase Two ESA (dated August 10, 2017) conducted by CVD for the Phase Two Property.

The CSM is complete with several figures to assist with organizing, presenting and understanding the soil and groundwater data that is related to the Phase Two Property. Refer to Figures 1-14 (appended).

Description and Assessment

The Phase Two Property is a vacant property covering a plan area of 2.874 ac in an area of residential, agricultural and community land uses. According to available resources, the Phase Two Property was historically part of the Toronto Grey & Bruce railway network until the tracks were decommissioned and railroad ballast removed circa 1990s. Since the decommissioning of the railway tracks, the Phase Two Property has remained vacant.

The legal description of the Phase Two Property is:

- PT LT 2 CON WOSR DIVISION 1 ARTHUR TOWNSHIP; PT LT 2 CON WOSR DIVISION 2 ARTHUR TOWNSHIP; PT PKLT 10 S/S PRINCESS STREET PL TOWN OF MOUNT FOREST BEING PTS 2, 3, 9 & 10, 61R7789; S/T RO800177E; TOWNSHIP OF WELLINGTON NORTH, COUNTY OF WELLINGTON

The property PIN is 71053-0213 (LT).

Areas Where Potentially Contaminating Activity Has Occurred

The Phase One ESA evaluated the environmental conditions of the Phase Two Property and adjacent properties to identify actual or potential sources of contamination associated with the Phase Two Property and surrounding properties. Based on the result of this investigation, potential contaminating activities (PCAs) associated with the Phase Two Property and properties within the Phase One Study Area were identified.

The Phase One ESA identified the following PCAs (Figure 2) that are related to the Phase Two Property and properties within the Phase One Study Area:

TABLE OF POTENTIALLY CONTAMINATING ACTIVITIES

PCA	Location	Description	Evaluation
1	Phase Two Property	PCA No. 30 – Importation of Fill Material of Unknown Quality	As part of railroad construction, it is expected that fill material of unknown quality was imported for use as track ballast for the track bed construction circa 1880s. During the 19th century, imported fill material used for railway ballast often included recycled slag and other waste rocky materials that may pose as potential environmental liabilities to the Phase Two Property.
2	Phase Two Property	PCA No. 46 – Rail Yards, Tracks and Spurs	The Phase Two Property was developed and used as part of the Toronto Grey & Bruce railway network between circa 1880s and 1990s. Old railway lines are common sources of soil contamination, including polycyclic aromatic hydrocarbons (PAHs) and heavy metals as a by-product of locomotive and railcar operations. Due to the extended period of usage as a railway, contaminants in the soil would have accumulated over time and may potentially pose as environmental liabilities to the Phase Two Property.
3	Martin Street Landfill	PCA No. 58 – Waste Disposal and Waste Management	The closed Mount Forest Martin Street municipal/domestic waste landfill (No. X8106) is located ±130 m south of the Phase Two Property. Based on the separation distance and the down-gradient location in terms of inferred groundwater flow, the closed landfill is not expected to be an environmental concern to the Phase Two Property at this time.

Areas of Potential Environmental Concern

As per the above PCA, two (2) areas of potential environmental concern (APECs) were identified on the Phase Two Property. The following table summarizes the APECs on the Phase Two Property:

TABLE OF AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Area of Potential Environmental Concern (APEC)	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)
APEC-1 Potential Fill of Unknown Quality	Site	PCA No. 30 - Importation of Fill Material of Unknown Quality	On-Site	Metals, As, Sb, Se, PAHs	Soil & Groundwater
APEC-2 Railway Line	Site	PCA No. 46 – Rail Yards, Tracks and Spurs	On-Site	Metals, As, Sb, Se, PAHs	Soil & Groundwater

The location of the APECs on the Phase Two Property are illustrated in Figure 4.

Subsurface Structures and Utilities

The Phase Two Property is a vacant lot with no utilities or other subsurface structures.

Physical Setting

Stratigraphy

In general, the soil stratigraphy encountered at the Phase Two Property consist of sand and gravel fill from 0.0 to 0.91 metres below ground surface (mbgs) which is underlain by sand lenses up to 3.05 mbgs on the north and south ends of the Phase Two Property. Underlying the fill and sand units is a silt till which extends to a depth of greater than 4.57 mbgs. Bedrock was not encountered in any of the boreholes. Sparse surface vegetation (i.e. grass, weed and shrubs) cover the otherwise bare surface of the Phase Two Property.

A Cross Section Plan is included as Figure 8. Cross section drawings of the soil stratigraphy prior to remedial action are presented in Figures 9A and 9B.

Hydrogeological Characteristics

Three (3) monitoring wells (MW1 to MW3) were installed during the Phase Two ESA. The monitoring wells were installed within the sand and gravel fill, sand, and/or silt till deposits. Based on the static groundwater measurements (hydraulic heads) taken on April 28, 2017, the localized groundwater flow direction is approximated to be southeasterly towards the South Saugeen River. A groundwater flow direction plan is illustrated in Figure 7.

A shallow groundwater table was observed within the unconfined sand and gravel fill, and sand aquifer. From borehole observations, the saturated zone extends up to 3 m into an unconfined silt till aquifer. There is no perched water at the Phase Two Property and no evidence of perched water.

The 'horizontal' groundwater flow velocity through the surficial unconfined silty sand aquifer `can be calculated using Darcy's Equation and estimates of the hydraulic conductivity, horizontal hydraulic gradient and porosity.

The 'horizontal' hydraulic gradient (or water table slope) across the Phase Two Property is calculated to be 0.05 m/m, based on the measured groundwater levels (hydraulic head) at each monitoring well. The 'horizontal' hydraulic conductivity (or permeability) of the surficial aquifer is expected to be $1x10^{-3}$ cm/s to 1.0 cm/s, given the nature of the aquifer (i.e. sand, and/or silt till).

The Town of Mount Forest relies on groundwater as a potable water source. The Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region has implemented a plan that designates Wellhead Protection Areas around each municipal drinking-water supply well in the Town of Mount Forest. Wellhead Protection Areas (WHPA) are classified from A to D, with WHPA-A areas being the areas closest to municipal wells and the most vulnerable. The Phase Two Property is located outside of the Town of Mount Forest WHPAs.

Approximate Depth to Bedrock

Based on water well records provided by the Government of Ontario for properties immediately west of the Phase Two Property, the depth to bedrock for the Phase Two Property is inferred to be at approximately 46 meters below ground surface (mbgs).

Based on the boreholes advanced by CVD on the Phase Two Property, no bedrock was encountered at depths of up to 4.57 mbgs. The depth to bedrock is greater than 4.57 mbgs, therefore, shallow bedrock conditions do not apply to the Phase Two Property.

Approximate Depth to Water Table

The groundwater levels from the monitoring wells were measured utilizing a Heron H.01 interface meter. Based on the groundwater measurements, the groundwater is located within the fill and native soil at depths ranging between 0.51 and 1.17 mbgs (hydraulic heads between 410.01 and 411.07 m).

Based on the hydraulic heads from MW1 to MW3, the localized groundwater flow direction is determined to be southeasterly. Elevations are relative to a temporary benchmark, the top of a 1-inch square iron survey bar located at the intersection of Martin Street and Cork Street with a geodetic elevation of 411.88 m.

Section 41 or 43.1 of the Regulation

The Phase Two Property is not within/adjacent/part of an area of natural significance. Analytical testing indicated that the pH of tested soil samples for surface soil is from 5.0 to 9.0 and subsurface soil is from 5.0 to 11.0. Therefore, Section 41 of the Regulation (Site Condition Standards, Environmental Sensitive Areas) does not apply to the Phase Two Property.

A water body is not located on or within 30 m of the Phase Two Property. Bedrock was not encountered within 2.0 mbgs at the Phase Two Property but static groundwater levels less than 3.0 mbgs were measured from all monitoring wells. In accordance with the Ministry of the Environment and Climate Change amended Ontario Regulation 153/04 (regulation) Part IX section 43.1, due to the shallow groundwater table, the Site is considered a shallow soil/groundwater property.

Section 43.1 of the Regulation (Site Condition Standards, Shallow Soil Property or Water Body) therefore applies to the Phase Two Property and analytical results were compared to the MOECC Table 6, Generic Site Condition Standards for Shallow Soils in a Potable Groundwater Condition.

The Town of Mount Forest relies on groundwater as a source of potable water, therefore, a potable groundwater condition exists at the Phase Two Property. For comparative purposes, the analytical results were compared to the generic standards as the proposed future use of the Phase Two Property is a residential land use.

Soils Placed On, In or Under the Phase Two Property

Based on the findings of the Phase One and Phase Two ESA, the Phase Two Property was formerly re-graded with imported fill for railway track bed construction and as track ballast.

Proposed Building and Other Structures

The proposed development of the Phase Two Property includes the construction of single family residences. The locations of the proposed buildings are not known at this time.

Contamination In or Under the Phase Two Property

To meet the desired objectives, the investigation included the excavation of test pits, drilling of boreholes, the installation of groundwater monitoring wells, collection of representative soil and

groundwater samples, and the chemical analysis of soil and groundwater samples. The sampling programs employed a judgmental sampling approach with borehole and monitoring wells being targeted to assess areas/depths of potential contamination.

Based on the findings of the Phase One ESA, contaminants of potential concern in the soil and groundwater with respect to the identified APECs at the Phase Two Property were assessed during the Phase Two ESA.

Three (3) boreholes (MW1 to MW3) and ten (10) test pits (TP1 to TP10) were advanced on the Phase Two Property to characterize the underlying soil and groundwater conditions. The three (3) boreholes (MW1 to MW3) were installed with monitoring wells. The borehole locations are provided in Figure 3.

The boreholes were located in the following areas (Figure 3) with the following rationale:

- MW1 was advanced on the northern part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.

- MW2 was advanced on the central part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.

- MW3 was advanced on the southern part of the Site to investigate potential environmental impacts related to residual railway track bed and ballast. The borehole was completed with a monitoring well installation to assess the general groundwater condition at the Site.

- Test pits TP1 to TP10 were excavated along the length of the Site to investigate potential environmental impacts related to residual railway ballast.

Laboratory analyses of chemicals of potential concern in soil included metals, As, Sb, Se and PAHs and pH. For due diligence purposes, random samples were analyzed for BTEX and/or PHCs.

Laboratory analyses of chemicals of potential concern in groundwater included, metals, As, Sb, Se and PAHs. For due diligence purposes, groundwater samples were also analyzed for BTEX and PHCs.

The Town of Mount Forest relies on groundwater as a source of potable water. Bedrock was not encountered within 2.0 mbgs at the Phase Two Property but static groundwater levels less than 3.0 mbgs were measured from all monitoring wells. The analytical results were therefore compared to the MOECC Table 6, Generic Site Condition Standards for Shallow Soils in a Potable Groundwater Condition.

Based on development plans, the soil and groundwater results were compared to the residential/parkland/institutional property use for a coarse textured soil (herein referred to as the “applicable Table 6 standards”). A coarse textured soil definition for the Phase Two Property was adopted to evaluate the soil and groundwater conditions.

Area Where Contaminants are Present & Contaminants Associated with Contaminated Areas

The laboratory analytical results of soil sample TP3-1 (0.30 to 0.61 mbgs), collected from the imported fill of unknown quality (APEC-1) at test pit TP3, reported an arsenic concentration of 33.4 µg/g, which exceeds the applicable Table 6 standards of 18 µg/g.

The laboratory analytical results of soil sample TP8-1 (0.30 to 0.61 mbgs), collected from the imported fill of unknown quality (APEC-1) at test pit TP8, reported arsenic (50.8 µg/g), acenaphthylene (0.301 µg/g), benzo(a)anthracene (0.63 µg/g), benzo(a)pyrene (0.799 µg/g), benzo(b)fluoranthene (1.27 µg/g), dibenzo(ah)anthracene (0.173 µg/g), fluoranthene (0.775 µg/g), indeno(1,2,3-cd)pyrene (0.564 µg/g), 1+2-methylnaphthalene (1.62 µg/g), and naphthalene (0.682 µg/g) concentrations which exceeds the applicable Table 6 standards.

The analytical results of soil samples collected from the remaining borehole and test pit locations reported that all tested chemical parameters met the applicable Table 6 standards. No other contaminants are identified at the Phase Two Property at a concentration above the applicable Table 6 standards.

The analytical results of soil and groundwater samples selected for analysis from MW1 to MW3 indicate that all PAH, BTEX, PHC F1-F4, As, Sb, Se, and metal parameters were either not detected or were below the applicable Table 6 standards. All laboratory MDLs were below the applicable Table 6 standards.

Medium in Which Contaminants are Present

Contaminants of concern (COCs), including PAHs and As, are present in the imported fill material (residual railway track bed and ballast) that was identified at the Phase Two Property. No sediment is located on, in or under the Phase Two Property.

Description and Assessment of Contaminated Areas & Distribution of Contaminants

Based on the Phase Two ESA investigation, two (2) areas of impacted soil were identified.

The first area was located on the northern half of the Phase Two Property and was identified to have arsenic and PAH (acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(ah)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, 1+2-methylnaphthalenes, naphthalene) impacted soil between 0.30 and 0.61 mbgs at sample location TP8. The surface area of impacted soil was measured to be approximately 65 m^2.

The second area was located at the southern end of the Phase Two Property and was identified to have arsenic impacted soil between 0.30 and 0.61 mbgs at sample location TP3. The surface area of impacted soil was measured to be approximately 80 m^2.

A remediation contractor was retained to complete the excavation and removal of the impacted soil. CVD provided direction to the contractor during the excavation and soil removal activities and collected soil samples during and after the soil remediation was completed.

Prior to the remediation activities, a representative sample of the impacted soil was submitted to ALS Laboratory Group in Waterloo, Ontario, for analysis under Ontario Regulation 558/00 Schedule 4. The analytical results indicated that the impacted soil was classified as a non-hazardous waste.

The impacted soil was subsequently excavated and removed from the Phase Two Property between May 26th and May 29th, 2017. A total of 435.7 metric tonnes of soil was removed from the Phase Two Property by Waste Away Recycling & Environmental Inc. for disposal at the Waste Management Petrolia Landfill, a MOECC registered landfill in Petrolia, Ontario.

Following the removal of the impacted soil, CVD collected confirmatory soil samples from the floor and sidewalls of the excavation in accordance with the sampling frequency provided in Table 3 of Schedule E of O.Reg 153/04.

A total of fourteen (14) soil verification samples were submitted to ALS Laboratory Group in Waterloo, Ontario, for chemical analyses which included As, Sb, Se, metals and PAHs. The laboratory results indicate that all soil verification samples had As, Sb, Se, metals and PAH concentrations that were either not detected or below the applicable Table 6 standards.

Reasons for Discharge

The Phase Two Property was developed as a railway corridor by the Toronto, Grey & Bruce Railway Company circa late-1800's. Fill material was imported onto the Phase Two Property for track bed grading and as track ballast.

Migration of Contaminants

The identified arsenic and PAHs parameters in the fill material would not migrate vertically within the soil due to limited mobility. No other contaminants are identified at the Phase Two Property at a concentration above the applicable regulatory standards.

Climatic or Meteorological Conditions Influencing Distribution and Migration

Temporal, climatic and meteorological conditions do not have a major influence at the Phase Two Property.

Vapour Soil Intrusion

Based on the Phase Two ESA, soil impacts at the Site include arsenic and PAHs (acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(ah)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, 1+2-methylnaphthalenes, naphthalene). These chemicals of potential concern (COCs) are not considered to be volatile, therefore, the soil does not present a potential risk to receptors as an indoor air exposure pathway.

Potential Exposure Pathways and Receptors

Since no contaminants remain at the Phase Two Property at a concentration above the applicable regulatory standard, no potential pathways and receptors are identified.

The sources of the COCs have been removed from the Phase Two Property. Tables illustrating potential source(s), contaminant transport pathways and human or ecological receptors currently on the Site are included below:

HUMAN HEALTH

Source	Contaminant of Concern (COC)	Potential Pathway	Potential Risks	
			Pre-Impacted Soil Removal (Prior to May 2017)	Post-Impacted Soil Removal (Since May 2017)
Fill	As, PAHs	Ingestion	Minimal Risk Present	Sources Removed → No Risk
		Inhalation	Minimal Risk Present	
		Skin Contact	Minimal Risk Present	
Native Soils	None	Ingestion	No Source → No Risk	No Source → No Risk
		Inhalation		
		Skin Contact		
Bedrock	None	Ingestion	No Source → No Risk	No Source → No Risk
		Inhalation		
		Skin Contact		
Ground Water	None	Ingestion	No Source → No Risk	No Source → No Risk
		Skin Contact		

Potential current human receptors at the Site include construction/remediation workers. Future potential human receptors at the Site include residents (adult and children).

TERRESTRIAL ENVIRONMENT

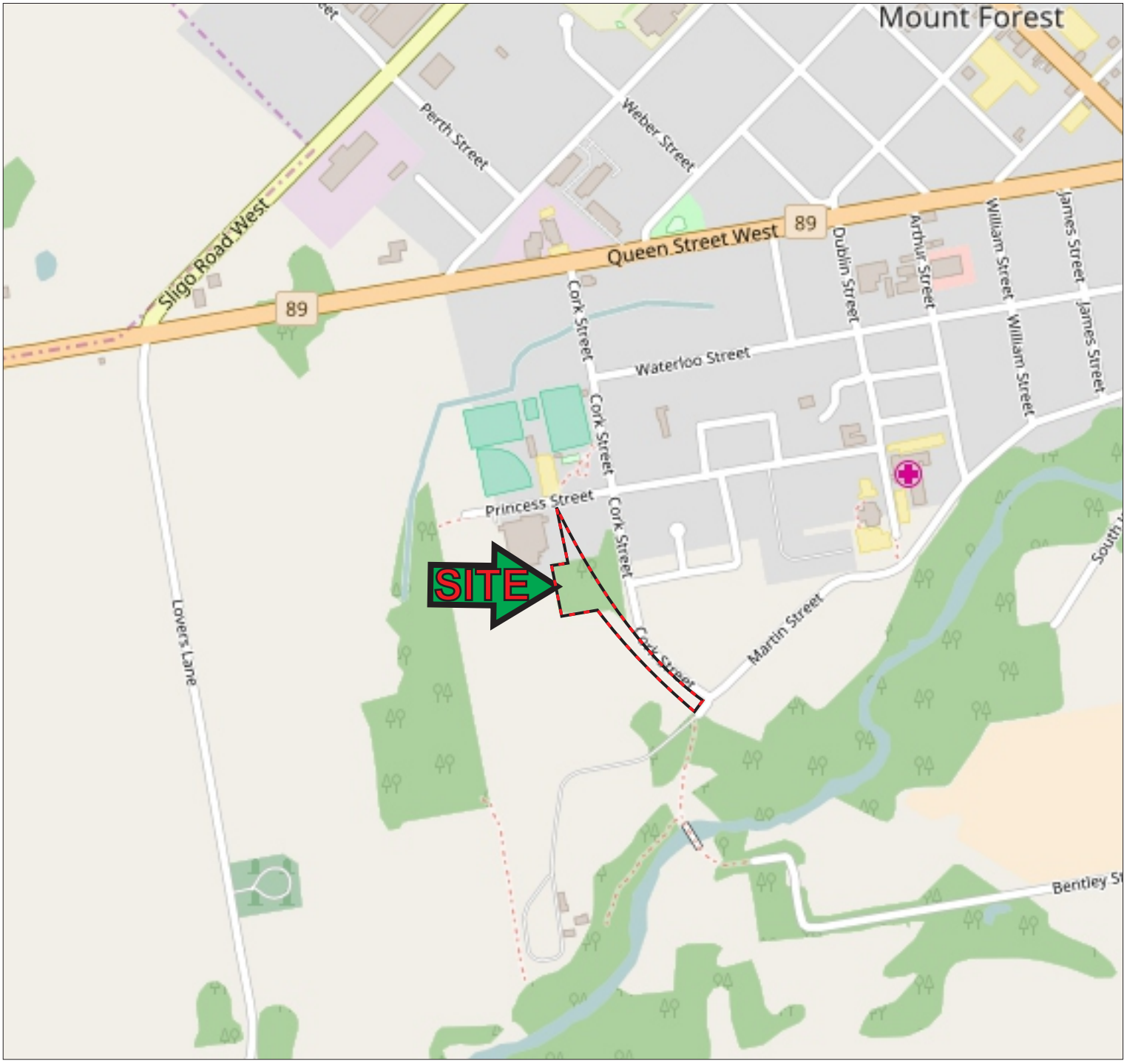
Source	Contaminant of Concern (COC)	Potential Pathway	Potential Risks	
			Pre-Impacted Soil Removal (Prior to May 2017)	Post-Impacted Soil Removal (Since May 2017)
Fill	As, PAHs	Ingestion	Minimal Risk Present	Sources Removed → No Risk
		Inhalation	Minimal Risk Present	
		Skin Contact	Minimal Risk Present	
		Root Intake	Minimal Risk Present	
Native Soils	None	Ingestion	No Source → No Risk	No Source → No Risk
		Inhalation		
		Prey/Food Uptake		
Bedrock	None	Ingestion	No Source → No Risk	No Source → No Risk
		Inhalation		
		Skin Contact		
Ground Water	None	Ingestion	No Source → No Risk	No Source → No Risk
		Root Uptake		

Potential current and future ecological receptors include terrestrial plants (root uptake), soil invertebrates, small mammals and birds.

AQUATIC ENVIRONMENT

Source	Contaminant of Concern (COC)	Potential Pathway	Potential Risks	
			Pre-Impacted Soil Removal (Prior to May 2017)	Post-Impacted Soil Removal (Since May 2017)
Ground Water	None	Gill Uptake	No Source / No Aquatic Ecosystem → No Risk	No Source / No Aquatic Ecosystem → No Risk
		Ingestion		
		Prey/Food Uptake		

No potential current or future aquatic environment ecological receptors exist as no aquatic ecosystem is present on the Site.



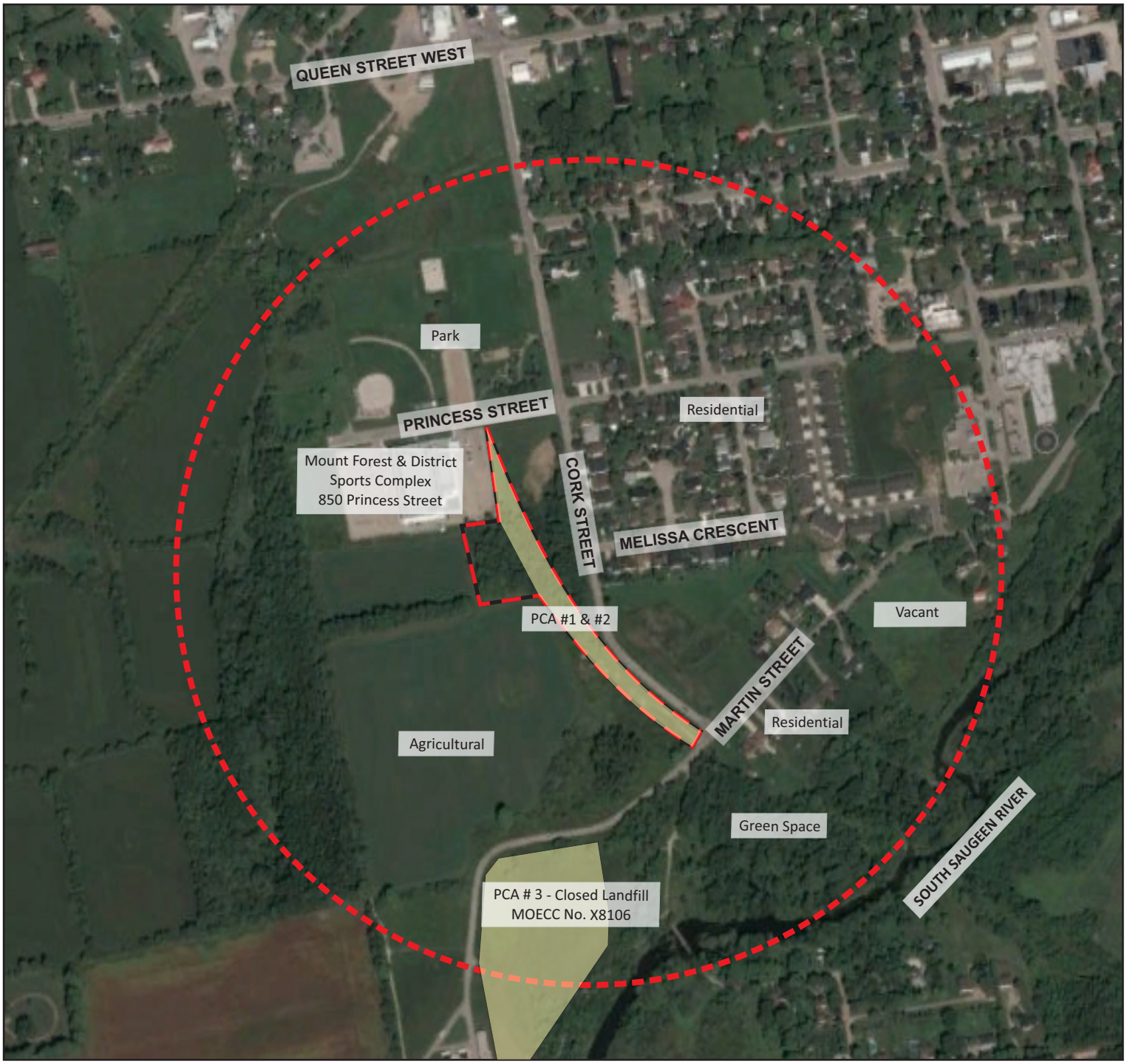
LEGEND

PHASE TWO PROPERTY BOUNDARY

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N
W E
S

KEY PLAN **CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO**	**Date:**	**SEPT. 2017**
	Scale:	**1:11000**
	File No.:	**E17383**
	Figure:	**1**



LEGEND

PHASE TWO PROPERTY BOUNDARY

PHASE ONE STUDY AREA

POTENTIALLY CONTAMINATING ACTIVITY (PCA)

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N W E S

STUDY AREA PLAN **CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO**	**Date:**	**SEPT. 2017**
	Scale:	**1:11000**
	File No.:	**E17383**
	Figure:	**2**

LEGEND

PHASE TWO PROPERTY BOUNDARY

MONITORING WELL LOCATIONS

TEST PIT LOCATIONS

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N
W E
S

BOREHOLE AND TEST PIT LOCATION PLAN CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO	Date:	SEPT. 2017
	Scale:	1:2500
	File No.:	E17383
	Figure:	3

LEGEND

PHASE TWO PROPERTY BOUNDARY

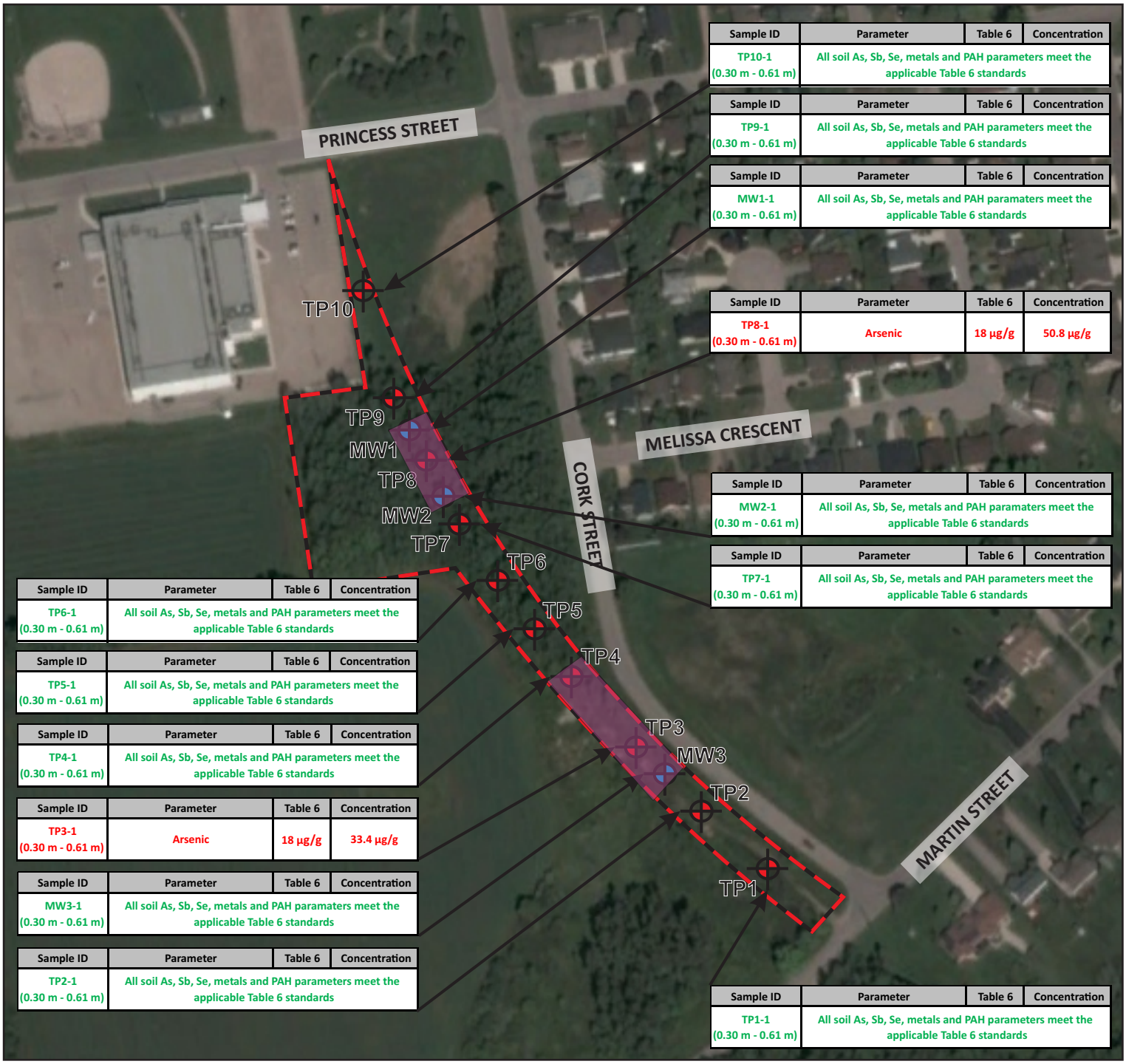
APEC-1 (PCA #30)

APEC-2 (PCA #46)

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N
W E
S

APEC PLAN CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO	Date:	SEPT. 2017
	Scale:	1:2500
	File No.:	E17383
	Figure:	4



Sample ID	Parameter	Table 6	Concentration
TP10-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP9-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP8-1 (0.30 m - 0.61 m)	Arsenic	18 µg/g	50.8 µg/g

Sample ID	Parameter	Table 6	Concentration
MW2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP7-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP6-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP5-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP4-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP3-1 (0.30 m - 0.61 m)	Arsenic	18 µg/g	33.4 µg/g

Sample ID	Parameter	Table 6	Concentration
MW3-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

LEGEND

PHASE TWO PROPERTY BOUNDARY

MONITORING WELL LOCATIONS

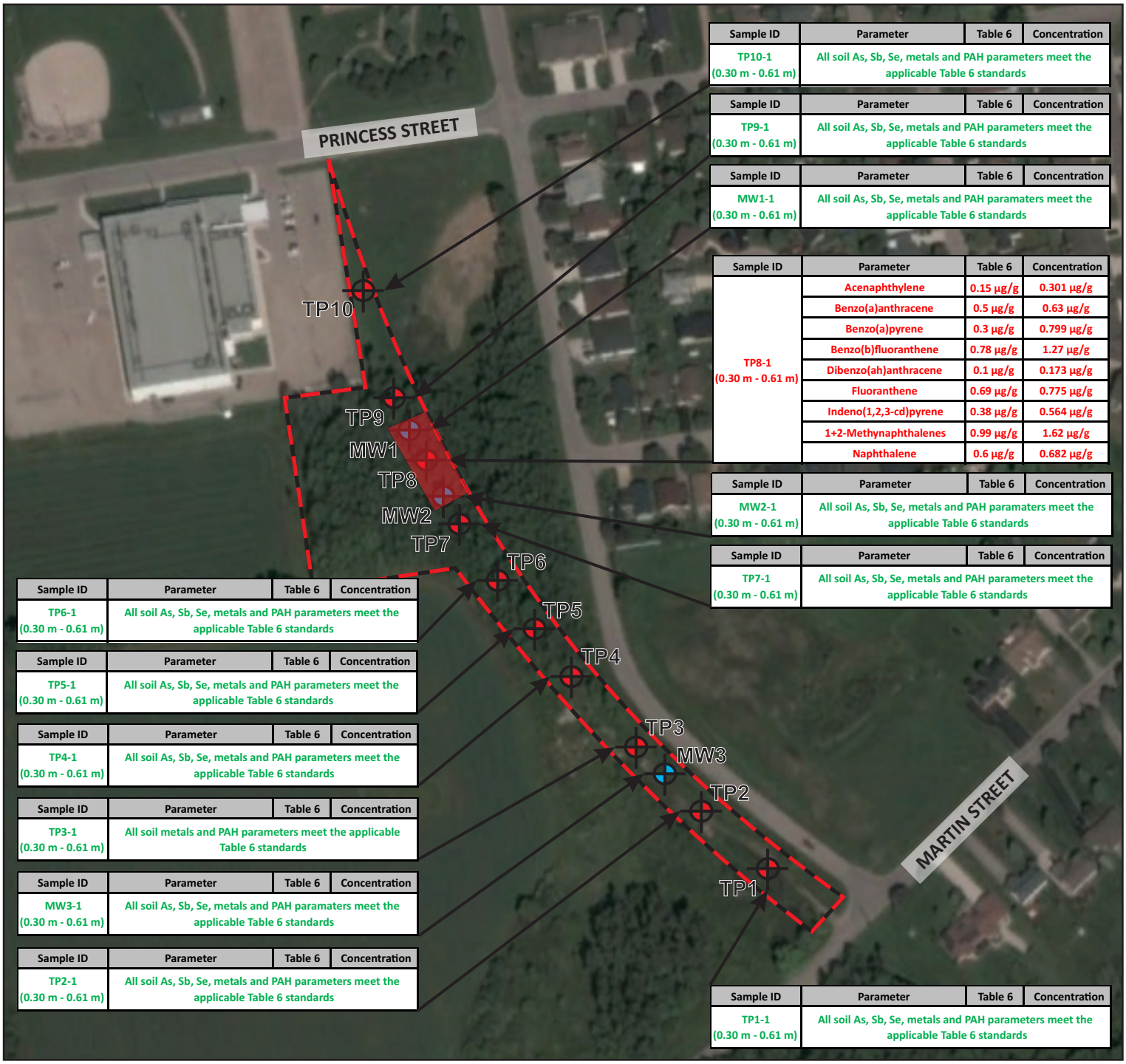
TEST PIT LOCATIONS

HORIZONTAL EXTENT OF HYDRIDE IMPACTS IN SOIL

CHUNG & VANDER DOELEN ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N W E S

HORIZONTAL EXTENT OF HYDRIDE IMPACTS IN SOIL PRIOR TO REMEDIAL ACTION	Date:	SEPT. 2017
	Scale:	1:2500
CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO	File No.:	E17383
	Figure:	5A



Sample ID	Parameter	Table 6	Concentration
TP10-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP9-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP8-1 (0.30 m - 0.61 m)	Acenaphthylene	0.15 µg/g	0.301 µg/g
	Benzo(a)anthracene	0.5 µg/g	0.63 µg/g
	Benzo(a)pyrene	0.3 µg/g	0.799 µg/g
	Benzo(b)fluoranthene	0.78 µg/g	1.27 µg/g
	Dibenzo(ah)anthracene	0.1 µg/g	0.173 µg/g
	Fluoranthene	0.69 µg/g	0.775 µg/g
	Indeno(1,2,3-cd)pyrene	0.38 µg/g	0.564 µg/g
	1+2-Methynaphthalenes	0.99 µg/g	1.62 µg/g
	Naphthalene	0.6 µg/g	0.682 µg/g

Sample ID	Parameter	Table 6	Concentration
MW2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP7-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP6-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP5-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP4-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP3-1 (0.30 m - 0.61 m)	All soil metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW3-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

LEGEND

PHASE TWO PROPERTY BOUNDARY

MONITORING WELL LOCATIONS

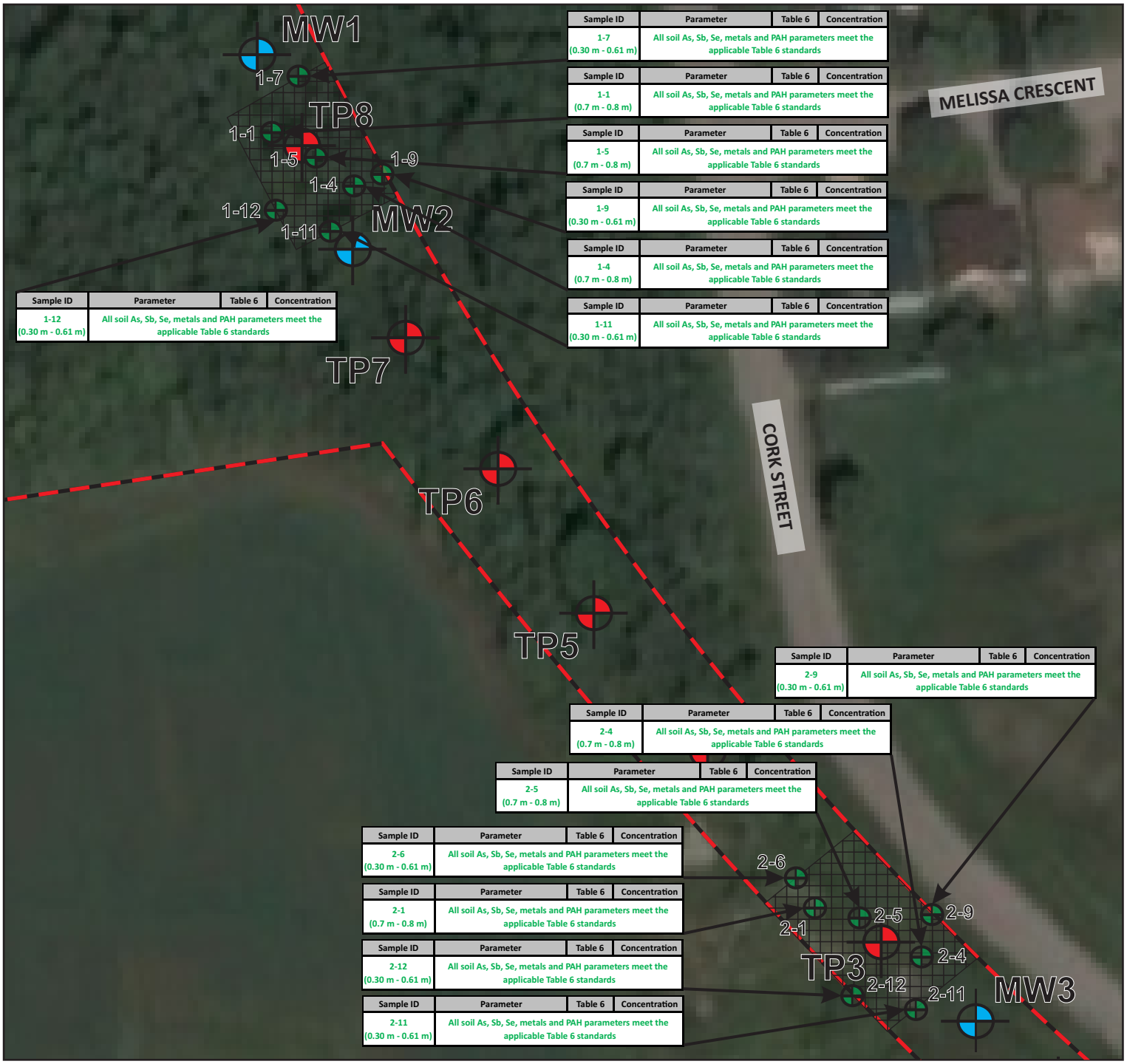
TEST PIT LOCATIONS

HORIZONTAL EXTENT OF PAH IMPACTS IN SOIL

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N W E S

HORIZONTAL EXTENT OF PAH IMPACTS IN SOIL PRIOR TO REMEDIAL ACTION	Date:	SEPT. 2017
	Scale:	1:2500
CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO	File No.:	E17383
	Figure:	5B



LEGEND

PHASE TWO PROPERTY BOUNDARY

MONITORING WELL LOCATIONS

TEST PIT LOCATIONS

EXTENT OF EXCAVATION

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N W E S

SOIL VERIFICATION SAMPLE PLAN
POST-REMEDIAL ACTION

CORK STREET RAILWAY LANDS
(BETWEEN MARTIN & PRINCESS STREET)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
Scale:	1:360
File No.:	E17383
Figure:	6

LEGEND

PHASE TWO PROPERTY BOUNDARY	
MONITORING WELL LOCATIONS	
GENERAL DIRECTION OF GROUNDWATER FLOW	
GROUNDWATER ELEVATION	324.56 m
EQUIPOTENTIAL LINES (INFERRED)	

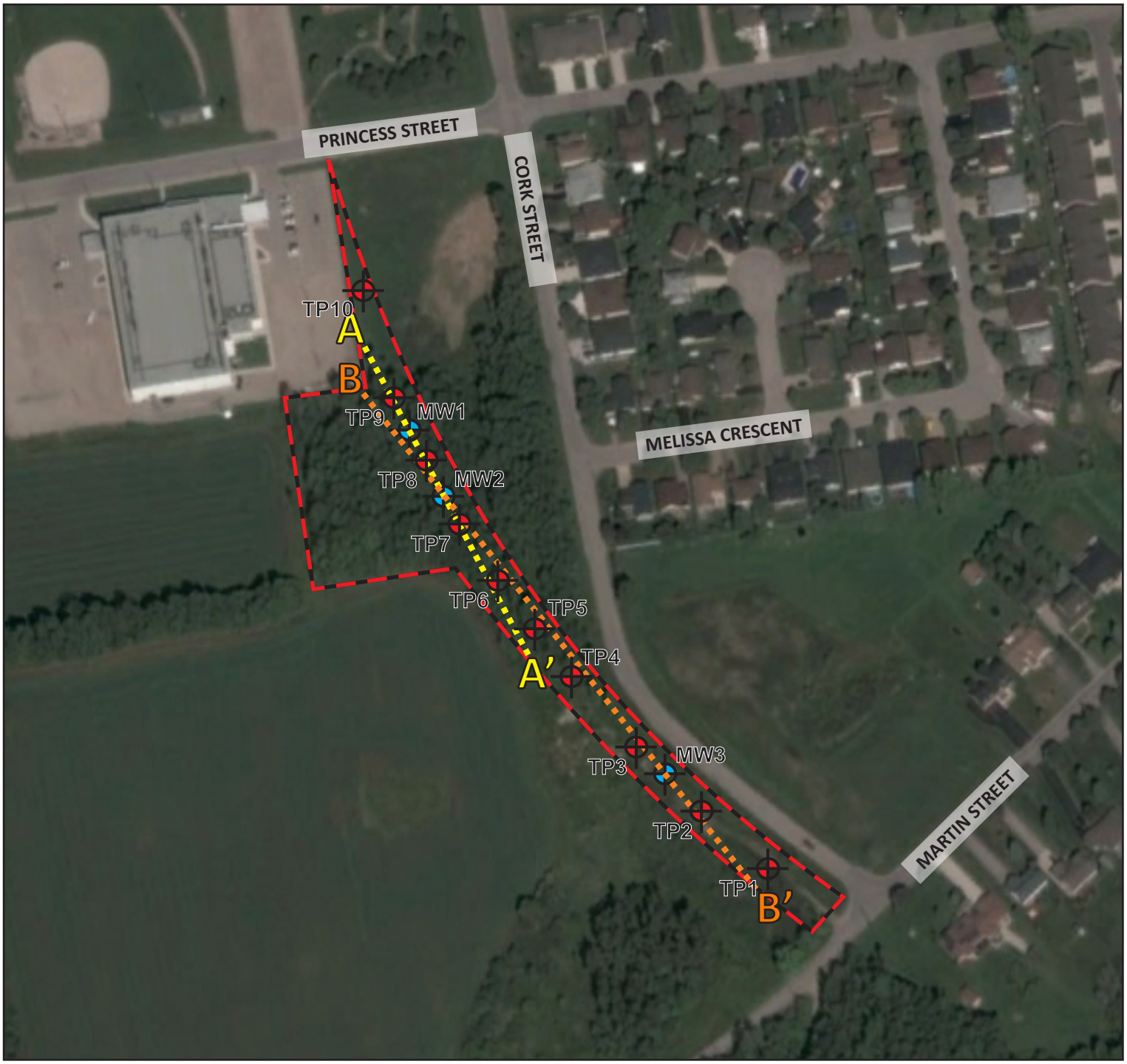
CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N
W E
S

SHALLOW GROUNDWATER FLOW PLAN

CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
Scale:	1:1000
File No.:	E17417
Figure:	7



LEGEND

PHASE TWO PROPERTY BOUNDARY

MONITORING WELL LOCATIONS

CROSS SECTION (A - A')

CROSS SECTION (B - B')

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

N W E S

CROSS SECTION PLAN CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO	Date:	SEPT. 2017
	Scale:	1:1000
	File No.:	E17417
	Figure:	8

NORTH

A

SOUTH

A’

TP9 MW1 TP8 MW2 TP7 TP6

412.00
411.00
410.00
409.00
408.00
407.00

ELEVATION (m)

Property Line

Sample ID	Parameter	Table 6	Concentration
TP9-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP8-1 (0.30 m - 0.61 m)	Arsenic	18 µg/g	50.8 µg/g
	Acenaphthylene	0.15 µg/g	0.301 µg/g
	Benzo(a)anthracene	0.5 µg/g	0.63 µg/g
	Benzo(a)pyrene	0.3 µg/g	0.799 µg/g
	Benzo(b)fluoranthene	0.78 µg/g	1.27 µg/g
	Dibenzo(ah)anthracene	0.1 µg/g	0.173 µg/g
	Fluoranthene	0.69 µg/g	0.775 µg/g
	Indeno(1,2,3-cd)pyrene	0.38 µg/g	0.564 µg/g
	1+2-Methynaphthalenes	0.99 µg/g	1.62 µg/g
	Naphthalene	0.6 µg/g	0.682 µg/g

Sample ID	Parameter	Table 6	Concentration
TP7-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP6-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

0 10 20 30 40 50 60

HORIZONTAL DISTANCE (m)

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

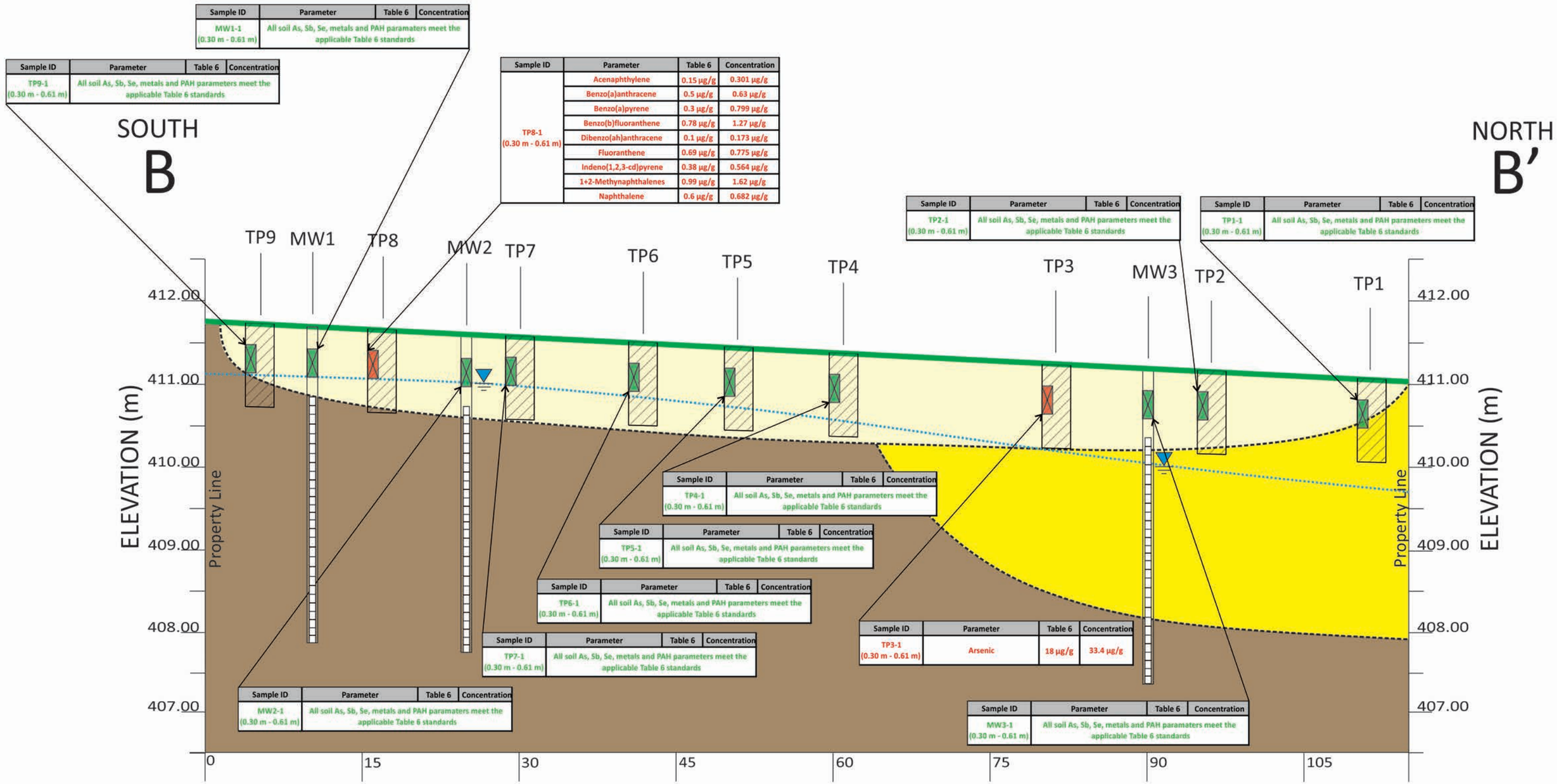
CROSS SECTION A-A’
-VERTICAL EXTENT OF SOIL IMPACTS PRIOR TO REMEDIAL ACTION-

CORK STREET RAILWAY LANDS (BETWEEN PRINCESS ST. & MARTIN ST.) MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	9A

LEGEND:

- MW1 — BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- SOIL SAMPLE
- TEST PIT
- VEGETATED/BARE GROUND SURFACE
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- GRAVELLY SAND
- SILT TILL
- INFERRED CONTACT
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS



CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

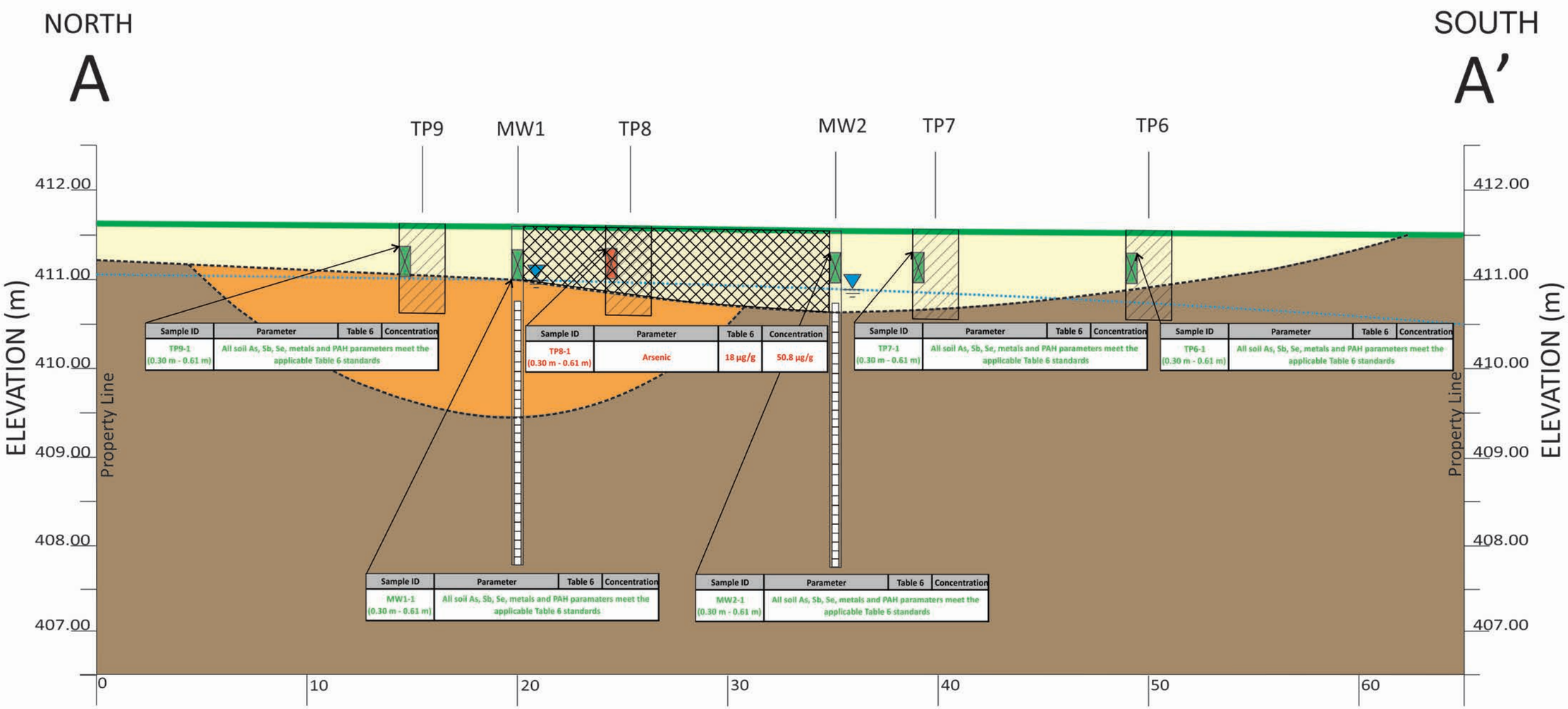
CROSS SECTION B-B'
-VERTICAL EXTENT OF SOIL IMPACTS PRIOR TO REMEDIAL ACTION-

CORK STREET RAILWAY LANDS
(BETWEEN PRINCESS ST. & MARTIN ST.)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	9B

LEGEND:

- MW1 — BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- SOIL SAMPLE
- TEST PIT
- VEGETATED/BARE GROUND SURFACE
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- SAND
- SILT TILL
- INFERRED CONTACT
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS



CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

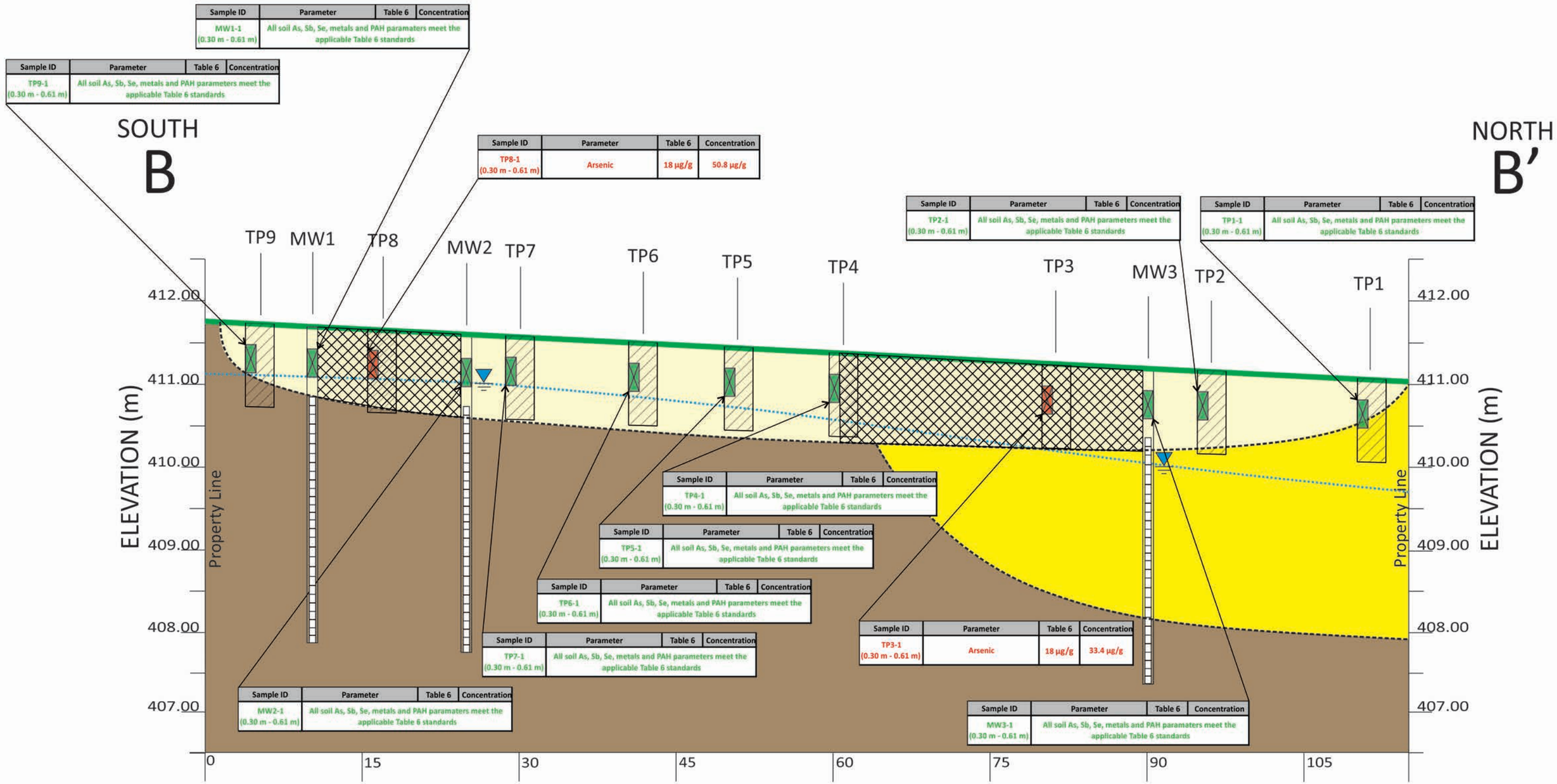
CROSS SECTION A-A'
-VERTICAL EXTENT OF HYDRIDE IMPACTS IN SOIL PRIOR TO REMEDIAL ACTION-

CORK STREET RAILWAY LANDS
(BETWEEN PRINCESS ST. & MARTIN ST.)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	10A

LEGEND:

- MW1 — BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- SOIL SAMPLE
- TEST PIT
- VEGETATED/BARE GROUND SURFACE
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- GRAVELLY SAND
- SILT TILL
- INFERRED CONTACT
- EXTENT OF HYDRIDE IMPACTS
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS



CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

CROSS SECTION B-B'
-VERTICAL EXTENT OF HYDRIDE IMPACTS IN SOIL PRIOR TO REMEDIAL ACTION-

CORK STREET RAILWAY LANDS
(BETWEEN PRINCESS ST. & MARTIN ST.)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	10B

LEGEND:

- MW1 — BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- SOIL SAMPLE
- TEST PIT
- VEGETATED/BARE GROUND SURFACE
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- SAND
- SILT TILL
- INFERRED CONTACT
- EXTENT OF HYDRIDE IMPACTS
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS

NORTH

A

SOUTH

A’

TP9 MW1 TP8 MW2 TP7 TP6

412.00
411.00
410.00
409.00
408.00
407.00

ELEVATION (m)

Property Line

Sample ID	Parameter	Table 6	Concentration
TP9-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP8-1 (0.30 m - 0.61 m)	Acenaphthylene	0.15 µg/g	0.301 µg/g
	Benzo(a)anthracene	0.5 µg/g	0.63 µg/g
	Benzo(a)pyrene	0.3 µg/g	0.799 µg/g
	Benzo(b)fluoranthene	0.78 µg/g	1.27 µg/g
	Dibenzo(ah)anthracene	0.1 µg/g	0.173 µg/g
	Fluoranthene	0.69 µg/g	0.775 µg/g
	Indeno(1,2,3-cd)pyrene	0.38 µg/g	0.564 µg/g
	1+2-Methynaphthalenes	0.99 µg/g	1.62 µg/g
	Naphthalene	0.6 µg/g	0.682 µg/g

Sample ID	Parameter	Table 6	Concentration
TP7-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP6-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

0 10 20 30 40 50 60

HORIZONTAL DISTANCE (m)

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

CROSS SECTION A-A’
-VERTICAL EXTENT OF PAH IMPACTS IN SOIL PRIOR TO REMEDIAL ACTION-

CORK STREET RAILWAY LANDS
(BETWEEN PRINCESS ST. & MARTIN ST.)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	11A

LEGEND:

- MW1 BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- SOIL SAMPLE
- TEST PIT
- VEGETATED/BARE GROUND SURFACE
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- GRAVELLY SAND
- SILT TILL
- INFERRED CONTACT
- EXTENT OF PAH IMPACTS
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS

SOUTH

B

NORTH

B’

Sample ID	Parameter	Table 6	Concentration
MW1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP9-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP8-1 (0.30 m - 0.61 m)	Acenaphthylene	0.15 µg/g	0.301 µg/g
	Benzo(a)anthracene	0.5 µg/g	0.63 µg/g
	Benzo(a)pyrene	0.3 µg/g	0.799 µg/g
	Benzo(b)fluoranthene	0.78 µg/g	1.27 µg/g
	Dibenzo(ah)anthracene	0.1 µg/g	0.173 µg/g
	Fluoranthene	0.69 µg/g	0.775 µg/g
	Indeno(1,2,3-cd)pyrene	0.38 µg/g	0.564 µg/g
	1+2-Methynaphthalenes	0.99 µg/g	1.62 µg/g
	Naphthalene	0.6 µg/g	0.682 µg/g

Sample ID	Parameter	Table 6	Concentration
TP2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP1-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

TP9 MW1 TP8 MW2 TP7 TP6 TP5 TP4 TP3 MW3 TP2 TP1

412.00

411.00

410.00

409.00

408.00

407.00

ELEVATION (m)

Property Line

0 15 30 45 60 75 90 105

HORIZONTAL DISTANCE (m)

Sample ID	Parameter	Table 6	Concentration
TP4-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP5-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP6-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP7-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
TP3-1 (0.30 m - 0.61 m)	All soil metals and PAH parameters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW2-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

Sample ID	Parameter	Table 6	Concentration
MW3-1 (0.30 m - 0.61 m)	All soil As, Sb, Se, metals and PAH paramaters meet the applicable Table 6 standards		

CHUNG & VANDER DOELEN
ENGINEERING LTD.

311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

CROSS SECTION B-B’
-VERTICAL EXTENT OF PAH IMPACTS IN SOIL PRIOR TO REMEDIAL ACTION-

CORK STREET RAILWAY LANDS (BETWEEN PRINCESS ST. & MARTIN ST.) MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	11B

LEGEND:

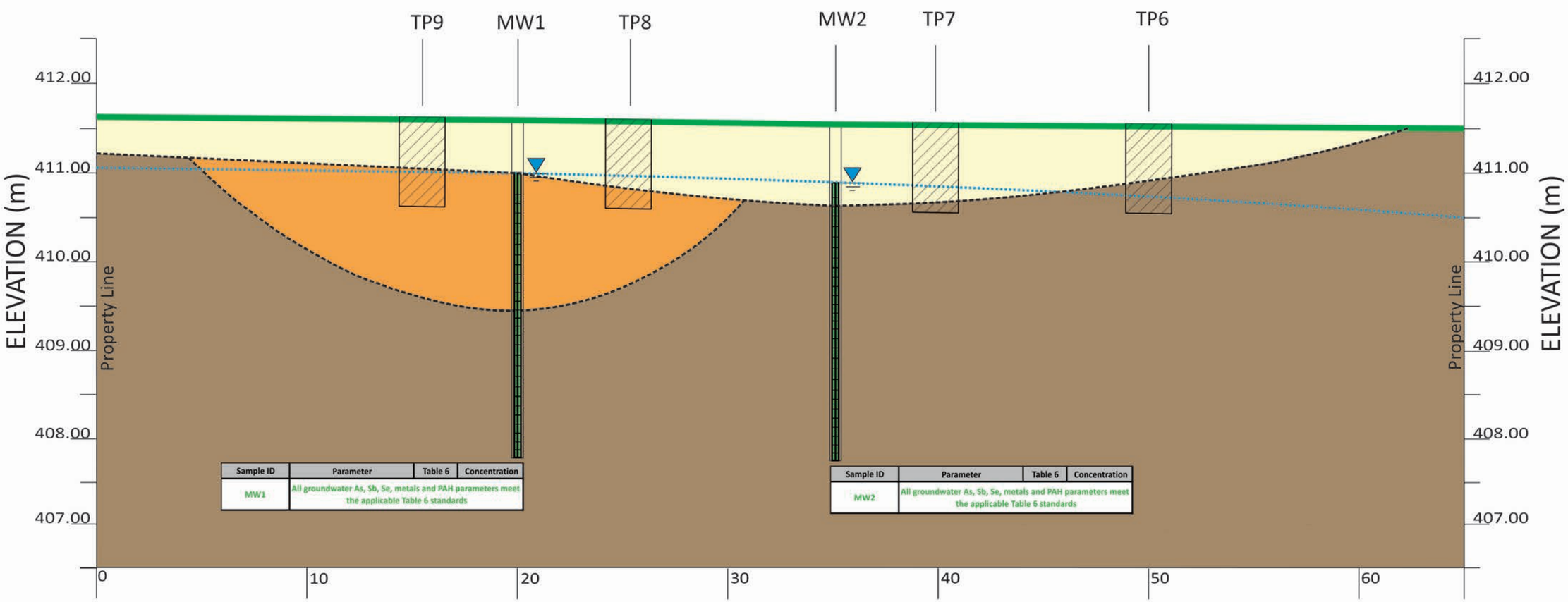
- MW1 BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- SOIL SAMPLE
- TEST PIT
- VEGETATED/BARE GROUND SURFACE
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- SAND
- SILT TILL
- INFERRED CONTACT
- EXTENT OF PAH IMPACTS
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS

NORTH

A

SOUTH

A’



CHUNG & VANDER DOELEN
ENGINEERING LTD.

311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

CROSS SECTION A-A’
-VERTICAL EXTENT OF GROUNDWATER IMPACTS-

CORK STREET RAILWAY LANDS
(BETWEEN PRINCESS ST. & MARTIN ST.)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	12A

LEGEND:

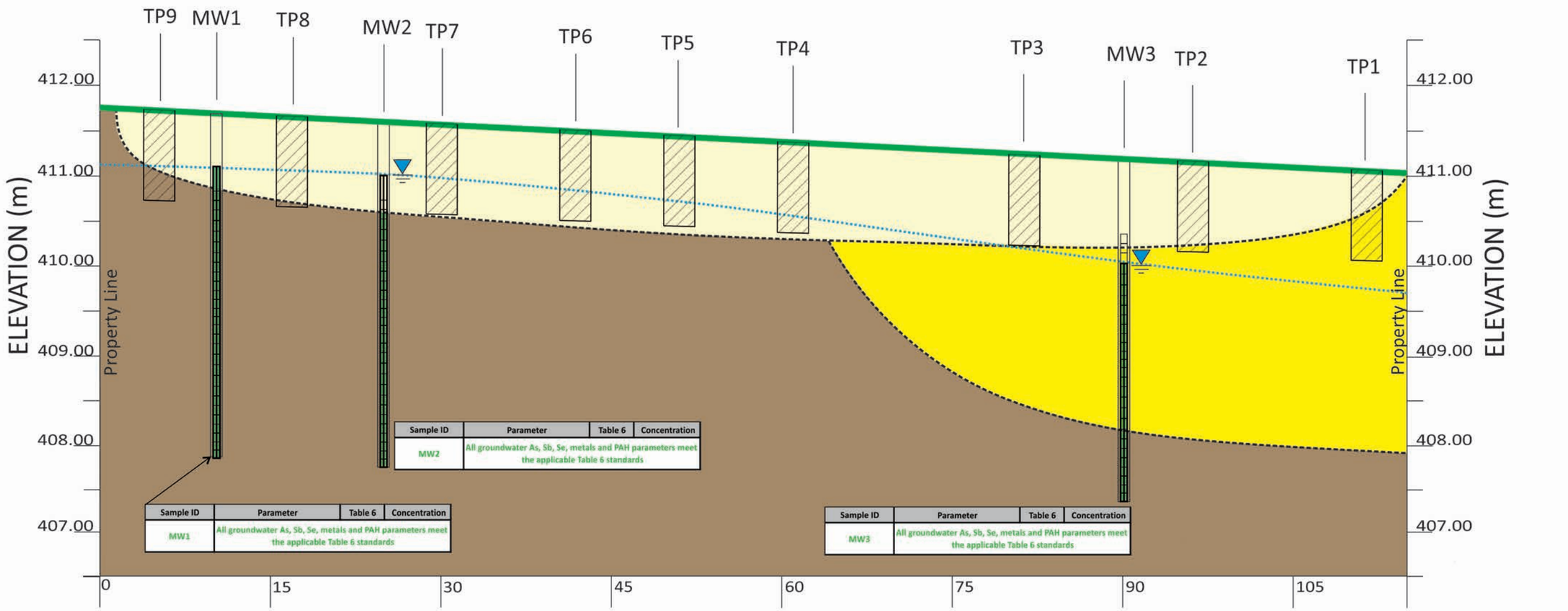
- MW1 — BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- GROUNDWATER SAMPLE
- TEST PIT
- VEGETATED/BARE GROUND SURFACE
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- GRAVELLY SAND
- SILT TILL
- INFERRED CONTACT
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS

SOUTH

B

NORTH

B’



CHUNG & VANDER DOELEN
ENGINEERING LTD.

311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

CROSS SECTION B-B’
-VERTICAL EXTENT OF GROUNDWATER IMPACTS-

CORK STREET RAILWAY LANDS
(BETWEEN PRINCESS ST. & MARTIN ST.)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	12B

LEGEND:

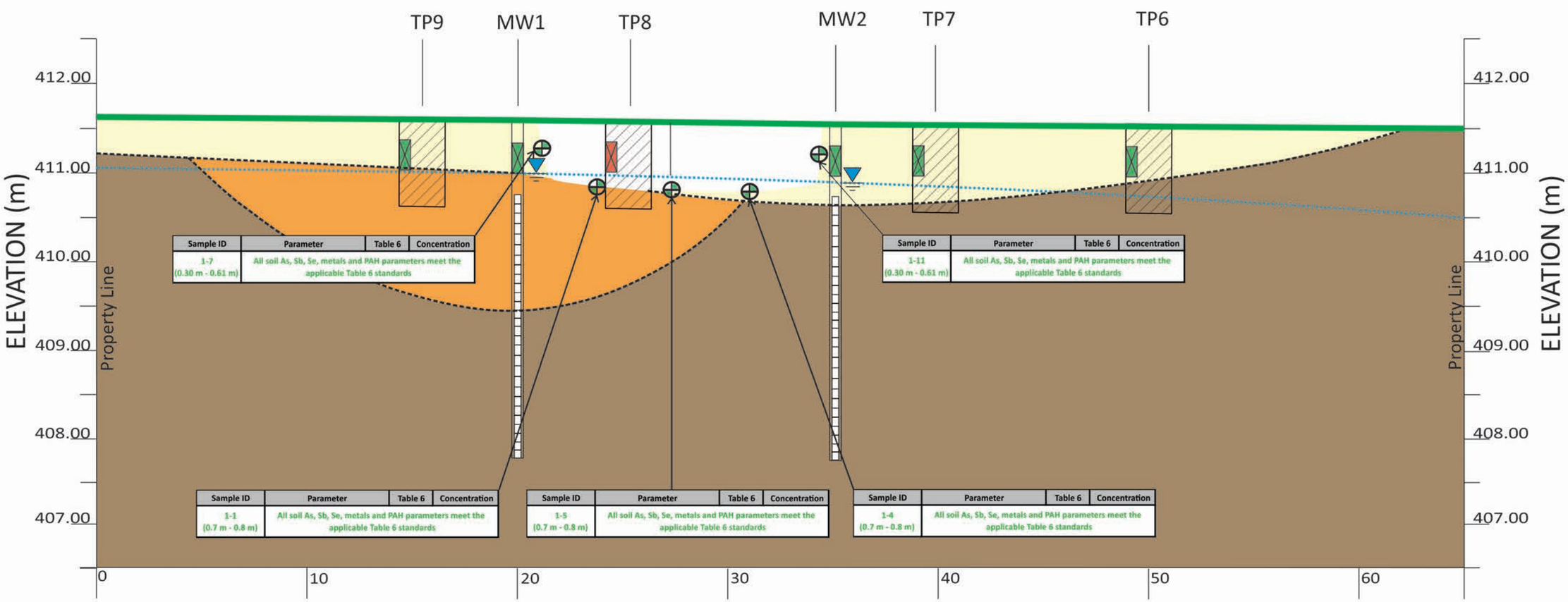
- MW1 — BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- GROUNDWATER SAMPLE
- TEST PIT
- VEGETATED/BARE GROUND SURFACE
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- SAND
- SILT TILL
- INFERRED CONTACT
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS

NORTH

A

SOUTH

A’



HORIZONTAL DISTANCE (m)

CHUNG & VANDER DOELEN
ENGINEERING LTD.

311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

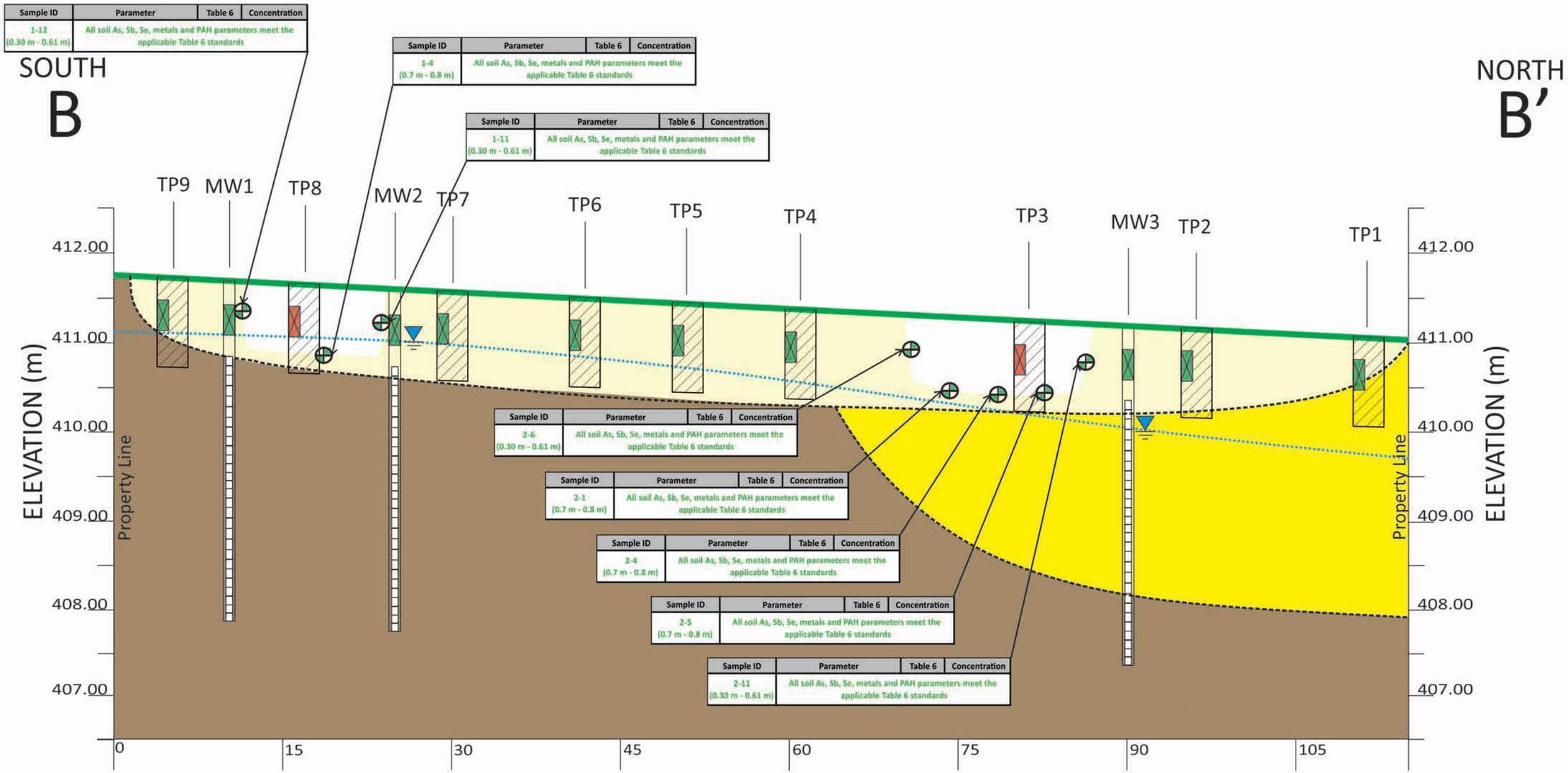
CROSS SECTION A-A’
-VERTICAL EXTENT OF SOIL IMPACTS POST-REMEDIAL ACTION-

CORK STREET RAILWAY LANDS
(BETWEEN PRINCESS ST. & MARTIN ST.)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	13A

LEGEND:

- MW1 — BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- SOIL SAMPLE
- TEST PIT
- GROUND SURFACE PRIOR TO EXCAVATION
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- GRAVELLY SAND
- SILT TILL
- INFERRED CONTACT
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS
- CONFIRMATORY SOIL SAMPLE



CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979
www.cvdengineering.com

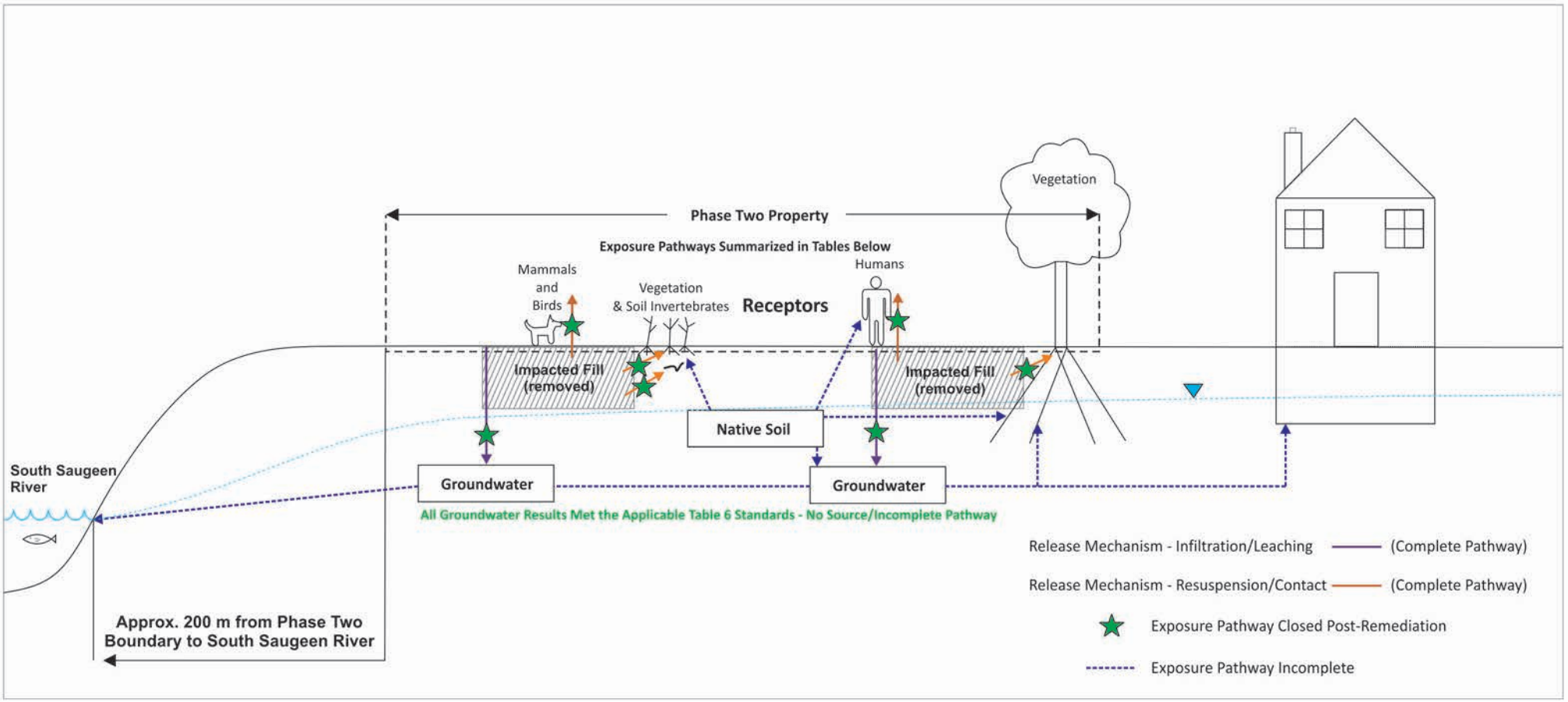
CROSS SECTION B-B'
-VERTICAL EXTENT OF SOIL IMPACTS POST-REMEDIAL ACTION-

CORK STREET RAILWAY LANDS
(BETWEEN PRINCESS ST. & MARTIN ST.)
MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
File No.:	E17383
Figure No.:	13B

LEGEND:

- MW1 — BOREHOLE
- MEASURED GROUNDWATER LEVEL (APRIL 28, 2017)
- INFERRED GROUNDWATER TABLE
- SLOTTED WELL SCREEN
- SOIL SAMPLE
- TEST PIT
- GROUND SURFACE PRIOR TO EXCAVATION
- FILL (SAND, SOME GRAVEL, TRACE SILT)
- SAND
- SILT TILL
- INFERRED CONTACT
- ANALYTICAL RESULTS BELOW THE APPLICABLE TABLE 6 STANDARDS
- ANALYTICAL RESULTS ABOVE THE APPLICABLE TABLE 6 STANDARDS
- CONFIRMATORY SOIL SAMPLE



HUMAN HEALTH

Source	Contaminant of Concern (COC)	Potential Pathway	Potential Risks	
			Pre-Impacted Soil Removal (Prior to May 2017)	Post-Impacted Soil Removal (Since May 2017)
Fill	As, PAHs	Ingestion	Minimal Risk Present	Sources Removed → No Risk
		Inhalation	Minimal Risk Present	
		Skin Contact	Minimal Risk Present	
Native Soils	None	Ingestion	No Source → No Risk	No Source → No Risk
		Inhalation		
		Skin Contact		
Bedrock	None	Ingestion	No Source → No Risk	No Source → No Risk
		Inhalation		
		Skin Contact		
Ground Water	None	Ingestion	No Source → No Risk	No Source → No Risk
		Skin Contact		

AQUATIC ENVIRONMENT

Source	Contaminant of Concern (COC)	Potential Pathway	Potential Risks	
			Pre-Impacted Soil Removal (Prior to May 2017)	Post-Impacted Soil Removal (Since May 2017)
Ground Water	None	Gill Uptake	No Source / No Aquatic Ecosystem → No Risk	No Source / No Aquatic Ecosystem → No Risk
		Ingestion		
		Prey/Food Uptake		

TERRESTRIAL ENVIRONMENT

Source	Contaminant of Concern (COC)	Potential Pathway	Potential Risks	
			Pre-Impacted Soil Removal (Prior to May 2017)	Post-Impacted Soil Removal (Since May 2017)
Fill	As, PAHs	Ingestion	Minimal Risk Present	Sources Removed → No Risk
		Inhalation	Minimal Risk Present	
		Skin Contact	Minimal Risk Present	
		Root Intake	Minimal Risk Present	
Native Soils	None	Ingestion	No Source → No Risk	No Source → No Risk
		Inhalation		
		Prey/Food Uptake		
Bedrock	None	Ingestion	No Source → No Risk	No Source → No Risk
		Inhalation		
		Skin Contact		
Ground Water	None	Ingestion	No Source → No Risk	No Source → No Risk
		Root Uptake		

CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979

POTENTIAL EXPOSURE PATHWAYS & RECEPTORS

CORK STREET RAILWAY LANDS (BETWEEN MARTIN & PRINCESS STREET) MOUNT FOREST, ONTARIO

Date:	SEPT. 2017
Scale:	NTS
File No.:	E17383
Figure:	14

APPENDIX H
QUALIFICATIONS OF ASSESSOR

Peter Dao, M.Sc, P.Geo

Environmental Site Assessor

Mr. Dao has over 5 years of experience in geological, geotechnical and environmental investigations in the mining and municipal sectors.

Mr. Dao has specialized in the environmental inspection and assessment of residential, commercial, and industrial properties for a broad range of clients in the property management, insurance, automotive, and manufacturing sectors.

Education

Masters of Science, Earth and Environmental Science, McMaster University, 2011.
Honours Bachelor of Science, Earth and Environmental Science, McMaster University, 2009.

Professional Affiliations

Association of Professional Geoscientists of Ontario, 2015 – Present

Project Experience

Mr. Dao has conducted over 50 Phase I and Phase II Environmental Site Assessments (ESA's) for various residential, commercial and industrial properties including but not limited to service stations, shopping plazas, apartment buildings and industrial manufacturing facilities.

Michael J. Lefebvre, P.Geo.

Environmental Site Assessor

Mr. Lefebvre has over 20 years of experience in environmental assessment and project management providing site investigation, remediation services, for the industrial, commercial and municipal sectors. Mr. Lefebvre extensive experience in environmental management, environmental auditing, remedial design, project implementation, environmental clean up, and site decommissioning.

Mr. Lefebvre has specialized in the development and implementation of environmental work plans and programs for a broad range of clients in the property management, insurance, automotive, chemical, manufacturing and transportation sectors.

Education

- Bachelor of Environmental Studies, University of Waterloo, 1986

Professional Affiliations

- Association of Professional Geoscientists of Ontario.
- Mr. Lefebvre is currently registered as a "Qualified Person (ESA)" as described in the amended Ontario Regulation 153/04.

Project Experience

Mr. Lefebvre has conducted over 1000 Phase I and Phase II Environmental Site Assessments (ESA's) for various commercial and industrial properties including service stations, shopping plazas, apartment buildings and industrial manufacturing facilities.

Phase I and Phase II ESA's have also been prepared to support the submission of a Record of Site Condition (RSC) to the Ministry of the Environment.

Mr. Lefebvre has conducted numerous major environmental decommissioning projects. His areas of expertise include regulatory liaison, industrial plant decommissioning, spill cleanup, reclamation, and site rehabilitation.

Mr. Lefebvre conducted *compliance audits* in various industrial settings over the past four years and has assisted in the preparation of companies for ISO 14001 registration. Mr. Lefebvre has conducted compliance audits for the automotive, packaging sector and conducted numerous pre-acquisition environmental compliance audits throughout Ontario, for the insurance, property acquistion and banking industry.

Mr. Lefebvre has supervised over 100 underground storage tank removal projects and provided direction for further remedial activities when required.