

# **Phase Two Environmental Site Assessment**

1429 Dundas Street East  
Oakville, Ontario

## **Prepared For:**

Mattamy (Joshua Creek) Limited  
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Suite 110  
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**DS Project No:** 18-549-100

**Date:** 2019-08-28



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## **Executive Summary**

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DS Consultants Ltd. (DS) was retained by Mattamy (Joshua Creek) Limited (the “Client”) to conduct a Phase Two Environmental Site Assessment (ESA) of a portion of the Property located at 1429 Dundas Street East, Oakville, Ontario, herein referred to as the “Phase Two Property”.

The Phase Two Property is a 24 hectare (59.31 acres) parcel of land situated within a mixed residential and agricultural neighbourhood in the Town of Oakville, Ontario. It should be noted that the Phase Two Property comprises the southern portion of a 101.9-hectare parcel of land known as the “Bressa Development Property”. The Phase Two Property is located approximately 360 m west of the intersection of Dundas Street East and Ninth Line and was vacant and undeveloped at the time of this investigation.

DS understands that this Phase Two ESA may be used to support the filing of a Record of Site Condition (RSC) as part of the proposed redevelopment of the Phase Two Property for residential purposes. It is further understood that the proposed development will consist of a residential subdivision. It is the opinion of DS that the intended future property use (residential) constitutes a more sensitive property use, as defined under O.Reg. 153/04 (as amended) than the current commercial land use (former Golf Course). Given that the proposed change in property use is to a more sensitive property use, the filing of a Record of Site Condition (RSC) with the Ontario Ministry of Environment, Conservation and Parks (MECP) will be required under O.Reg. 153/04 (as amended).

The Phase Two ESA was completed to satisfy the intent of the requirements, methodology and practices for a Phase Two ESA as described in Ontario Regulation 153/04 (as amended). The objective of this Phase Two ESA is to confirm whether contaminants are present, and at what concentration are they present on the Phase Two Property, as related to the Areas of Potential Environmental Concern (APEC) identified in the Phase One ESA.

The Phase One ESA completed in October 2018 indicated that the Phase Two Property was historically used for agricultural purposes from the 1800s to the late 1970s. The Phase Two Property was subsequently used as a golf course from the 1980s to the mid-2010s. The Phase Two Property is currently vacant and free of structures. The results of the Phase One ESA identified two (2) APECs on the Property, relating to the historical importation of an estimated 340,000 cubic metres of fill material (with soil impacts), and the former presence of two (2) ASTs which were associated with the historical golf club.

Based on the findings of the Phase One ESA it was concluded that a Phase Two ESA is warranted in order to assess the soil and groundwater conditions on the Phase Two Property.

The Phase Two ESA involved the advancement of thirteen (13) boreholes, which was completed between June 11, 2018 and August 23, 2018. The boreholes were advanced to a maximum depth of 22.82 metres below ground surface (mbgs) under the supervision of DS personnel. Groundwater monitoring wells were installed in all of the boreholes to facilitate the collection of groundwater samples and the assessment of groundwater flow direction.

The borehole locations were selected to supplement the previous analytical results obtained by others between 2015-2016. Soil and groundwater samples were collected and submitted for analysis of all PCOCs, including: PHCs, VOCs, BTEX, Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, low or high pH, SAR, OCPs, PCBs and PAHs. The results of the chemical analyses were assessed against the MECP Table 8 Site Condition Standards SCS.

Based on the findings of the Phase Two ESA, DS presents the following findings:

- ◆ It is estimated that up to 340,000 cubic metres of mixed fill material is present on-Site, ranging in thickness between 0.9 to 7.0 mbgs. The fill material was generally found to be underlain by clayey silt/silty clay, and clayey silt till. Bedrock was encountered at various depths across the site, ranging between 7.3 to 11.3 mbgs. Groundwater was first encountered within the weathered shale/till complex overlying the bedrock.
- ◆ Monitoring wells were installed at the bedrock interface, and within the bedrock. The groundwater levels were found to range between 0.85 to 5.13 mbgs in the weathered shale/till unit and 3.37 to 5.00 mbgs within the bedrock. Based on the groundwater elevations recorded, the groundwater flow direction appears to be southeasterly towards Joshua's Creek and Lake Ontario. It is possible that the groundwater levels may vary seasonally. The groundwater flow direction can only be confirmed through long term monitoring.
- ◆ Soil exceedances of the Table 8 SCS included the following:
  - Barium, identified in TP16-11 (2.4-3.4 mbgs);
  - Electrical Conductivity, identified in TP16-11 (2.4-3.4 mbgs) and BH18-5 (3.1-3.7 mbgs);
  - Silver, identified in TP15A-20 (2.4-4.0 mbgs);
  - Boron (HWS), identified TP15A-18 (0.3-3.7 mbgs);
  - Cyanide, identified in BH15A-6 (0.0-0.7mbgs); and

- PHC F2, identified in BH18-1 (3.1-3.7 mbgs) and BH18-5 (6.1-6.7 mbgs)
- ◆ Groundwater exceedances of the Table 8 SCS included:
  - Sodium and chloride, identified in BH15A-5, BH15A-6, BH15A-7, MW18-2D, MW18-2D2, MW18-3S, MW18-3D, MW18-3D2, MW18-4S, MW18-4D, MW18-4D2, MW18-5D and MW18-6;
  - Cobalt, identified in BH15A-7 during one (1) sampling event;
  - Uranium, identified in BH15A-7, MW18-3S and MW18-5D during one (1) sampling event; and
  - Boron, identified in BH18-3D2.

The impacted soils were remediated on August 9, 2019, February 21, 2019, and May 17, 2019 through the excavation and off-site disposal at a licensed MECP receiving facility. The excavation was conducted by DeKay Construction Group under the supervision of DS personnel. Approximately 9624 cubic metres of soil was excavated and removed from the Property in order to reduce the contaminant concentrations present to levels below the MECP Table 8 SCS.

Based on the results of the information gathered through the course of the investigation, DS presents the following conclusions:

- ◆ The EC impact in BH18-5 was demonstrated through forensic analysis to be unrelated to the application of road salt (e.g. natural conditions resulting in elevated EC), and as such is not considered to be contamination, as defined under the EPA.
- ◆ The remaining soil impacts were remediated through the excavation and off-site disposal of all impacted soils, followed by confirmatory sampling in accordance with O.Reg. 153/04 (as amended).
- ◆ The cobalt and uranium exceedances are considered to be anomalous based on the results of the remaining three (3) sampling events in which acceptable concentrations of cobalt and uranium were identified.
- ◆ The sodium, chloride and boron exceedances identified are attributed to natural background conditions within the Queenston Shale aquifer, based on literature review, the lack of a contaminant source, and the concentration trends (increasing with depth).
- ◆ It is concluded by the QP<sub>ESA</sub> that the groundwater on the Phase Two Property meets the applicable Table 8 SCS.
- ◆ As of May 30, 2019, the impacted soils identified have been excavated and removed from the Phase Two Property. Confirmatory sampling was conducted in accordance

with O.Reg. 153/04 (as amended). All of the remaining soils on-Site met the Table 8 SCS.

- ◆ The results of the Phase Two ESA and remedial activities indicate that as of May 30, 2019, the Site Condition Standards for the Phase Two Property have been met. A Record of Site Condition may be filed based on the findings of this Phase Two ESA.
- ◆ All monitoring wells should be decommissioned in accordance with O.Reg. 903 when no longer required.

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## **1.0 Introduction**

DS Consultants Ltd. (DS) was retained by Mattamy (Joshua Creek) Limited (the “Client”) to conduct a Phase Two Environmental Site Assessment (ESA) of a portion of the Property located at 1429 Dundas Street East, Oakville, Ontario, herein referred to as the “Phase Two Property” or “Site”. It is DS’s understanding that this Phase Two ESA has been requested for due diligence purposes in association with the proposed redevelopment of the Property. DS understands that this Phase Two ESA may be used to support the filing of a Record of Site Condition (RSC) as part of the proposed redevelopment of the Site for residential purposes.

It is the opinion of DS that the intended future property use (residential) constitutes a more sensitive property use, as defined under O.Reg. 153/04 (as amended) than the current commercial use (former Golf Course). Given that the proposed change in property use is to a more sensitive property use, the filing of a Record of Site Condition (RSC) with the Ontario Ministry of Environment, Conservation and Parks (MECP) will be required under O.Reg. 153/04 (as amended).

The Phase Two ESA was completed to satisfy the intent of the requirements, methodology and practices for a Phase Two ESA as described in Ontario Regulation 153/04 (as amended). The objective of this Phase Two ESA is to confirm whether contaminants are present, and at what concentration are they present on the Phase Two Property, as related to the Areas of Potential Environmental Concern (APEC) identified in the Phase One ESA.

## 1.1 Site Description

The Phase Two Property is a 24 hectare (59.31 acres) parcel of land situated within a mixed residential and agricultural neighbourhood in the Town of Oakville, Ontario. It should be noted that the Phase Two Property comprises the southern portion of a 101.9-hectare parcel of land known as the “Bressa Property” and is herein referred to as the “Bressa Development Lands”. The adjacent lands to the east and north of the Phase Two Property are referred to as the “NHS lands” which encompass the natural heritage feature associated with Joshua’s Creek and a 30 metre off-set from the aforementioned natural heritage feature, and the “Valleylands” which include the valley associated with Joshua’s Creek. A Record of Site Condition was previously obtained for the Valleylands in August 2016 (RSC #222461).

The Phase Two Property is located approximately 360 m west of the intersection of Dundas Street East and Ninth Line and was vacant and free of structures at the time of this investigation. A Site Location Plan is provided in Figure 1.

For the purposes of this report, Dundas Street East street is assumed to be aligned in an east-west orientation, and Ninth Line street in a north-south orientation. A Plan of Survey for the Site dated August 9, 2019 and prepared by R-PE Surveying Ltd., an Ontario Land Surveyor, has been provided under Appendix A.

The Site is currently vacant and contains no structures. A Site Plan depicting the property boundaries and Site features is provided in Figure 2.

Additional details regarding the Phase Two Property are provided in the table below.

**Table 1-1: Phase Two Property Information**

Criteria	Information	Source
Legal Description	Part of Lots 6, 7 and 8, Concession 1, North of Dundas Street, Town of Oakville, Regional Municipality of Halton.	Legal Survey
Property Identification Number (PIN)	24930-0658	Legal Survey
Municipal Address	1429 Dundas Street East, Oakville, Ontario	Town of Oakville
Property Owner	Mattamy (Joshua Creek) Limited	Deed
Property Owner Contact Information	Jason Mosdell Project Manager	433 Steeles Avenue East Suite 110 Milton, Ontario, L9T 8Z4 Phone: 905.203.3967 Email: Jason.Mosdell@mattamycorp.com

Criteria	Information	Source
Current Site Occupants	Vacant	Site Visit
Site Area	24 hectares (59.31 acres)	Survey plan
Centroid UTM Coordinates	Northing:4817917.69 Easting: 604704.35 Zone: 17T	Google Earth

## 1.2 Property Ownership

The ownership details for the Phase Two Property are provided in the table below.

**Table 1-2: Phase Two Property Ownership**

Property Owner	Address	Contact
Bressa Developments Ltd.	433 Steeles Avenue East Suite 110 Milton, Ontario L9T 8Z4	Ryan Oosterhoff Phone: 905.203.3967 Email:Ryan.Oosterhoff@mattamycorp.com

## 1.3 Current and Proposed Future Use

The Phase Two Property is currently undeveloped. It is DS’s understanding that the Client intends to redevelop the Site for residential use.

## 1.4 Applicable Site Condition Standards

The Phase Two Property is an undeveloped property located within the Town of Oakville, and the proposed future land use is residential. The surrounding land uses consist of residential, parkland and agricultural. It is possible that potable water wells are located within 500 m of the Property. Tributaries of the Joshua’s Creek are present on the Property, as depicted on Figure 2.

Under Section 41 of O.Reg. 153/04 (as amended), the Site is classified as “environmentally sensitive” if the pH of the surface soil (ground surface to 1.5 metres below ground surface) is less than 5 or greater than 9, if the subsurface soil (deeper than 1.5 mbgs) is less than 5 or greater than 11, or if the Site is considered to be an area of natural significance or is adjacent to or contains land within 30 metres of an area of natural significance.

Soil samples were analyzed for pH as part of this Phase Two ESA, the results of which indicated that non of the samples were outside of the acceptable range, as such the Phase Two Property is not considered to be environmentally sensitive. No areas of natural significance were identified on the Phase Two Property, or on lands within 30 metres of the Phase Two Property boundary.

The applicable Site Condition Standards (SCS) for the Phase Two Property are considered by the Qualified Person (QP) to be the Table 8 SCS: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition for Residential/Parkland/Institutional Use Table 8 SCS: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition for Residential/Parkland/Institutional Use as contained in the April 15, 2011 Ontario Ministry of Environment and Climate Change (MECP) “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act”, herein referred to as the “Table 8 SCS”.

The selection of the Table 8 SCS is considered appropriate based on the following rationale:

- ◆ It is possible that potable water wells are located within 500 m of the Property;
- ◆ The Site is not considered to be environmentally sensitive, as defined under O.Reg. 153/04 (as amended);
- ◆ The proposed future use of the Phase Two Property will be residential;
- ◆ The Site is located within 30 m of a water body (tributaries of Joshua’s Creek);
- ◆ The pH of the soils analyzed during this Phase Two ESA are within the accepted range specified under O.Reg. 153/04 (as amended); and
- ◆ Bedrock was not encountered within 2 metres of the ground surface

## **2.0 Background Information**

### **2.1 Physical Setting**

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#### **2.1.1 Water Bodies and Areas of Natural Significance**

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Tributaries of Joshua’s Creek cross southeasterly through the Property. Joshua’s Creek is located approximately 40 metres east of the Phase Two Property. Environmentally Significant Areas are natural areas that have been identified as significant and worthy of protection on three criteria – ecology, hydrology and geology. Municipalities have developed policies to protect natural heritage features. The Region uses Environmentally Significant Areas as a means to protect natural areas like wetlands, fish habitat, woodlands, habitat of rare species, groundwater recharge and discharge areas, and Areas of Natural and Scientific Interest.

A Natural Heritage Feature associated with Joshua’s Creek was identified in the Halton Region Official Plan. This feature is situated within the “NHS Lands” (refer to Section 1.1), and is greater than 30 metres from the Phase Two Property.

### **2.1.2 Topography and Surface Water Draining Features**

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The Property is located in an urban setting, with elevations ranging from 160 to 170 metres above sea level (masl). The topography of the Property generally slopes to the south/southeast, towards Lake Ontario located approximately 6.5 km southeast of the Property. Several seasonal drainage features and tributaries of Joshua's Creek are present on the Property, as shown in Figure 2.

Surface water flow associated with precipitation events is anticipated to run overland and drain into the aforementioned drainage features and tributaries, ultimately discharging into Joshua's Creek.

## **2.2 Past Investigations**

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### **2.2.1 Previous Report Summary**

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DS reviewed the following environmental report prepared for the Property. The report was provided by the client to DS.

- ◆ *"Phase II Environmental Site Assessment, Fill Deposit – Bressa Developments Property, Dundas Street West, Oakville Ontario"*, prepared for Mattamy Homes Ltd., prepared by Terrapex Environmental Ltd., dated April 11, 2006 (Terrapex 2006 Report);
- ◆ *"Phase I Environmental Site Assessment, Due Diligence for Financing – Lakeport Property, Oakville, Ontario"*, prepared for Bressa Developments Limited c/o Mattamy Development Corporation, prepared by AME – Materials Engineering, dated October 31, 2008 (AME 2008 Report); and
- ◆ *"Phase One Environmental Site Assessment – Bressa Property, 1264, 1288 Burnhamthorpe Road East, 1429 Dundas Street East, Oakville, Ontario"*, prepared for Mattamy Homes, prepared by SPL Consultants Ltd., dated March 16, 2015 (SPL 2015 Report);
- ◆ *"Memorandum – Environmental Testing Summary, Project # 141-55140-00"*, prepared for Mattamy Development Corporation, prepared by WSP Canada Inc., dated January 16, 2016 (WSP 2016 Memo).

These reports were reviewed in order to assess for the presence of known or suspected PCAs and APECs, and to determine if there are known soil and/or groundwater impacts on the Property or on Properties within the Phase One Study Area.

Based on the information reviewed by DS, the location of the Phase One Property, and the proposed future land use (residential), the most applicable Site Condition Standards as defined by the Ministry of the Environment, Conservation, and Parks (formerly MECP) in the document “ Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*”, dated April 15, 2011 are considered to be:

- ◆ Table 8 SCS: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Ground Water Condition for Residential/Parkland/Institutional Use.

The analytical data provided in the previous reports was compared to the Table 8 SCS in order to assess whether there are known areas of impacted soil and/or groundwater on the Property. A summary of the pertinent details of the reports reviewed is provided below:

### **Terrapex 2006 Report**

The Terrapex 2006 Report was reportedly conducted in general accordance with Ontario Regulation 153/04 (applicable at the time) and was completed in order to assess the environmental quality of the fill materials present on the Site. The scope of work completed included the advancement of four boreholes to depths ranging between 4.7 to 5.2 metres below ground surface (mbgs). The stratigraphy encountered generally consisted of 2.1 to 3.7 m of fill material (silt with varying amounts of clay, sand and organic matter), underlain by native sandy silt till. Bedrock was not encountered in any of the borehole locations.

Composite samples of the fill material collected from the boreholes were prepared and submitted for analysis of metals and inorganics. One additional sample was analyzed for volatile organic compounds (VOCs) and petroleum hydrocarbons (PHCs). The results were assessed against the Table 3 SCS applicable at the time. It was concluded by Terrapex that all of the samples met the applicable site condition standards.

The analytical results of this investigation are over 13 years old, and as such have not been relied upon for the purpose of this Phase Two ESA.

### **AME 2008 Report**

The AME 2008 Report was conducted in general accordance with CSA document entitled "Phase I Environmental Site Assessment" (CSA Document Z768-01), dated November 2001 (reaffirmed 2006) CSA document entitled "Phase I Environmental Site Assessment" (CSA Document Z768-01), dated November 2001 (reaffirmed 2006), and included a review of readily available historical records and reasonably ascertainable regulatory information, a Site Reconnaissance, interviews, evaluation of information, and reporting. The report was

conducted on the entirety of the “Bressa Property”, the following pertinent information was noted by DS which is applicable to the Phase One Property:

- ◆ The Site was used for agricultural purposes and commercial purposes (golf course) at the time of the investigation;
- ◆ It was determined that the property has been vacant and was generally used for agricultural purposes from the 1950s to the late 1970s;
- ◆ Three tributaries of Joshua’s Creek converge along the northeastern property boundary;
- ◆ The golf course contained a clubhouse and a separate maintenance building;
- ◆ Two aboveground storage tanks (ASTs) were observed in a fenced enclosure alongside the maintenance building. The tanks were observed to be in good condition, no stains or evidence of historical spills were observed;
- ◆ Two dug wells and four drilled wells were observed on the north adjoining property. The wells were reported to be in the process of being decommissioned at the time of the investigation;
- ◆ Fill material was reported to be present on the Site;
- ◆ The environmental quality of the fill material was assessed in 2002 by AME, involving the advancement of eight boreholes and 44 test pits.
- ◆ 34 soil samples were submitted for chemical analysis, the results of which indicated that all of the samples met the Site Condition Standards applicable at the time, with the exception of an exceedance of Boron which was identified in Test Pit #34. It was estimated that approximately 19 cubic metres of impacted soil was present.
- ◆ Pesticides were reported to be applied sparingly, as needed to the agricultural fields;
- ◆ Imported fill was placed to the farm fields adjacent to the west side of the golf course. Earthen berms were created to redirect surface water to the north, rather than draining across the golf course, south of the parking lot. A draining ditch had been cut north of the golf course to the creek for the purpose of draining water that began to accumulate in the fields after the earthworks were completed;

Based on the findings of the Phase I ESA it was concluded that the completion of a Limited Phase II ESA was warranted.

### **SPL 2015 Report**

The SPL 2015 Report was conducted in general accordance with Ontario Regulation 153/04, dated April 15, 2011 (as amended) Ontario Regulation 153/04, dated April 15, 2011 (as

amended), and included a review of readily available historical records and reasonably ascertainable regulatory information, a Site Reconnaissance, interviews, evaluation of information, and reporting. The report was conducted on the entirety of the “Bressa Property”, the following pertinent information was noted by DS which is applicable to the Phase One Property

- ◆ The Site was used for agricultural and commercial purposes (White Oaks Golf Club) at the time of the investigation;
- ◆ Two potentially contaminating activities were identified, associated with the presence of two aboveground storage tanks, as previously identified by AME in 2008, and with the presence of fill material;

It was concluded that two Areas of Potential Environmental Concern were present on the Phase One Property. The completion of a Phase Two ESA was recommended to further understand the soil and groundwater conditions at the Phase One Property.

**WSP 2016 Memorandum**

WSP reported that test pits were advanced and monitoring wells were installed on the Site as part of a Phase Two ESA for the Site. It does not appear that a Phase Two ESA Report was finalized for the Site. It was estimated that approximately 340,000 m<sup>3</sup> of fill material containing organics and debris was present on the Site, with an average depth of 3 metres. The maximum fill depth encountered was greater than 6.6 metres.

WSP reviewed the results of the chemical analyses conducted in the previous two site assessments (AME and Terrapex), as well as the data obtained by WSP. A summary of the chemical analyses conducted on the fill material is presented in the table below:

**Table 2-1: Summary of Chemical Analyses Conducted (Soil)**

Consultant	Parameter Tested	Number of Samples	Result
AME (2002)	Metals and Inorganics	30	TP34 – exceeded SCS for Boron (HWE) (2.3-3.0 mbgs). The SCS for Boron (HWE) are non-applicable to subsurface soils, as such this is not considered to be an exceedance of the applicable SCS.
Terrapex (2006)	Metals	4	Met Site Condition Standards
	PHCs	1	
	VOCs	1	
WSP (2015-2016)	Metals and Inorganics	38 + 3 duplicates	BH15A-6 SS1 – exceeded SCS for cyanide (0-0.6 mbgs)

Consultant	Parameter Tested	Number of Samples	Result
			TP15A-18 Sa2 – exceeded SCS for Boron (HWE) (0.3-3.0 mbgs)  TP15A-20 Sa3 – exceeded SCS for silver (2.4-4.0 mbgs)  TP16-11 Sa1 – exceeded SCS for EC and Barium (2.4-3.4 mbgs)
	PHCs, VOCs	2 + 1 duplicate	Met Site Condition Standards
	PAHs	2 + 1 duplicate	Met Site Condition Standards
	PCBs and OC Pesticides	4 + 1 duplicate	Met Site Condition Standards

WSP indicated that three monitoring wells had been used to collect groundwater samples. The results of the chemical analyses indicated that all three groundwater samples exceeded the Table 2 SCS for sodium, chloride and cobalt.

### **Previous Reports Summary**

Based on a review of the previous reports provided, it is concluded that the Site was historically used as a Golf Course from the 1980s to the mid-2010s and has been used for agricultural purposes since the 1800s. Potentially contaminating activities identified include the importation of fill material of unknown quality, and the former presence of two ASTs (servicing the golf course). Soil impacts for boron (HWE), cyanide, and EC were identified throughout the course of the previous environmental investigations. Sodium, chloride and cobalt impacts were identified in groundwater collected from three monitoring wells (BH15A-5, BH15A-6, and BH15A-7) tested by WSP.

It is noted by DS that the monitoring wells BH15A-5, BH15A-6, and BH15A-7 were all screened within the weathered shale/till zone. The Queenston Shale which is present on-Site has been documented to naturally exhibit elevated concentrations of sulphate, chloride, calcium, sodium, magnesium, manganese, strontium, iron, hardness, and total dissolved solids (AECOM, 2009 & Canadian Journal of Earth Science, 2017). According to Sibul et al. (1977) sodium occurs naturally in Queenston Shales, and the ion exchange process results in the replacement of calcium with sodium in groundwater, resulting in naturally high concentrations of sodium in groundwater derived from the Queenston Shale formation. This is supported by the historical soil and groundwater analytical data. Only one marginal exceedance of electrical conductivity has been identified (0.723 µs/cm vs. criteria of 0.7

µs/cm). A total of 68 soil samples have been analyzed for metals and inorganics between 2002 and 2016 by AME and WSP. All of the samples analyzed within the vicinity of BH15A-5, BH15A-6, and BH15A-7 met the Criteria for EC and SAR. Based on this weight of evidence, it is concluded by DS that the elevated levels of sodium and chloride observed in water are not anthropogenic in nature and are the result of the natural bedrock conditions.

Concentrations of cobalt in excess of the applicable Site Condition Standards were not identified in any of the 68 soil samples analyzed for metals and inorganics between 2002 and 2016 by AME and WSP. Fill material was the only potentially contaminating activity identified on Site which could result in elevated concentrations of cobalt in groundwater. Given that no source of cobalt was identified in soil, it is the opinion of the QP<sub>ESA</sub> that the elevated concentration of cobalt in groundwater reported by WSP was not the result of human activity.

The Environmental Protection Act (EPA) defines contaminants as “any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect (EPA, 1990)”. As there is no indication that the elevated concentrations of sodium, chloride, and cobalt reported in groundwater are anthropogenic in nature, it is concluded that the cobalt, sodium, and chloride are not considered to be contaminants, as defined by the EPA.

### **3.0 Scope of the Investigation**

The scope of the Phase Two ESA was designed to investigate the portions of the Site determined in the Phase One ESA to be Areas of Potential Environmental Concern, and to supplement the data collected by WSP in 2015/2016.

This Phase Two ESA was conducted in general accordance with O.Reg. 153/04 (as amended). The scope of the investigation including the subsurface investigation, sampling, and laboratory analysis was based on the findings of the Phase One ESA and was limited to the portions of the site which were accessible.

#### **3.1 Overview of Site Investigation**

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The following tasks were completed as part of the Phase Two ESA:

- ◆ Preparation of a Health and Safety Plan to ensure that all work was executed safely;
- ◆ Clearance of public private underground utility services prior to commencement of subsurface investigative operations;
- ◆ Preparation of a Sampling and Analysis Plan (SAP);
- ◆ Retained a MECP licenced driller to advance a total of thirteen (13) boreholes on the Phase Two Property, to depths ranging between 7.62 to 22.82 mbgs. All the boreholes were instrumented with groundwater monitoring wells upon completion. The soil lithology was logged during drilling, and representative soil samples were collected at regular intervals. The soil samples were screened for organic vapours using an Eagle 2 MultiGas Detector, and examined for visual and olfactory indications of soil impacts;
- ◆ Submitted “worst case” soil samples collected from the boreholes for laboratory analysis of relevant contaminants of potential environmental concern (COPCs) as identified in the Phase One ESA;
- ◆ Conducted groundwater level measurements in the monitoring wells in order to determine the groundwater elevation, and to establish the local groundwater flow direction;
- ◆ Surveyed all monitoring wells to a geodetic benchmark;
- ◆ Developed and purged all monitoring wells prior to sampling. Groundwater samples were collected for all COPCs identified in the Phase One ESA;
- ◆ Compared all soil and groundwater analytical data to the applicable MECP SCS; and
- ◆ Prepared a Phase Two ESA Report in general accordance with O.Reg. 153/04 (as amended).

## 3.2 Media Investigated

### 3.2.1 Rationale for Inclusion or Exclusion of Media

**Table 3-1: Rationale of Sampling Media**

Media	Included or Excluded	Rationale
Soil	Included	Soil was identified as a media of potential impact in the Phase One ESA, based on the historical operations conducted on-Site.
Groundwater	Included	Groundwater was identified as a media of potential impact in the Phase One ESA, based on the historical operations conducted on-Site.
Sediment	Excluded	Sediment is not present on the Phase Two Property.
Surface Water	Excluded	Surface is not present on the Phase Two Property.

### 3.2.2 Overview of Field Investigation of Media

**Table 3-2: Field Investigation of Media**

Media	Methodology of Investigation
Soil	<p>A total of thirteen (13) boreholes were advanced in six (6) locations on the Phase Two Property, to a maximum depth of 22.82 mbgs. Soil samples were collected and submitted for analysis of all relevant COPCs.</p> <p>The results from the borehole and test pitting programs completed by WSP in 2015-2016 were incorporated into this Phase Two ESA.</p>
Groundwater	<p>A total of thirteen (13) monitoring wells were installed across six (6) locations by DS as part of this investigation. Three (3) of the monitoring wells previously installed by WSP in 2015 (BH15A-5, BH15A-6 and BH15A-7) were also used to facilitate the collection of representative groundwater samples.</p> <p>Groundwater samples were collected from each of the aforementioned monitoring wells and submitted for analysis of all COPCs.</p>

## 3.3 Phase One Conceptual Site Model

A Conceptual Site Model was developed for the Phase One Property, located at 1429 Dundas Street East, Oakville, Ontario. The Phase One Conceptual Site Model is presented in Drawings 2A, 2B, 3A, 3B, and 4 and visually depict the following:

- ◆ Any existing buildings and structures
- ◆ Water bodies located in whole, or in part, on the Phase One Study Area
- ◆ Areas of natural significance located in whole, or in part, on the Phase One Study Area
- ◆ Water wells at the Phase One Property or within the Phase One Study Area
- ◆ Roads, including names, within the Phase One Study Area
- ◆ Uses of properties adjacent to the Phase One Property

- ◆ Areas where any PCAs have occurred, including location of any tanks
- ◆ Areas of Potential Environmental Concern

### 3.3.1 Potentially Contaminating Activity Affecting the Phase One Property

All PCAs identified within the Phase One Study Area are presented on Figure 3B. The PCAs which are considered to contribute to APECs on, in or under the Phase One Property are summarized in the table below:

**Table 3-3: Summary of PCAs Contributing to APECs**

PCA Item.	PCA Description (Per. Table 2, Schedule D of O.Reg. 153/04)	Description	Contributing to APEC (Y/N)
1	PCA-30: Importation of Fill Material of Unknown Quality	Fill material was previously imported to the Phase One Property, as has been characterized by AME in 2002, and by WSP in 2015/2016. Several pockets of impacted fill material was formerly identified by AME and WSP. The location of the soil impacts identified is depicted on Figure 2B.	Yes – APEC-1
2	PCA-28: Gasoline and associated products storage in fixed tanks	Two ASTs were formerly present on the Phase One Property and were used by the former golf club. The ASTs are no longer present on-site.	Yes – APEC-2

### 3.3.2 Contaminants of Potential Concern

A summary of the contaminants of potential concern identified for each respective APEC is presented in Table 4-3 above. The following contaminants of potential concern were identified for the Phase One Property: PHCs, VOCs, BTEX, Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, low or high pH, SAR, and PAHs.

Select surface soil samples were assessed for Organochlorine Pesticides (OC Pesticides) at the request of the Client and their contractor. The purpose of this assessment was to determine if the high organic content soils could be re-used as topsoil at off-site locations. It is DS' understanding that OC Pesticide analysis was requested by the local municipality. The results of this supplementary analysis has been reported under a separate letter, and these results are not considered to be relevant to this Phase Two ESA with respect to the APECs identified and the associated COPCs.

### **3.3.3 Underground Utilities and Contaminant Distribution and Transport**

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Underground utilities can affect contaminant distribution and transport. Trenches excavated to install utility services, and the associated granular backfill may provide preferential pathways for horizontal contaminant migration in the shallow subsurface.

Underground services including two septic systems, an underground water cistern, and inferred natural gas service were formerly present on the Phase One Property, servicing the former golf clubhouse. Based on the information obtained in the Phase One interview, all of the former services have been decommissioned.

The former underground services are not located in close proximity to the APECs identified on the Phase One Property, as such these former services are not considered to have presented pathways for contaminant migration.

### **3.3.4 Geological and Hydrogeological Information**

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The topography of the Phase One Property is generally sloped to the south, with elevations ranging from 170 to 160 masl. The topography within the Phase One Study Area generally slopes to the south/southeast, towards Lake Ontario located approximately 6.5 km southeast of the Phase One Property. The nearest body of water is a branch of Joshua's Creek, located approximately 40 metres east of the Property. Tributaries/drainage features of Joshua's Creek cut across the central portions of the site and flow into Joshua's Creek.

Based on a review of the MECP well records, the depth to groundwater in the vicinity of the Phase One Property appears to be variable, ranging between 3.0 to 12 mbgs. The shallow groundwater flow direction within the Phase One Study Area is inferred to be southeasterly towards Joshua's Creek and Lake Ontario.

The physiography of the Phase One Property is described as a till moraine across the northern portion of the Site, and the southern portion of the Site is described as a till plain. The surficial geology within the Phase One Study area is described as "clay to silt-textured till (derived from glaciolacustrine deposits or shale", and the bedrock is described as "shale, limestone, dolostone and siltstone of the Queenston Formation". Based on a review of OGS Earth records, the depth to bedrock in the Phase One Study Area is anticipated to be variable, ranging from 3 to 15 mbgs.

### **3.3.5 Uncertainty and Absence of Information**

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DS has relied upon information obtained from federal, provincial, municipal, and private databases, in addition to records and summaries provided by EcoLog ERIS and the

information presented in the environmental reports reviewed (completed by others). All information obtained was reviewed and assessed for consistency, however the conclusions drawn by DS are subject to the nature and accuracy of the records reviewed.

All reasonable inquiries were made to obtain reasonably accessible information, as mandated by O.Reg.153/04 (as amended). All responses to database requests were received prior to completion of this report, with the exception of the MECP FOI request. If the MECP FOI request produces information which may alter the conclusions of this report, an addendum will be provided to the Client. This report reflects the best judgement of DS based on the information available at the time of the investigation.

Information used in this report was evaluated based on proximity to the Phase One Property, anticipated direction of local groundwater flow, and the potential environmental impact on the Phase One Property as a result of potentially contaminating activities. The QP has determined that the uncertainty dose not affect the validity of the Phase One ESA Conceptual Site Model or the conclusions of this report

### **3.4 Deviations from Sampling and Analysis Plan**

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The Phase Two ESA was completed in accordance with the SAP.

### **3.5 Impediments**

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Uneven topography associated with the historical infilling activity was encountered during the drilling activities. The monitoring wells were installed in locations which were accessible to the required drilling equipment. No other impediments were encountered. The terrain encountered is not considered to have prevented the assessment of all APECs on the Phase Two Property.

## **4.0 Investigation Method**

### **4.1 General**

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The Phase Two ESA followed the methodology outlined in the following documents:

- Ontario Ministry of the Environment “Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario” (December 1996);
- Ontario Ministry of the Environment “Guide for Completing Phase Two Environmental Site Assessments under Ontario regulation 153/04” (June 2011);
- Ontario Ministry of the Environment “Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act” (July 2011) (Analytical Protocol);

The methods used in the Phase Two ESA investigation did not differ from the associated standard operating procedures.

### **4.2 Drilling and Excavating**

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A site visit was conducted prior to drilling in order to identify the borehole locations based on the APECs identified in the Phase One ESA. The Phase Two ESA drilling program was implemented over two (2) drilling events.

A total of five (5) borehole locations were selected for the June 2018 drilling event. A set of nested wells (monitoring wells installed adjacent to one another at differing depths) was installed at each location. The upper monitoring wells were screened within the first water bearing formation (weathered shale/till complex), and the lower monitoring wells were screened within the competent bedrock.

Four (4) additional monitoring wells were installed in August 2018. The August 2018 drilling program involved the addition of a deeper monitoring well to three (3) of the existing monitoring well nests, and the completion of a deep (15 mbgs) monitoring well (BH18-6) situated upgradient of the APECs on-Site to establish background conditions on-Site.

The selected borehole locations are presented on Figure 4. The borehole locations were cleared of underground public and private utility services prior to commencement of drilling. A summary of the drilling activities is provided in the table below.

**Table 4-1: Summary of Drilling Activities**

Parameter	Details
Drilling Contractor	Landshark Drilling
Drilling Dates	June 11 – 15, 2018 August 20-22, 2018
Drilling Equipment Used	Track-mounted CME 75
Measures taken to minimize the potential for cross contamination	<ul style="list-style-type: none"> <li>◆ Soil sampling was conducted using a 50 mm stainless steel split spoon sampler. The split spoon sampler was brushed clean of soil, washed in municipal water containing phosphate free detergent, rinsed in municipal water, and then rinsed with distilled water for each sampling interval in order to reduce the potential for cross contamination;</li> <li>◆ Soil samples were extracted from the interior of the sampler rather than from areas in contact with the sampler sidewalls;</li> <li>◆ Use of dedicated and disposable acrylonitrile gloves for the handling of soil samples. A new set of gloves was used for each sample.</li> </ul>
Sample collection frequency	<p>Samples were collected at a frequency of every 0.6 m per 0.8 m from the ground surface to 3.1 mbgs, followed by one sample per 1.5 m to borehole termination depth.</p> <p>Soil samples were not recovered from monitoring well BH18-6, the lithology was inferred from the nearby borehole BH18-2 and from the auger cuttings.</p>

### 4.3 Soil Sampling

Soil samples were collected using (insert method as described in section above). Discrete soil samples were collected from the split-spoon samplers by DS personnel using dedicated nitrile gloves.

A portion of each sample was placed in a resealable plastic bag for field screening, and the remaining portion was placed into laboratory supplied glass sampling jars. Samples intended for VOC and the F1 fraction of petroleum hydrocarbons analysis were collected using a laboratory-supplied soil core sampler, placed into the vials containing methanol for preservation purposes and sealed using Teflon lined septa lids. All sample jars were stored in dedicated coolers with ice for storage, pending transport to the analytical laboratory. A formal chain of custody was maintained for all samples submitted to the laboratory.

The subsurface soil conditions were logged by DS personnel at the time of drilling and recorded on field borehole logs. The borehole logs are presented under Appendix C.

Additional detail regarding the lithology encountered in the boreholes is presented under Section 6.1 and depicted visually in Figure 4.

#### 4.4 Field Screening Measurements

All retrieved soil samples were screened in the field for visual and olfactory observations. No obvious visual or olfactory evidence of potential contamination were noted. No aesthetic impacts (e.g. cinders, slag, hydrocarbon odours) were encountered during this investigation. The soil sample headspace vapour concentrations for all soil samples recovered during the investigation were screened using portable organic vapour testing equipment in accordance with the procedure outlined in the MECP's *'Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario'*.

The soil samples were inspected and examined to assess soil type, ground water conditions, and possible chemical contamination by visual and olfactory observations or by organic vapour screening. Samples submitted for chemical analysis were collected from locations judged by the assessor to be most likely to exhibit the highest concentrations of contaminants based on several factors including (i) visual or olfactory observations, (ii) sample location, depth, and soil type (iii) ground water conditions and headspace reading. A summary of the equipment used for field screening is provided below:

**Table 4-2: Field Screening Equipment**

Parameter	Details
Make and Model of Field Screening Instrument	RKI Eagle 2, Model 5101-P2 Serial Number: E2G721
Chemicals the equipment can detect and associated detection limits	VOCs with dynamic range of 0 parts per million (ppm) to 2,000 ppm PHCs with range of 0 to 50,000 ppm
Precision of the measurements	3 significant figures
Accuracy of the measurements	VOCs: ± 10% display reading + one digit Hydrocarbons: ± 5% display reading + one digit
Calibration reference standards	PID: Isobutylene CGD: Hexane
Procedures for checking calibration of equipment	In-field re-calibration of the RKI Eagle 2 was conducted (using the gas standard in accordance with the operator's manual instructions) if the calibration check indicated that the calibration had drifted by more than +/- 10%.

A summary of the soil headspace measurements is provided in the borehole logs, appended under Appendix C.

#### **4.5 Groundwater Monitoring Well Installation**

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Monitoring wells were installed upon completion of all of the boreholes advanced on the Phase Two Property. The monitoring wells were constructed of 51-millimetre (2-inch) inner diameter (ID) flush-threaded schedule 40 polyvinyl chloride (PVC) risers, equipped with a 1.5m or 3.1m length of No. 10 slot PVC screen. The well screens were sealed at the bottom using a threaded cap and at the top with a lockable J-plug.

Silica sand was placed around and up to 0.6m above the well screen to act as a filter pack. Bentonite was placed from the ground surface to the top of the sand pack. The wells were completed with protective aboveground monument casings.

Details regarding the monitoring well construction can be found in Table 1, and on the borehole logs provided in Appendix C.

Disposable nitrile gloves were used to minimize the potential for cross-contamination during well installation. Dedicated equipment was used for well development and sampling for further minimize the risk of cross contamination.

The monitoring wells were developed at minimum of 24 hours before water samples were taken. In accordance with DS SOPs for monitoring well development, the wells were developed by removing a minimum of three standing water column volumes using dedicated inertial pumps comprised of Waterra polyethylene tubing and dedicated foot valves.

#### **4.6 Groundwater Field Measurement of Water Quality Parameters**

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Field measurements of water quality parameters including temperature, specific conductivity, pH, turbidity, dissolved oxygen, oxidation-reduction potential and turbidity were collected using a flow-through cell and a YSI Water Quality Meter (YSI-556™). The YSI Water Quality Meter was calibrated by the supplier (Maxim and Environe) in accordance with the manufacturer's specifications.

The measurements were conducted at regular intervals in order to determine whether stabilized geochemical conditions had been established in the monitoring well, indicating representative groundwater conditions. The field measurements have been archived and can be provided upon request.

#### **4.7 Groundwater Sampling**

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Groundwater samples were collected a minimum of 24 hours after the development of the monitoring wells. The monitoring wells could not be sampled using low flow methodology

due to the low yield and recovery of the monitoring wells. The monitoring wells were purged to dryness at the lower possible pumping rate. The monitoring wells were allowed to recover prior to sampling. Groundwater samples to be submitted for analysis of volatile parameters (PHC F1, and VOCs) were collected using a dedicated inertial pump. The remaining samples were collected using a peristaltic pump with dedicated 6.4 mm ID polyethylene tubing.

Groundwater samples for metals analysis were field filtered using dedicated 0.45 micro in-line filters. The groundwater was transferred directly into laboratory supplied containers and preserved as appropriate using the containers supplied by the analytical laboratory. The samples were placed in coolers upon completion of sampling and stored on ice for storage, pending transport to the analytical laboratory. A formal chain of custody was maintained for all samples submitted to the laboratory.

#### **4.8 Sediment Sampling**

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No sediment as defined under O.Reg. 153/04 (as amended) was present on the Phase Two Property at the time of this investigation. Sediment sampling was not conducted as a result.

#### **4.9 Analytical Testing**

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The soil and groundwater samples collected were submitted to ALS Environmental (ALS) under chain of custody protocols. ALS Environmental is an independent laboratory accredited by the Canadian Association for Laboratory Accreditation.

One set of groundwater samples were submitted to Maxxam Analytics (Maxxam) under chain of custody protocols. Maxxam is also an independent laboratory accredited by the Canadian Association for Laboratory Accreditation. Delineation soil samples were also submitted to Maxxam for forensics analysis pertaining to elevated levels of electrical conductivity.

ALS and Maxxam conducted the analyses in accordance with the MECP document “Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act” dated March 9, 2004 (revised on July 1, 2011).

#### **4.10 Residue Management Procedures**

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##### **4.10.1 Soil Cuttings From Drilling and Excavations**

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The soil cuttings generated by the borehole drilling program were left on-site for future disposal at the time of site redevelopment.

#### **4.10.2 Water from Well Development and Purging**

Excess water derived from well purging activities was stored in 20-L sealed plastic pails and temporarily stored on site for disposal by a MECP approved waste-hauler for disposal at a MECP-approved waste management facility.

#### **4.10.3 Fluids from Equipment Cleaning**

Excess equipment cleaning fluids were stored in 20-L sealed plastic pails and temporarily stored on site for disposal by a MECP approved waste-hauler for disposal at a MECP-approved waste management facility.

### **4.11 Elevation Surveying**

The borehole and monitoring well locations were surveyed using a Sokkia GCX-2 GNSS RTK receiver, referenced to a local benchmark (ID #00819800339) with an elevation of 140 metres above sea level.

The ground surface elevations can be found on the borehole logs presented in Appendix C.

### **4.12 Quality Assurance and Quality Control Measures**

#### **4.12.1 Sample containers, preservation, labelling, handling and custody for samples submitted for laboratory analysis, including any deviations from the SAP**

All soil and groundwater samples were stored in laboratory-supplied sample containers in accordance with the MECP Analytical Protocol. A summary of the preservatives supplied by the laboratory is provided in the table below.

**Table 4-3: Summary of Sample Bottle Preservatives**

<b>Media</b>	<b>Parameter</b>	<b>Sample Container</b>
Soil	PHCs F1 VOCs	40 mL methanol preserved glass vial with septum lid.
	PHCs F2-F4 metals and ORPs PAHs	120 mL or 250 mL unpreserved glass jar with Teflon™-lined lid.
Groundwater	PHCs F1 VOCs	40 mL glass vial with septum lid, containing sodium bisulphate preservative.
	PHCs F2-F4	250 mL amber glass bottle with sodium bisulphate preservative
	PAHs	250 mL amber glass bottle (unpreserved)
	Inorganics	500 mL high density polyethylene bottle (unpreserved)

Media	Parameter	Sample Container
Groundwater	Metals	125 mL high density polyethylene bottle containing nitric acid preservative
	Hexavalent Chromium	125 mL high density polyethylene bottle containing ammonium sulphate/ammonium hydroxide preservative
	Mercury	125 mL glass bottle containing hydrochloric acid preservative
	Cyanide	125 mL high density polyethylene bottle containing sodium hydroxide preservative

Groundwater samples were collected using dedicated equipment for each well. Groundwater samples collected for analysis of dissolved metals, mercury and hexavalent chromium were filtered in the field using a dedicated 0.45-micron in-line filter. Each sample container was labelled with a unique sample identification, the project number, and the sampling date. All samples were placed in an ice-filled cooler upon completion of sampling and kept under refrigerated conditions until the time of delivery to the analytical laboratory. A formal chain of custody was maintained for all samples submitted to the laboratory.

#### **4.12.2 Description of equipment cleaning procedures followed during all sampling**

Dedicated, disposable nitrile gloves were used for each sampling event to reduce the potential for cross-contamination.

The split spoon sampler was brushed clean of soil, washed in municipal water containing phosphate free detergent, rinsed in municipal water, and then rinsed with distilled water for each sampling interval in order to reduce the potential for cross contamination.

Dedicated equipment was used for well development and sampling for further minimize the risk of cross contamination. Non-dedicated equipment (i.e. interface probe) was cleaned before initial use and between all measurement points with a solution of Alconox™ and distilled water. The Alconox™ solution was rinsed off using distilled water.

#### **4.12.3 Description of how the field quality control measures referred to in subsection 3 (3) were carried out**

Field duplicate samples were collected at the time of sampling. In accordance with O.Reg. 153/04, one duplicate sample was analyzed per ten samples submitted for analysis. A laboratory prepared trip blank accompanied the groundwater samples during each sampling event and was submitted for laboratory analysis of VOCs.

All field screening devices (i.e. RKI Eagle 2, YSI Water Quality Meter) were calibrated prior to use by the supplier. Calibration checks were completed, and re-calibrations were conducted as required.

#### **4.12.4 Description of, and rationale for, any deviations from the procedures set out in the quality assurance and quality control program set out in the SAP**

There were no deviations from the QA/QC program described in the SAP.

## **5.0 Review and Evaluation**

### **5.1 Geology**

A summary of the subsurface conditions is presented below. Additional details may be found in the borehole logs appended in Appendix C.

Topsoil ranging in thickness between 50 to 350 mm was generally encountered in all borehole locations. It is estimated that up to 340,000 cubic metres of mixed fill material is present on-Site, ranging in thickness between 0.9 to 7.0 mbgs. The fill material was generally found to be underlain by Halton Till (clayey silt/silty clay, and clayey silt till). A silty sand/sandy silt till was encountered above the bedrock in boreholes BH18-2 and BH18-4 (eastern side of Site). Bedrock was encountered at various depths across the site, ranging between 7.3 to 11.3 mbgs. Groundwater was first encountered within the weathered shale/till complex overlying the bedrock. A summary of the geologic units investigated is provided in Table 5-1 below.

**Table 5-1: Summary of Geologic Units Investigated**

<b>Geologic Unit</b>	<b>Inferred Thickness (m)</b>	<b>Top Elevation (masl)</b>	<b>Bottom Elevation (masl)</b>	<b>Properties</b>
Topsoil	0.05-0.35	166.2	159.3	
Fill Material	0.4-7.0	165.8	158.6	Mixed – containing construction debris, brick, topsoil, organics, etc.
Clayey Silt/Silty Clay Till	5.8-10.5	164.8	148.7	Some sand, trace gravel, occasional cobble/boulder, grey, moist
Silty Sand Till	1.5	155.5	147.2	Trace clay, trace gravel, occasional cobble/bulder, reddish brown, wet
Sandy Silty Till	1.5	154.0	148.1	Trace gravel, occasional cobble/boulder, reddish brown
Till Shale Complex	1.5	147.2	145.7	Trace gravel, reddish brown, moist

Geologic Unit	Inferred Thickness (m)	Top Elevation (masl)	Bottom Elevation (masl)	Properties
Shale Bedrock	Unknown	156.2-145.7	Unknown	Highly weathered shale, reddish-brown, moist

## 5.2 Ground Water Elevations and Flow Direction

### 5.2.1 Rationale for Monitoring Well Location and Well Screen Intervals

A total of thirteen (13) monitoring wells were installed on the Phase Two Property in order to assess the groundwater quality in relation to APEC-1. The monitoring wells were screened to intersect the first water bearing formation encountered, in order to allow for the assessment of LNAPL, and to provide information regarding the quality of the groundwater at the water table. Monitoring well locations MW18-1 to MW18-5 were completed within APEC-1 to assess for the presence of groundwater impacts in relation to the historic placement of fill material of unknown quality on the Property. MW18-6 was advanced upgradient of MW18-2 in order to assess the background groundwater quality on the Property.

Three (3) tiers of monitoring wells were installed on the Phase Two Property. A table providing additional details regarding monitoring well construction is provided in Table 5-2 below, and Table 1 (appended).

**Table 5-2: Summary of Monitoring Well Installations**

Zone	Monitoring Wells	Geologic Unit Screened	Properties
Upper Tier	MW18-1S, MW18-2S	Halton Till	First water bearing formation encountered.
	MW18-3S, MW18-4S, MW18-5S	Weathered Shale/Till Complex	
Middle Tier	MW18-1D, MW18-2D, MW18-3D, MW18-4D, MW18-5D, MW18-6	Weathered Shale (Queenston Formation)	Monitoring wells screened to assess groundwater conditions within upper bedrock
Lower Tier	MW18-2D2, MW18-3D2, MW18-4D2	Shale (Queenston Formation)	Monitoring wells screened to assess groundwater conditions in deeper, more competent bedrock

### 5.2.2 Results of Interface Probe Measurements

A summary of the groundwater level measurements is provided in Table 1 (appended). The groundwater level measurements were collected using a Solinst interface probe model 122. The depth to groundwater was found to range between 0.85 to 5.13 mbgs on June 25, 2018,

and 0.85 to 8.65 mbgs on July 26, 2018. The depth to groundwater in the lower tier monitoring wells was recorded on August 24, 2018, and ranged from 0.72 to 4.10 mbgs.

There was no indication of DNAPL or LNAPL in the monitoring wells at this time. The results of the interface probe measurements and field observations indicate that positive head pressure is present within the aquifer screened, resulting in the high groundwater levels recorded in the monitoring wells.

### **5.2.3 Product Thickness and Free Flowing Product**

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No evidence of product was observed in the monitoring wells at the time of the investigation.

### **5.2.4 Groundwater Elevation**

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The groundwater elevation was calculated by subtracting the depth to groundwater from the surface elevation determined by the surface elevation survey conducted as part of this investigation. A summary of the groundwater elevations calculated is presented in Table 1. Generally, the groundwater elevation was found to range from 166.05 to 154.45 masl in the aquifer investigated.

### **5.2.5 Groundwater Flow Direction**

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The groundwater flow direction was interpreted using the groundwater elevations calculated for the monitoring wells installed on the Phase Two Property. Based on the groundwater elevations calculated, the groundwater flow direction is interpreted to be southeasterly towards Joshua's Creek and ultimately, Lake Ontario. The groundwater elevation contours and flow direction are presented on Figures 5A and 5B.

### **5.2.6 Assessment of Potential for Temporal Variability in Groundwater Flow Direction**

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The shallow aquifer investigated is inferred to be an unconfined aquifer, based on the soil stratigraphy observed in the boreholes advanced on the Phase Two Property. It is possible that temporal variations in groundwater elevations may occur on the Phase Two Property in response to seasonal weather patterns.

Temporal variability in groundwater level has the ability to influence the groundwater flow direction. The degree of variation in groundwater levels on the Phase Two Property can only be confirmed with long-term monitoring.

### **5.2.7 Evaluation of Potential Interaction Between Buried Utilities and the Water Table**

The Phase Two Property is currently undeveloped, no buried services are present.

## **5.3 Ground Water Hydraulic Gradients**

### **5.3.1 Horizontal Hydraulic Gradient**

The horizontal hydraulic gradient was calculated based on the groundwater levels recorded on June 25, 2018.

**Table 5-3: Summary of Horizontal Hydraulic Gradient Calculations**

<b>Hydrogeological Unit</b>	<b>Calculated Horizontal Hydraulic Gradient</b>
Upper tier (Halton Till and weathered shale/till complex)	Maximum: 0.02084715 Average: 0.01424544 Minimum: 0.0077625
Bedrock	Maximum: 0.0175517 Average: 0.01143462 Minimum: 0.003814

### **5.3.2 Vertical Hydraulic Gradient**

The vertical hydraulic gradient was calculated based on the groundwater levels recorded on June 25, 2018.

**Table 5-4: Summary of Vertical Hydraulic Gradient Calculations**

<b>Monitoring Well Nest</b>	<b>Calculated Vertical Hydraulic Gradient</b>
MW18-1S MW18-1D	0.3200, down
MW18-2S MW18-2D	0.2627, up
MW18-3S MW18-3D	0.001493, down
MW18-4S MW18-4D	5.215e-15, down

The results of the vertical hydraulic gradient calculations generally indicate downward migration of groundwater and that the aquifer investigated is acting as a source of recharge for Joshua’s Creek.

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## 5.4 Fine-Medium Soil Texture

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### 5.4.1 Rational for use of Fine-Medium Soil Texture Category

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A total of four (4) grain size analyses were submitted to ALS for grain size analysis as part of this investigation. The results of the grain size analyses indicate that more than two-thirds of the soils encountered classified as medium-fine textured.

### 5.4.2 Results of Grain Size Analysis

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A summary of the soil samples analyzed, and the corresponding grain size results is presented in the table below:

**Table 5-5: Summary of Grain Size Analyses**

Sample	% Gravel	% Sand	%Silt+Clay	Classification
BH18-1 SS2	9%	16%	74%	Medium-fine-textured
BH18-1 SS7	0%	38%	62%	Medium-fine-textured
BH18-4 SS2	0%	16%	84%	Medium-fine-textured
BH18-4 SS7	3%	39%	58%	Medium-fine-textured

### 5.4.3 Rational for the Number of Samples Collected and Analyzed

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The grain size analyses were conducted for the purposes of this Phase Two ESA. At least one sample was analyzed per stratigraphic unit encountered in order to characterize the various strata encountered.

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## 5.5 Soil Field Screening

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Soil vapour headspace readings were collected at the time of sample collection, the results of which are presented on the borehole logs Appendix C. The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 15 ppm. The CGD readings remained 0 ppm for all samples.

The soil samples were also screened for visual and olfactory indicators of impacts (e.g. staining, odours). No staining, orders, sheening or evidences of LNAPL or DNAPL were present at the time of sampling.

## 5.6 Soil Quality

The results of the chemical analyses conducted are presented in Tables 5 through 10. A visual summary of the location of the sample locations is provided in Figures 6A through 6D. The laboratory certificates of analysis have been provided under Appendix D.

### 5.6.1 Metals and ORPs

A total of six (6) samples, including one field duplicates for QA/QC purposes were submitted by DS for analysis of metals and ORPs. A total of forty (40) samples were previously submitted by WSP between 2015 and 2016. The results of the analyses are tabulated in Table 5 and presented on Figure 6A. The results of the analyses indicated the following exceedances of the Table 8 SCS:

**Table 5-6: Summary of Metals and ORPs Exceedances in Soil**

Sample ID	Sample Depth (mbgs)	Parameter	Units	Table 8 SCS	Reported Value
BH15A-6 SS1 (QA/QC1)	0.0-0.6	Cyanide	µg/g	0.051	<b>0.067</b>
TP15A-18 Sa2	0.3-3.1	Boron (HWS)	µg/g	1.5	<b>1.79</b>
TP15A-20 Sa3	2.4-4.0	Silver	µg/g	0.5	<b>1.40</b>
TP16-11 Sa1	2.4-3.4	Barium	µg/g	220	<b>225</b>
		EC	µg/g	0.7	<b>0.723</b>

Elevated levels of electrical conductivity in excess of the Table 8 SCS were also identified in sample BH18-5 SS5 (3.1-3.7 mbgs). The elevated EC is not considered by the QP<sub>ESA</sub> to be contamination, per the definition of contamination described under the Environmental Protection Act (EPA, 1990). Additional discussion is provided under Section 5.6.6.

### 5.6.2 Petroleum Hydrocarbons

A total of six (6) samples, including one (1) field duplicates for QA/QC purposes were submitted for analysis by DS for PHCs (incl. BTEX). Ten (10) samples were submitted by WSP between 2015 and 2016. The results of the analyses are tabulated in Table 6 and presented on Figure 6B.

The results of the analyses indicated the following exceedances of the Table 8 SCS:

**Table 5-7: Summary of PHCs in Soil**

Sample ID	Sample Depth (mbgs)	Parameter	Units	Table 8 SCS	Reported Value
BH18-1 SS5	3.1-3.7	F2 (C10-C16)	µg/g	10	<b>11</b>
	QAQC2	F2 (C10-C16)	µg/g	10	10
BH18-5 SS7	6.1-6.7	F2 (C10-C16)	µg/g	10	<b>18</b>

Remediation through bulk excavation and off-site disposal was conducted for these soil impacts. Details pertaining to the remedial activities and confirmatory sampling in accordance with O.Reg. 153/04 (as amended) are provided in Appendix E.

### **5.6.3 Volatile Organic Compounds**

A total of six (6) samples, including one (1) field duplicate for QA/QC purposes were submitted by DS for analysis of VOCs. Three (3) samples were submitted by WSP in 2015. The results of the analyses are tabulated in Table 7 and presented on Figure 6C. The results of the analyses indicated that there were no exceedances of the Table 8 SCS.

### **5.6.4 Polycyclic Aromatic Hydrocarbons**

A total of sixteen (16) samples, including one (1) field duplicate for QA/QC purposes were submitted by WSP between 2015 and 2016 for analysis of PAHs. The results of the analyses are tabulated in Table 8 and presented on Figure 6D. The results of the analyses indicated that there were no exceedances of the Table 8 SCS.

### **5.6.5 Organochlorine Pesticides**

A total of six (6) samples, including one (1) field duplicate for QA/QC purposes were submitted by DS for analysis of OCPs. Five (5) samples were submitted by WSP in 2015. The results of the analyses are tabulated in Table 9 and presented on Figure 6E. All of the samples analysed met the MECP Table 8 SCS.

### **5.6.1 Polychlorinated Biphenyls**

A total of five (5) including one field duplicate were submitted for the analysis of PCBs by WSP. The results of the analysis are tabulated in Table 10 and presented on Figure 6E. The results of the analyses indicated that there were no exceedances of the Table 8 SCS.

### **5.6.2 Commentary on Soil Quality**

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The results of the soil chemical analyses conducted indicated that metals, ORP, and PHC impacts are present on the Phase Two Property.

#### **Metals**

Soils impacts with metals were identified at test pit TP16-11 (barium) and TP15A-20 (silver) at depths ranging between 0.2-0.6 mbgs and 2.4-4.0 mbgs (respectively). The horizontal extent of the metals impacts in soil is presented on Figures 6A, 6Ai and 6Aii. The vertical extent of the impacts was determined during the remedial excavation activities. Additional details are provided in Appendix E.

#### **Other Regulated Parameters (ORP)**

Soils impacts with ORPs were identified at test pit TP16-11 (EC), TP15A-18 (boron- HWS), and borehole BH15A-6 (cyanide) at depths ranging between 0.2-0.6 mbgs, 0.3-3.1 mbgs and 0-0.6 mbgs (respectively). The horizontal extent of the ORP impacts in soil is presented on Figures 6B, 6Bi and 6Bii. The vertical extent of the impacts was determined during the remedial excavation activities. Additional details are provided in Appendix E.

Elevated levels of EC in excess of the Table 8 SCS were also identified in borehole BH18-5 SS5 at a depth of 3.1 to 3.7 mbgs. Delineation/confirmatory sampling was conducted as part of the remedial activities at the Site. The results of the first round of confirmatory sampling indicated that EC impacts were still present within a 7 metre radius of BH18-5. Additional delineation/confirmatory sampling was conducted in May 2019, involving the collection of additional samples at locations approximately 30 metres to the north, south, east and west of BH18-5. As part of the May 2019 sampling program samples were submitted to Maxxam Analytics for forensic analysis in order to determine if the source of the EC impact was attributable to the use of road salt based on a comparison of key inorganic parameter concentrations.

EC is measured using a probe, via a PC-Titrate system, and is a measure of the solution's ability to conduct an electric current. The conductivity is directly proportional to the concentration of dissolved charged ions, such as those associated with salt. The results of the forensic analysis indicated that the samples contained chloride concentrations between 30 to 70 µg/g. It was noted by Maxxam that road salt impacted soils typically contain chloride concentrations in excess of 1000 µg/g. Furthermore, the sulphate concentrations in the samples were found to range between 800 to 4,500 µg/g, as such the reported elevated EC

values appear to be the result of elevated sulphate concentrations, rather than chloride, suggesting that the elevated EC levels are not the result of application of road salt.

Sulphate sources range from naturally occurring minerals and deposits, to a wide range of soil amendments (e.g. fertilizers, pesticides and soil stabilizers). The lithology encountered in BH18-5 consisted of 300 mm of topsoil, underlain by 1.2 m of clayey silt fill, and clayey silt till (Halton Till).

The samples analysed were collected from the native Halton Till unit, which is considered to be of low permeability, and were collected at depths greater than 3.1 mbgs. Any application of soil amendments would have been at the surface, and the majority of any amendments applied would have adsorbed to the organic matter contained within the topsoil. There is no indication based on the Phase One ESA of soil amendments being applied to the Property within the past 10 years. Based on the physical separation of over 3 metres, and the low permeability soils present on-Site, it is the opinion of the QP<sub>ESA</sub> that the elevated sulphate concentrations are the result of naturally occurring minerals, and therefore is not considered to be a contaminant, as defined by the EPA (EPA, 1990). A copy of the forensic analysis letter provided by Maxxam has been included under Appendix F.

### **Petroleum Hydrocarbons (PHCs)**

Soils impacts with PHCs in the F2 range were identified at boreholes BH18-1 and BH18-5 at respective depths of 3.1-3.7 and 6.1-6.7 mbgs. The horizontal extent of the PHC impacts in soil is presented on Figures 6C and 6Ci. The vertical extent of the impacts was determined during the remedial excavation activities. Additional details are provided in Appendix E.

## **5.7 Ground Water Quality**

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The results of the chemical analyses conducted are presented in Tables 11 through 14. A visual summary of the location of the sample locations is provided in Figures 7A through 7D. The laboratory certificates of analysis have been provided under Appendix D.

### **5.7.1 Metals and ORPs**

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A total of forty-seven (47) samples, including seven (7) field duplicates for QA/QC purposes were submitted for analysis of metals and ORPs. The results of the analyses are tabulated in Table 11 and presented on Figure 7A. The groundwater samples transferred into the metals, mercury, and hexavalent chromium bottles were field filtered using a 0.45-micron in-line filter. The results of the analyses indicated the following exceedances of the Table 8 SCS:

**Table 5-8: Summary of Metals and ORPs Exceedances in Groundwater**

Sample ID	Well Screen Interval (mbgs)	Date Sampled	Parameter	Units	Table 8 SCS	Reported Value
BH15A-5	12.1-15.2	29-Mar-18	Chloride	mg/L	790	<b>1390</b>
			Sodium	µg/L	490000	<b>8780000</b>
		21-Feb-19	Sodium	µg/L	490000	<b>950000</b>
BH15A-6	7.6-10.7	29-Mar-18	Chloride	mg/L	790	<b>1160</b>
			Sodium	µg/L	490000	<b>597000</b>
BH15A-7	9.0-12.1	29-Mar-18	Chloride	mg/L	790	<b>1440</b>
			Cobalt	µg/L	3.8	<b>3.9</b>
			Sodium	µg/L	490000	<b>1020000</b>
		05-Jul-18	Uranium	µg/L	20	<b>58</b>
		29-Aug-18	Chloride	mg/L	790	<b>1640</b>
		19-Sep-18	Sodium	µg/L	490000	<b>955000</b>
		18-Oct-18	Sodium	µg/L	490000	<b>1060000</b>
		21-Feb-19	Sodium	µg/L	490000	<b>1000000</b>
BH15A-7 (QAQC)	9.0-12.1	18-Oct-18	Sodium	µg/L	490000	<b>1090000</b>
BH15A-7 DUP 1	9.0-12.1	21-Feb-19	Sodium	µg/L	490000	<b>1100000</b>
MW18-2D	13.8-15.3	28-Jun-18	Chloride	mg/L	790	<b>1290</b>
			Sodium	µg/L	490000	<b>645000</b>
		26-Jul-18	Chloride	mg/L	790	<b>1050</b>
			Sodium	µg/L	490000	<b>630000</b>
		29-Aug-18	Chloride	mg/L	790	<b>1090</b>
		19-Sep-18	Sodium	µg/L	490000	<b>566000</b>
		21-Feb-19	Sodium	µg/L	490000	<b>660000</b>
BH18-2D2	21.3-22.8	19-Sep-18	Chloride	mg/L	790	<b>2780</b>
			Sodium	µg/L	490000	<b>941000</b>
MW18-3S	10.7-13.8	28-Jun-18	Chloride	mg/L	790	<b>848</b>
			Sodium	µg/L	490000	<b>594000</b>
		05-Jul-18	Uranium	µg/L	20	<b>60</b>

Sample ID	Well Screen Interval (mbgs)	Date Sampled	Parameter	Units	Table 8 SCS	Reported Value
		26-Jul-18	Chloride	mg/L	790	<b>922</b>
			Sodium	µg/L	490000	<b>642000</b>
		21-Feb-19	Sodium	µg/L	490000	<b>600000</b>
MW18-3D	14.3-15.8	28-Jun-18	Chloride	mg/L	790	<b>4120</b>
			Sodium	µg/L	490000	<b>1690000</b>
		29-Aug-18	Chloride	mg/L	790	<b>9150</b>
		19-Sep-18	Sodium	µg/L	490000	<b>982000</b>
		21-Feb-19	Sodium	µg/L	490000	<b>3500000</b>
		18-Jul-19	Antimony	µg/L	6	<b>&lt;10</b>
		18-Jul-19	Beryllium	µg/L	4	<b>&lt;10</b>
		18-Jul-19	Cobalt	µg/L	3.8	<b>&lt;10</b>
		18-Jul-19	Silver	µg/L	1.2	<b>&lt;5</b>
		18-Jul-19	Uramium	µg/L	20	<b>&lt;50</b>
BH18-3D2	21.3-22.8	19-Sep-18	Boron	µg/L	5000	<b>5300</b>
			Sodium	µg/L	490000	<b>3320000</b>
		19-Sep-18	Antimony	µg/L	6	<b>&lt;10</b>
		19-Sep-18	Beryllium	µg/L	4	<b>&lt;10</b>
		19-Sep-18	Cobalt	µg/L	3.8	<b>&lt;10</b>
		19-Sep-18	Silver	µg/L	1.2	<b>&lt;5</b>
		19-Sep-18	Uramium	µg/L	20	<b>&lt;50</b>
MW18-4S	8.2-11.3	28-Jun-18	Chloride	mg/L	790	<b>2300</b>
			Sodium	µg/L	490000	<b>1200000</b>
		26-Jul-18	Chloride	mg/L	790	<b>3960</b>
			Sodium	µg/L	490000	<b>1800000</b>
		21-Feb-19	Sodium	µg/L	490000	<b>1900000</b>
MW18-4D	13.7-15.2	28-Jun-18	Chloride	mg/L	790	<b>4020</b>
			Sodium	µg/L	490000	<b>1710000</b>
		26-Jul-18	Chloride	mg/L	790	<b>2380</b>

Sample ID	Well Screen Interval (mbs)	Date Sampled	Parameter	Units	Table 8 SCS	Reported Value
			Sodium	µg/L	490000	<b>1320000</b>
		19-Sep-18	Sodium	µg/L	490000	<b>1420000</b>
		21-Feb-19	Sodium	µg/L	490000	<b>1400000</b>
MW18-4D (DUP-1)	13.7-15.2	21-Feb-19	Sodium	µg/L	490000	<b>1300000</b>
BH18-4D2	21.3-22.8	29-Aug-18	Chloride	mg/L	790	<b>12800</b>
		19-Sep-18	Sodium	µg/L	490000	<b>4480000</b>
		19-Sep-18	Antimony	µg/L	6	<b>&lt;10</b>
		19-Sep-18	Beryllium	µg/L	4	<b>&lt;10</b>
		19-Sep-18	Cobalt	µg/L	3.8	<b>&lt;10</b>
		19-Sep-18	Silver	µg/L	1.2	<b>&lt;5</b>
		19-Sep-18	Uranium	µg/L	20	<b>&lt;50</b>
BH18-4D2 (QAQC1)	21.3-22.8	19-Sep-18	Chloride	mg/L	790	<b>2320</b>
			Sodium	µg/L	490000	<b>1100000</b>
MW18-5D	12.2-15.3	05-Jul-18	Uranium	µg/L	20	<b>58.8</b>
		21-Feb-19	Sodium	µg/L	490000	<b>3400000</b>
BH18-6	13.7-15.2	19-Sep-18	Chloride	mg/L	790	<b>3920</b>
			Sodium	µg/L	490000	<b>1770000</b>

**Notes:**

- Red** Concentration exceeded the Table 8 SCS
- Blue** Detection limits exceeded the Table 8 SCS

### **5.7.2 Petroleum Hydrocarbons**

A total of six (6) samples were submitted for analysis of PHCs (incl. BTEX). The results of the analyses are tabulated in Table 12 and presented on Figure 7B. The results of the analyses indicated that there were no exceedances of the Table 8 SCS.

### **5.7.3 Volatile Organic Compounds**

A total of six samples, including one Trip Blank were submitted for analysis of VOCs. The results of the analyses are tabulated in Table 13 and presented on Figure 7C. The results of the analyses indicated that there were no exceedances of the Table 8 SCS.

#### **5.7.4 Organochlorine Pesticides**

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A total of a total of six (6) samples were submitted for analysis of OCPs. The results of the analyses are tabulated in Table 14 and presented on Figure 7D. The results of the analyses indicated that there were no exceedances of the Table 8 SCS.

#### **5.7.5 Commentary on Groundwater Quality**

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The laboratory certificates of analysis indicated that dilution of the sample resulting in elevated detection limits (greater than the Table 8 SCS) was required for samples MW18-3D (July 26, 2018), MW18-3D2 (September 19, 2018) and MW18-4D2 (September 19, 2018). The results of subsequent sampling events conducted on MW18-3D indicated acceptable non-detectable concentrations of cobalt. Cobalt exceedances were not identified in any of the upper tier monitoring wells on the Property. The laboratory indicated that the dilution was required due to the elevated concentrations of other analytes in the sample (e.g. sodium and chloride). As there is no indication of cobalt within the upper aquifer investigated or source of cobalt contamination identified, it is the opinion of the QP<sub>ESA</sub> that the elevated detection limits in the lowest tier of monitoring wells has not limited the ability to assess for the presence of cobalt as a contaminant of concern with respect to the groundwater quality on-Site.

The upper tier of monitoring wells on the Property were screened within the first water bearing formation encountered. Monitoring wells MW18-1S and MW18-2S were the only borehole locations in which groundwater was identified within the overburden. The results of the chemical analyses conducted on both of these monitoring wells indicated acceptable concentrations of all parameters of concern.

The remaining upper tier monitoring wells were screened within the weathered shale/till complex (BH15A-5, BH15A-6, BH15A-7, MW18-3S and MW18-4S). The middle tier monitoring wells (MW18-1D, MW18-2D, MW18-3D, MW18-4D, MW18-5D and MW18-6) were installed within the bedrock at an approximate depth of 15 mbgs. Elevated concentrations of sodium and/or chloride in excess of the Table 8 SCS were reported in all of the middle tier monitoring wells, with the exception of MW18-1D.

The Queenston Shale which is present on-Site has been documented to naturally exhibit elevated concentrations of sulphate, chloride, calcium, sodium, magnesium, manganese, strontium, iron, hardness, and total dissolved solids (AECOM, 2009 & Canadian Journal of Earth Science, 2017). According to Sibul et al. (1977) sodium occurs naturally in Queenston Shales, and the ion exchange process results in the replacement of calcium with sodium in

groundwater, resulting in naturally high concentrations of sodium in groundwater derived from the Queenston Shale formation.

In general, the reported concentrations of sodium and chloride increased with depth. The concentrations of sodium and chloride in the intermediate tier monitoring wells were approximately 1.5 to 4.8 times greater than the reported concentrations in the upper tier monitoring wells. Similarly, the concentrations of sodium and chloride in the lower tier monitoring wells were approximately 1.5 to 3.4 times greater than the reported concentrations in the middle tier monitoring wells.

The Phase Two Property is an agricultural field with no roads and/or municipal walkways subject to application of road salt. Based on the findings of the Phase One ESA, the only potential source of sodium and chloride impact to the groundwater was the fill material of unknown quality (potentially subjected to de-icing salts) imported to the Site. The native Halton Till encountered on the property is of low permeability, and the groundwater table was generally encountered within the weathered shale/till complex.

The results of the soil chemical analysis indicated that of the 73 soil samples analysed between 2002 and 2018, only two (2) of the samples marginally exceeded the Table 8 SCS in borehole BH18-5 (3.1-3.7 mbgs) and test pit TP16-11 Sa1. The results of the May 2019 forensic analysis indicated that the elevated EC values do not appear to be attributable to the application of road salt and are likely due to background conditions.

Based on the lack of apparent source of sodium and chloride impact, the findings of the May 2019 forensics analysis, and the physical separation of greater than 4 metres through low permeability till between the reported elevated levels of EC in soil and the groundwater table, it is concluded by DS that the elevated levels of sodium and chloride observed in water are not anthropogenic in nature, and are the result of the natural bedrock conditions.

The Environmental Protection Act (EPA) defines contaminants as “any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect (EPA, 1990)”.

Concentrations of boron in excess of the Table 8 SCS were reported in monitoring well MW18-3D2. Both of the corresponding upper and intermediate tier monitoring wells at this monitoring well nest location met the Table 8 SCS for boron, as such it is the opinion of the QP<sub>ESA</sub> that the reported concentration of boron in MW18-3D2 is attributable to background conditions, and is not considered to be contamination as defined under the EPA (EPA, 1990).

As there is no indication that the elevated concentrations of sodium, chloride, and boron reported in groundwater are anthropogenic in nature, it is concluded that the elevated concentrations of sodium, chloride and boron are not considered to be contamination, as defined by the EPA. As such it is concluded by the QP<sub>ESA</sub> that the groundwater quality on the Phase Two Property meets the applicable site condition standards.

## 5.8 Sediment Quality

No sediment was present on the Phase Two Property at the time of the investigation.

## 5.9 Quality Assurance and Quality Control Results

Collection of soil and groundwater samples was conducted in general accordance with the MECP *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*. As described in Section 4.12, dedicated equipment was used where possible, and all non-dedicated equipment was decontaminated before and between sampling events. All soil and groundwater samples were transferred directly into laboratory-supplied containers. The laboratory containers were prepared by the laboratory with suitable preservative, as required. All samples were stored and transported under refrigerated conditions. Chain of custody protocols were maintained from the time of sampling to delivery to the analytical laboratory.

The field QA/QC program involved the collection of field duplicate soil and groundwater samples, and the use of a trip blank for each groundwater sampling event (when suitable). In addition to the controls listed above, the analytical laboratory employed method blanks, internal laboratory duplicates, surrogate spike samples, matrix spike samples, and standard reference materials.

A summary of the field duplicate samples analyzed and an interpretation of the efficacy of the QA/QC program is provided in the table below.

**Table 5-9: Summary of QA/QC Results**

Sample ID	QA/QC duplicate	Medium	Parameter Analyzed	QA/QC Result
QA/QC1	BH15A-6 SS1	Soil	Metals and ORPs	All results were within the analytical protocol criteria for RPD, except for the parameters listed below.
QA/QC2	BH15A-6 SS3	Soil	PHCs, VOCs	All results were within the analytical protocol criteria for RPD.
QA/QC5	TP15A-13 Sa2	Soil	ORPs	All results were within the analytical protocol criteria for RPD.
QA/QC6	TP15A-11 Sa2	Soil	Metals and ORPs	All results were within the analytical protocol criteria for RPD.

Sample ID	QA/QC duplicate	Medium	Parameter Analyzed	QA/QC Result
QA/QC7	TP15A-17 Sa2	Soil	ORPs	All results were within the analytical protocol criteria for RPD.
QAQC1	BH18-1 SS1	Soil	ORPs	All results were within the analytical protocol criteria for RPD.
QAQC2	BH18-1 SS5	Soil	PHCs, VOCs, ORPs	All results were within the analytical protocol criteria for RPD.
QAQC3	BH18-1 SS3	Soil	Metals and ORPs	All results were within the analytical protocol criteria for RPD, except for the parameters listed below.
Dup-1	TP18-1 S1	Soil	PHCs, PAHs	All results were within the analytical protocol criteria for RPD.
QA/QC1	BH15A-6	Groundwater	Metals and ORPs	All results were within the analytical protocol criteria for RPD, except for the parameters listed below.
QAQC	BH15A-7	Groundwater	Metals and ORPs	All results were within the analytical protocol criteria for RPD.
QAQC1	BH18-2D2	Groundwater	Metals and ORPs	All results were within the analytical protocol criteria for RPD, except for the parameters listed below.
DUP1	BH15A-6	Groundwater	Metals and ORPs	All results were within the analytical protocol criteria for RPD.
DUP 1	BH15A-7	Groundwater	Metals and ORPs	All results were within the analytical protocol criteria for RPD.
DUP-1	MW18-4D	Groundwater	Metals and ORPs	All results were within the analytical protocol criteria for RPD.
QAQC3	BH18-5 FL3A	Soil	EC	All results were within the analytical protocol criteria for RPD.
DUP 18-5D	BH18-5 SW1E	Soil	EC	All results were within the analytical protocol criteria for RPD.

The following exceptions in the RPD protocols were identified:

- ◆ The RPD value for BH15A-6 SS1 (QA/QC1) of 13% exceeded the recommended 10% RPD limit for Electrical Conductivity. The variance in the analytical result between the parent and duplicate sample are attributed to the heterogeneity of the fill material analyzed.
- ◆ The RPD value for BH15-6 (QA/QC1) of 40% exceeded the recommended 20% RPD limit for Nickel. The variance in the analytical result between the parent and duplicate sample are attributed to the heterogeneity of the fill material analyzed.
- ◆ The RPD value for BH18-1 SS3 (QAQC3) of 47% exceeded the recommended 30% RPD limit for Barium. The variance in the analytical result between the parent and duplicate sample are attributed to the heterogeneity of the fill material analyzed.
- ◆ The RPD value for BH18-2D2 (QAQC1) of 25% exceeded the recommended 20% RPD limit for Barium, 26% exceeded the recommended 20% RPD limit for Boron, and 71% exceeded the recommended 20% RPD limit for uranium. The variance in the

analytical result between the parent and duplicate sample are attributed to the heterogeneity of the fill material analyzed.

All samples were handled in accordance with the MECP Analytical Protocol regarding sample holding time, preservation methods, storage requirements, and type of container. Based on the interpretation of the laboratory results and the QA/QC program, it is the opinion of the QP that the laboratory analytical data can be relied upon. Various comments on the Certificates of Analyses regarding duplicate results, matrix spike recovery, detection limits, as well as other comments can be found in Appendix D.

With respect to subsection 47(3) of O.Reg 153/04 (as amended), all certificates of analysis or analytical reports pursuant to clause 47(2) (b) of the regulation comply with subsection 47(3). A certificate of analysis has been received for each sample submitted for analysis and have been provided (in full) in Appendix D.

A review of the QA/QC sample results indicated that no issues were identified with respect to both the field collection methodology and the laboratory reporting. It is the opinion of the QP that the analytical data obtained are representative of the soil and groundwater conditions at the Phase Two Property for the purpose of assessing whether the soil and groundwater at the Phase Property meets the applicable MECP SCS.

### **5.10 Phase Two Conceptual Site Model**

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A Phase Two Conceptual Site Model has been prepared for the Site based on the Phase One ESA, Phase Two ESA, and remediation activities. The Phase Two Conceptual Site Model has been provided under Appendix F.

## **6.0 Conclusions**

This Phase Two ESA incorporated data previously obtained by historical test pitting activities, and supplemented the historical data through the advancement of thirteen (13) boreholes, the installation of thirteen (13) monitoring wells on the Phase Two Property, and the collection of soil and groundwater samples for analysis of the potential contaminants of concern, including: PHCs, VOCs, BTEX, Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, low or high pH, SAR, OCPs, PCBs and PAHs.

Based on the results of the information gathered through the course of the investigation, DS presents the following conclusions:

- ◆ Soil exceedances of the Table 8 SCS included the following:
  - Barium, identified in TP16-11 (2.4-3.4 mbgs);

- Electrical Conductivity, identified in TP16-11 (2.4-3.4 mbgs) and BH18-5 (3.1-3.7 mbgs);
- Silver, identified in TP15A-20 (0.2-0.6 mbgs);
- Boron (HWS), identified TP15A-18 (0.3-3.7 mbgs);
- Cyanide, identified in BH15A-6 (0.0-0.7mbgs); and
- PHC F2, identified in BH18-1 (3.1-3.7 mbgs) and BH18-5 (6.1-6.7 mbgs)
- ◆ The EC impact in BH18-5 was demonstrated through forensic analysis to be unrelated to the application of road salt (e.g. natural conditions resulting in elevated EC), and as such is not considered to be contamination, as defined under the EPA.
- ◆ The remaining soil impacts were remediated through the excavation and off-site disposal of all impacted soils, followed by confirmatory sampling in accordance with O.Reg. 153/04 (as amended).
- ◆ Groundwater exceedances of the Table 8 SCS included:
  - Sodium and chloride, identified in BH15A-5, BH15A-6, BH15A-7, MW18-2D, MW18-2D2, MW18-3S, MW18-3D, MW18-3D2, MW18-4S, MW18-4D, MW18-4D2, MW18-5D and MW18-6;
  - Cobalt, identified in BH15A-7 during one (1) sampling event;
  - Uranium, identified in BH15A-7, MW18-3S and MW18-5D during one (1) sampling event; and
  - Boron, identified in BH18-3D2.
- ◆ The cobalt and uranium exceedances are considered to be anomalous based on the results of the remaining three (3) sampling events in which acceptable concentrations of cobalt and uranium were identified.
- ◆ The sodium, chloride and boron exceedances identified are attributed to natural background conditions within the Queenston Shale aquifer, based on literature review, the lack of a contaminant source, and the concentration trends (increasing with depth).
- ◆ It is concluded by the QP<sub>ESA</sub> that the groundwater on the Phase Two Property meets the applicable Table 8 SCS.
- ◆ As of May 30, 2019, the impacted soils identified have been excavated and removed from the Phase Two Property. Confirmatory sampling was conducted in accordance with O.Reg. 153/04 (as amended). All of the remaining soils on-Site met the Table 8 SCS.

- ◆ The results of the Phase Two ESA and remedial activities indicate that as of May 30, 2019, the Site Condition Standards for the Phase Two Property have been met. A Record of Site Condition may be filed based on the findings of this Phase Two ESA.
- ◆ All monitoring wells should be decommissioned in accordance with O.Reg. 903 when no longer required.

## **6.1 Qualifications of the Assessors**

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### **Ms. Aphrodite Koseos, B.Sc., EPt.**

Ms. Koseos is an Environmental Technician with DS Consultants Ltd. Aphrodite holds a Bachelor of Science Degree from Simon Fraser University with a major in Environmental Science and a specialization in Earth Systems. Aphrodite is also registered as an environmental professional in training with ECO Canada. Aphrodite has had several years of experience in the environmental sector conducting Phase One and Phase Two Environmental Site Assessments.

### **Mr. Patrick (Rick) Fioravanti, B.Sc., P.Geo., QP<sub>ESA</sub>**

Mr. Fioravanti is the Manager of Environmental Services with DS Consultants Limited. Patrick holds a Honours Bachelor of Science with distinction in Toxicology from the University of Guelph, and is a practicing member of the Association of Professional Geoscientists of Ontario (APGO). Patrick has over eight years of environmental consulting experience and has conducted and/or managed over 100 projects in his professional experience. Patrick has extensive experience conducting Phase One and Phase Two Environmental Site Assessments in support of brownfields redevelopment in urban settings, and been involved in numerous remediation projects, supported many risk assessments, and successfully filed Records of Site Condition with the Ministry of Environment. He has conducted work across southern and eastern Ontario, and Quebec in his professional experience. Patrick is considered a Qualified Person to conduct Environmental Site Assessments as defined by Ontario Regulation 153/04 (as amended).

## 6.2 Signatures

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This Phase Two ESA was conducted under the supervision of Mr. Patrick (Rick) Fioravanti, B.Sc., P.Geo., QP<sub>ESA</sub> in accordance with the requirements of O.Reg. 153/04 (as amended). The findings and conclusions presented have been determined based on the information obtained at the time of the investigation, and on an assessment of the conditions of the Site at this time.

We trust this report meets with your requirements. Should you have any questions regarding the information presented, please do not hesitate to contact our office.

Yours truly,

### DS Consultants Ltd



**Aphrodite Koseos, B.Sc., EPT.**  
Environmental Technician



**Patrick Fioravanti, B.Sc., P.Geo., QP<sub>ESA</sub>**  
Manager – Environmental Services

### **6.3 Limitations**

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This report was prepared for the sole use of Mattamy (Joshua Creek) Limited and is intended to provide an assessment of the environmental condition on the property located at 1429 Dundas Street East, Oakville, Ontario. The information presented in this report is based on information collected during the completion of the Phase Two Environmental Site Assessment by DS Consultants Ltd. The material in this report reflects DS' judgment in light of the information available at the time of report preparation. This report may not be relied upon by any other person or entity without the written authorization of DS Consultants Ltd. The scope of services performed in the execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or reuse of this documents or findings, conclusions and recommendations represented herein, is at the sole risk of said users.

The conclusions drawn from the Phase Two ESA were based on information at selected observation and sampling locations. Conditions between and beyond these locations may become apparent during future investigations or on-site work, which could not be detected or anticipated at the time of this investigation. The sampling locations were chosen based upon a cursory historical search, visual observations and limited information provided by persons knowledgeable about past and current activities on this site during the Phase Two ESA activities. As such, DS Consultants Ltd. cannot be held responsible for environmental conditions at the site that was not apparent from the available information.

## 7.0 References

- ◆ Armstrong, D.K. and Dodge, J.E.P. *Paleozoic Geology Map of Southern Ontario*. Ontario Geological Survey, Miscellaneous Release--Data 219.
- ◆ Chapman, L.J. and Putnam, D.F. 2007. *The Physiography of Southern Ontario*. Ontario Geological Survey, Miscellaneous Release--Data 228.
- ◆ Freeze, R. Allen and Cherry, John A., 1979. *Ground water*. Page 29.
- ◆ Ontario Ministry of the Environment, December 1996. *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*.
- ◆ Ontario Ministry of Environment, 15 April 2011. *Soil, Ground Water and Sediment Standards for use under part XV.1 of the Environmental Protection Act*.
- ◆ Ontario Ministry of the Environment, June 2011. *Guide for Completing Phase Two Environmental Site Assessments under Ontario regulation 153/04*.
- ◆ Ontario Ministry of the Environment, July 2011. *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*.
- ◆ The Ontario Geological Survey. 2003. *Surficial Geology of Southern Ontario*.
- ◆ “Phase II Environmental Site Assessment, Fill Deposit – Bressa Developments Property, Dundas Street West, Oakville Ontario”, prepared for Mattamy Homes Ltd., prepared by Terrapex Environmental Ltd., dated April 11, 2006 (Terrapex 2006 Report);
- ◆ “Phase I Environmental Site Assessment, Due Diligence for Financing – Lakeport Property, Oakville, Ontario”, prepared for Bressa Developments Limited c/o Mattamy Development Corporation, prepared by AME – Materials Engineering, dated October 31, 2008 (AME 2008 Report); and
- ◆ “Phase One Environmental Site Assessment – Bressa Property, 1264, 1288 Burnhamthorpe Road East, 1429 Dundas Street East, Oakville, Ontario”, prepared for Mattamy Homes, prepared by SPL Consultants Ltd., dated March 16, 2015 (SPL 2015 Report);
- ◆ “Memorandum – Environmental Testing Summary, Project # 141-55140-00”, prepared for Mattamy Development Corporation, prepared by WSP Canada Inc., dated January 16, 2016 (WSP 2016 Memo).



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# Tables



**Table 1: Summary of Monitoring Well Installation and Groundwater Data**

Well ID		MW18-1S	MW18-1D	MW18-2S	MW18-2D	MW18-2D2	MW18-3S	MW18-3D	MW18-3D2	MW18-4S	MW18-4D	MW18-4D2	MW18-5D	MW18-6	BH15A-5	BH15A-6	BH15A-7	
Installed By:		DS	DS	DS	DS	DS	DS	DS	DS	DS	DS	DS	DS	DS	WSP	WSP	WSP	
Installation Date:		14-Jun-18	14-Jun-18	13-Jun-18	13-Jun-18	22-Aug-18	12-Jun-18	12-Jun-18	21-Aug-18	11-Jun-18	11-Jun-18	20-Aug-18	15-Jun-18	23-Aug-18	14-Jan-15	14-Jan-15	15-Jan-15	
Well Status:		Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Active	Destroyed	Active	
Inner Diameter	(mm)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
Surface Elevation	(masl)	165.64	165.64	165.65	166.19	166.10	161.55	161.56	161.54	159.37	159.41	159.39	163.54	NM	167.60	160.10	166.17	
Bottom of Concrete Seal/Top of Bentonite Seal	mbsgs	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	
	masl	165.34	165.34	165.35	165.89	165.80	161.25	161.26	161.24	159.07	159.11	159.09	163.24	NM	167.30	159.80	165.87	
Bottom of Bentonite Seal/Top of Sand Pack	mbsgs	3.96	11.97	10.36	12.41	19.20	7.01	13.71	19.20	7.62	13.10	19.20	11.96	13.41	11.50	7.00	8.80	
	masl	161.68	153.67	155.29	153.78	146.90	154.54	147.85	142.34	151.75	146.31	140.19	151.58	NM	156.10	153.10	157.37	
Top of Well Screen	mbsgs	4.57	12.57	10.67	13.71	21.34	7.62	14.33	21.34	8.23	13.72	21.34	12.27	13.71	12.15	7.65	9.10	
	masl	161.07	153.07	154.98	152.48	144.76	153.93	147.23	140.20	151.14	145.69	138.05	151.27	NM	155.45	152.45	157.07	
Well Screen Length	m	3.05	3.05	3.05	1.52	1.52	3.05	1.52	1.52	3.05	1.52	1.52	3.05	1.52	3.05	3.05	3.05	
Bottom of Well Screen	mbsgs	7.62	15.62	13.71	15.23	22.86	10.67	15.85	22.86	11.28	15.24	22.86	15.32	15.23	15.20	10.70	12.15	
	masl	158.02	150.02	151.64	150.66	142.94	150.58	145.41	138.38	147.79	143.87	136.23	147.92	NM	152.10	149.10	153.72	
Formation Screened		Overburden	Bedrock	Overburden	Bedrock	Bedrock	Weathered Zone	Bedrock	Bedrock	Weathered Zone	Bedrock	Bedrock	Bedrock	Bedrock	Weathered Zone	Weathered Zone	Weathered Zone	
<b>GW Monitoring</b>																		
25-Jun-18	Depth to GW	mbsgs	0.85	3.41	5.13	5.00	Not Installed	5.03	5.05	Not Installed	4.92	4.96	Not Installed	3.37	Not Installed	1.55	N/A	4.17
	GW Elevation	masl	164.79	162.23	160.52	161.19		156.52	156.51		154.45	154.45		154.45		154.45		160.17
26-Jul-18	Depth to GW	mbsgs	0.85	1.95	5.43	5.33	Not Installed	5.09	5.22	Not Installed	4.71	4.67	Not Installed	NM	Not Installed	6.69	N/A	NM
	GW Elevation	masl	164.79	163.69	160.22	160.86		156.46	156.34		154.66	154.74		154.66		154.74		NM
24-Aug-18	Depth to GW	mbsgs	NM	NM	NM	NM	4.10	NM	NM	0.72	NM	NM	2.31	NM	0.99	NM	N/A	NM
	GW Elevation	masl	NM	NM	NM	NM	162.00	NM	NM	160.82	NM	NM	157.08	NM	NM	NM		NM

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 2: Summary of Soil Samples Submitted for Chemical Analysis**

Borehole ID	Sample No.	Sample Depth (mbgs)	Soil Description	Parameter Analyzed	APEC Investigated
<b>DS Consultants Phase Two ESA</b>					
BH18-1	SS1	0-0.6	Fill- Clayey Silt	OCPs	N/A
	SS2	0.8-1.4	Clayey Silt Till	grain size, pH	N/A
	SS3	1.5-2.1	Clayey Silt Till	Metals and ORPs	APEC-1
	SS5	3.1-3.7	Clayey Silt Till	PHCs, VOCs	APEC-1
	SS7	6.1-6.7	Clayey Silt Till	grain size, pH	N/A
	QAQC 1	0-0.6	Fill- Clayey Silt	OCPs	N/A
	QAQC 2	3.1-3.7	Clayey Silt Till	PHCs, VOCs	APEC-1
	QAQC 3	1.5-2.1	Clayey Silt Till	Metals and ORPs	APEC-1
BH18-2	SS1	0-0.6	Topsoil/Fill	OCPs	N/A
	SS2	0.8-1.4	Fill - Clayey Silt	Metals and ORPs, PHCs, VOCs	APEC-1
BH18-3	SS1	0-0.6	Topsoil/Fill	OCPs	N/A
	SS2	0.8-1.4	Fill - Clayey Silt	Metals and ORPs	APEC-1
	SS10	9.1-9.7	Clayey Silt Till	PHCs, VOCs	APEC-1
BH18-4	SS1	0-0.6	Topsoil/Fill	OCPs	N/A
	SS2	0.8-1.4	Clayey Silt Till	Metals and ORPs, grain size, pH	APEC-1
	SS7	6.1-6.7	Clayey Silt Till	grain size, pH	N/A
	SS9	9.1-9.8	Clayey Silt Till	PHCs, VOCs	APEC-1
BH18-5	SS1	0-0.6	Topsoil/Fill	OCPs	N/A
	SS5	3.1-3.7	Clayey Silt Till	Metals and ORPs	APEC-1
	SS7	6.1-6.7	Clayey Silt Till	PHCs, VOCs	APEC-1
TP18-1	S1	0-1.5	Fill	PHCs, PAHs	APEC-2
	Dup-1	0-1.5	Fill	PHCs, PAHs	APEC-2
TP18-2	S1	0-1.5	Fill	PHCs, PAHs	APEC-2
TP18-3	S1	0-1.5	Fill	PHCs, PAHs	APEC-2
TP18-4	S1	0-1.5	Fill	PHCs, PAHs	APEC-2
<b>WSP 2015-2016</b>					
BH15A-5	SS2	0.8-1.4	Fill - Topsoil	PCBs	APEC-1
	SS3	1.5-2.1	Fill - Clayey Silt	PHCs, VOCs	APEC-1
	SS4	2.3-2.9	Fill - Clayey Silt	PAHs	APEC-1
	SS6	4.6-5.2	Clayey Silt Till	PHCs	APEC-1
	SS7	6.1-6.7	Clayey Silt Till	Metals and ORPs	APEC-1
BH15A-6	SS1	0-0.6	Sand and Gravel	Metals and ORPs	APEC-1
	SS3	1.5-2.1	Clayey Silt	PHCs, VOCs	APEC-1
	SS10	9.1-9.7	Clayey Silt Till	PHCs	APEC-1
BH15A-7	SS4	2.3-2.9	Fill - Silty Clay	PCBs	APEC-1
TP15A-6	Sa2	0.3-1.7	Fill - Silty Clay	PAHs	APEC-1
TP15A-7	Sa2	0.3-3.2	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	3.2-4.3	Fill - Silty Clay	PAHs	APEC-1
TP15A-8	Sa2	0.3-2.4	Silty Clay	OCPs	APEC-1
TP15A-9	Sa2	0.3-1.1	Silty Clay	Metals and ORPs	APEC-1
TP15A-10	Sa2	0.3-0.9	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	0.9-3.7	Silty Clay	PAHs	APEC-1
TP15A-11	Sa2	0.3-2.0	Fill - Silty Clay	Metals and ORPs	APEC-1
TP15A-13	Sa2	0.3-1.2	Fill - Clayey Silt	PCBs	APEC-1
	Sa3	1.2-1.9	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP15A-14	Sa3	1.2-3.0	Fill - Silty Clay	Metals and ORPs	APEC-1
TP15A-15	Sa2	0.3-1.1	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	1.1-3.2	Silty Clay	PAHs	APEC-1
TP15A-16	Sa2	0.3-2.4	Fill- Silty Clay	OCPs	APEC-1



**Table 2: Summary of Soil Samples Submitted for Chemical Analysis**

Borehole ID	Sample No.	Sample Depth (mbgs)	Soil Description	Parameter Analyzed	APEC Investigated
TP15A-17	Sa2	0.3-1.5	Fill - Silty Clay	OCPs	APEC-1
	Sa3	1.5-4.3	Fill - Silty Clay	PAHs	APEC-1
TP15A-18	Sa2	0.3-3.1	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	3.1-4.0	Fill - Silty Clay	PAHs	APEC-1
TP15A-19	Sa2	0.3-2.4	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	2.4-4.3	Fill - Silty Clay	PCBs	APEC-1
TP15A-20	Sa2	0.3-2.4	Fill - Silty Clay	OCPs	APEC-1
	Sa3	2.4-4.0	Fill - Silty Clay	Metals and ORPs	APEC-1
TP16-01	Sa1	0.2-1.8	Fill - Silty Sand	Metals and ORPs	APEC-1
	Sa2	1.8-2.1	Fill - Silty Clay	Metals and ORPs	APEC-1
TP16-02	Sa1	1.5-2.0	Fill - Silty Sand	Metals and ORPs	APEC-1
TP16-03	Sa2	1.6-2.1	Silty Clay Till	Metals and ORPs	APEC-1
TP16-04	Sa1	0.2-1.5	Fill - Silty Sand	Metals and ORPs	APEC-1
	Sa3	2.0-3.0	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-05	Sa1	1.8-2.4	Fill - Silty Clay	Metals and ORPs	APEC-1
TP16-06	Sa2	6.0-6.2	Fill - Topsoil	Metals and ORPs	APEC-1
TP16-07	Sa3	5.9-6.1	Fill - Silty Clay	Metals and ORPs	APEC-1
TP16-08	Sa1	0.3-0.9	Fill - Clayey Silt	Metals and ORPs	APEC-1
	Sa2	0.9-3.0	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-09	Sa2	0.6-4.30	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-10	Sa1	0.2-2.7	Fill - Clayey Silt	Metals and ORPs	APEC-1
	Sa2	2.7-3.7	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-11	Sa0	1.2-2.4	Fill - Clayey Silt	PAHs	APEC-1
	Sa1	2.40-3.40	Clayey Silt	Metals and ORPs	APEC-1
	FL5A	4.57	Clayey Silt	EC	APEC-1
	FL5B	4.57	Clayey Silt	EC	APEC-1
	SW5N	2.40-3.40	Clayey Silt	EC	APEC-1
	SW5S	2.40-3.40	Clayey Silt	EC	APEC-1
	SW5E	2.40-3.40	Clayey Silt	EC	APEC-1
	SW5W	2.40-3.40	Clayey Silt	EC	APEC-1
	QAQC5 (SW5E)	2.40-3.40	Clayey Silt	EC	APEC-1
TP16-13	Sa1	2.1-2.4	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-14	Sa2	0.3-1.2	Fill - Silt	Metals and ORPs	APEC-1
	Sa3	1.2-3.7	Fill - Mixed	Metals and ORPs	APEC-1
TP16-15	Sa2	0.6-1.5	Fill - Silt	Metals and ORPs	APEC-1
TP16-16	Sa2	0.4-1.3	Fill - Clayey Silt	Metals and ORPs, PAHs	APEC-1
TP16-17	Sa2	0.2-1.5	Fill - Clayey Silt	Metals and ORPs	APEC-1
	Sa4	3.5-4.6	Fill - Sand and Gravel	Metals and ORPs	APEC-1
TP16-18	Sa4	0.8-1.8	Fill - Clayey Silt	Metals and ORPs	APEC-1
	Sa6	2.0-2.4	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-19	Sa2	0.3-0.6	Fill - Silt	PAHs	APEC-1
	Sa5	1.8-2.7	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-20	Sa2	0.6-2.1	Fill - Silt	PAHs	APEC-1
	Sa6	3.0-6.1	Fill - Silty Clay	Metals and ORPs	APEC-1

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 3: Summary of Groundwater Samples Submitted for Chemical Analysis**

Well ID	Well Screen Interval (masl)			Sample Date	Parameter Analyzed	APEC Investigated
		-				
BH15A-5	12.1	-	15.2	March 29, 2018	Metals and ORPs	APEC-1
				June 28, 2018	Metals and ORPs, PHCs, VOCs, OCPs	APEC-1
BH15A-6	7.6	-	10.7	March 29, 2018	Metals and ORPs	APEC-1
BH15A-7	9.0	-	12.1	March 29, 2018	Metals and ORPs	APEC-1
				July 5, 2018	Metals and ORPs, PHCs, VOCs, OCPs	APEC-1
				August 29, 2018	Cl	APEC-1
				September 19, 2018	Metals	APEC-1
				18-Oct-18	Metals	APEC-1
BH18-1S	4.5	-	7.6	July 5, 2018	Metals and ORPs, PHCs, VOCs, OCPs	APEC-1
BH18-1D	14.10	-	15.60	July 5, 2018	Metals and ORPs	APEC-1
BH18-2S	10.70	-	13.80	June 28, 2018	Metals and ORPs, PHCs, VOCs, OCPs	APEC-1
BH18-2D	13.80	-	15.30	June 28, 2018	Metals and ORPs	APEC-1
				July 26, 2018	Metals, Na, Cl	APEC-1
				August 29, 2018	Cl	APEC-1
				September 19, 2018	Metals	APEC-1
BH18-2D2	21.30	-	22.80	September 19, 2018	Metals, Cl	APEC-1
BH18-3S	10.70	-	13.80	June 28, 2018	Metals and ORPs, PHCs, VOCs, OCPs	APEC-1
				July 5, 2018	Metals and ORPs	APEC-1
				July 26, 2018	Metals, Cl	APEC-1
BH18-3D	14.30	-	15.80	June 28, 2018	Metals and ORPs	APEC-1
				July 26, 2018	Metals, Cl	APEC-1
				August 29, 2018	Cl	APEC-1
				September 19, 2018	Metals	APEC-1
BH18-3D2	21.30	-	22.80	August 29, 2018	Cl	APEC-1
				September 19, 2018	Metals	APEC-1
BH18-4S	8.20	-	11.30	June 28, 2018	Metals and ORPs, PHCs, VOCs, OCPs	APEC-1
				July 26, 2018	Metals, Na, Cl	APEC-1
BH18-4D	13.70	-	15.20	June 28, 2018	Metals and ORPs	APEC-1
				July 26, 2018	Metals, Cl	APEC-1
				August 29, 2018	Cl	APEC-1
				September 19, 2018	Metals	APEC-1
BH18-4D2	21.30	-	22.80	August 29, 2018	Cl	APEC-1
				September 19, 2018	Metals	APEC-1
BH18-5D	12.20	-	15.30	June 28, 2018	Metals and ORPs	APEC-1
				05-Jul-18	Metals and ORPs	APEC-1
BH18-6	13.70	-	15.24	September 19, 2018	Metals, Cl	APEC-1
QAQC1	9.00	-	12.10	19-Sep-18	Metals	Duplicate of BH15A-7
QAQC				18-Oct-18	Metals	
Trip Blank	Not applicable			05-Jul-18	VOCs	QAQC purposes

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 4: Summary of APECs Investigated**

APEC	Description	PCOCs	Media	Boreholes Within APEC	Samples Analysed	Parameter Analyzed
APEC-1	Historical Importation of Fill Material with Confirmed Soil Impacts	Metals and ORPs, PHCs, BTEX, PAHs, VOCs	Soil	BH18-1	SS3	Metals and ORPs
					SS5	PHCs and VOCs
				BH18-2	SS2	Metals and ORPs, PHCs and VOCs
				BH18-3	SS2	Metals and ORPs
					SS10	PHCs and VOCs
				BH18-4	SS2	Metals and ORPs
					SS9	PHCs and VOCs
				BH18-5	SS5	Metals and ORPs
					SS7	PHCs and VOCs
				BH18-2	SS3	PHCs, PAHs, VOCs
				TP16-01	Sa1	Metals and ORPs
					Sa2	Metals and ORPs
				TP16-02	Sa1	Metals and ORPs
				TP16-03	Sa2	Metals and ORPs
				TP16-04	Sa1	Metals and ORPs
					Sa3	Metals and ORPs
				TP16-05	Sa1	Metals and ORPs
				TP16-06	Sa2	Metals and ORPs
				TP16-07	Sa3	Metals and ORPs
				TP16-08	Sa1	Metals and ORPs
					Sa2	Metals and ORPs
				TP16-09	Sa2	Metals and ORPs
				TP16-10	Sa1	Metals and ORPs
					Sa2	Metals and ORPs
				TP16-11	Sa0	PAHs
					Sa1	Metals and ORPs
				TP16-13	Sa1	Metals and ORPs
				TP16-14	Sa2	Metals and ORPs
					Sa3	Metals and ORPs
				TP16-15	Sa2	Metals and ORPs
				TP16-16	Sa2	Metals and ORPs, PAHs
				TP16-17	Sa2	Metals and ORPs
Sa4	Metals and ORPs					
TP16-18	Sa4	Metals and ORPs				
	Sa6	Metals and ORPs				
TP16-19	Sa2	PAHs				
	Sa5	Metals and ORPs				
TP16-20	Sa2	PAHs				
	Sa6	Metals and ORPs				
BH15A-5	SS2	PCBs				



**Table 4: Summary of APECs Investigated**

APEC	Description	PCOCs	Media	Boreholes Within APEC	Samples Analysed	Parameter Analyzed
APEC-1	Historical Importation of Fill Material with Confirmed Soil Impacts	Metals and ORPs, PHCs, BTEX, PAHs, VOCs	Soil	BH15A-5	SS3	PHCs and VOCs
					SS4	PAHs
					SS6	PHCs
					SS7	Metals and ORPs
				BH15A-6	SS1	Metals and ORPs
					SS3	PHCs and VOCs
					SS10	PHCs
				BH15A-7	SS4	PCBs
				TP15A-6	Sa2	PAHs
				TP15A-7	Sa2	Metals and ORPs
					Sa3	PAHs
				TP15A-9	Sa2	Metals and ORPs
				TP15A-10	Sa2	Metals and ORPs
					Sa3	PAHs
				TP15A-11	Sa2	Metals and ORPs
				TP15A-13	Sa2	PCBs
					Sa3	Metals and ORPs
				TP15A-14	Sa3	Metals and ORPs
				TP15A-15	Sa2	Metals and ORPs
					Sa3	PAHs
		TP15A-16	Sa2	OCPs		
		TP15A-17	Sa2	OCPs		
			Sa3	PAHs		
		TP15A-18	Sa2	Metals and ORPs		
			Sa3	PAHs		
		TP15A-19	Sa2	Metals and ORPs		
			Sa3	PCBs		
		TP15A-20	Sa2	OCPs		
			Sa3	Metals and ORPs		
		Metals and ORPs	Groundwater	BH15A-5	Mar-18	Metals and ORPs
					Jun-18	Metals and ORPs, PHCs, VOCs, OCPs
				BH15A-6	Mar-18	Metals and ORPs
BH15A-7	Mar-18			Metals and ORPs		
	Jul-18			Metals and ORPs, PHCs, VOCs, OCPs		
	Aug-18			Metals, Na, Cl		
	Sep-18			Metals		
BH18-1S	Oct-18			Metals		
	Jul-18	Metals and ORPs, PHCs, VOCs, OCPs				
BH18-1D	Jul-18	Metals and ORPs				



**Table 4: Summary of APECs Investigated**

APEC	Description	PCOCs	Media	Boreholes Within APEC	Samples Analysed	Parameter Analyzed
APEC-1	Historical Importation of Fill Material with Confirmed Soil Impacts	Metals and ORPs	Groundwater	BH18-2S	Jun-18	Metals and ORPs, PHCs, VOCs, OCPs
				BH18-2D	Jun-18	Metals and ORPs
					Jul-18	Metals, Na, Cl
					Aug-18	Na, Cl
					Sep-18	Na
				BH18-2D2	Sep-18	Na, Cl
				BH18-3S	Jun-18	Metals and ORPs, PHCs, VOCs, OCPs
					Jul-18	Metals and ORPs
					Jul-18	Metals, Na, Cl
				BH18-3D	Jun-18	Metals and ORPs
					Jul-18	Metals, Na, Cl
					Aug-18	Metals, Na, Cl
					Sep-18	Metals
				BH18-3D2	Aug-18	Na, Cl
					Sep-18	Na
				BH18-4S	Jun-18	Metals and ORPs, PHCs, VOCs, OCPs
					Jul-18	Metals, Na, Cl
				BH18-4D	Jun-18	Metals and ORPs
					Jul-18	Metals, Na, Cl
					Aug-18	Na, Cl
Sep-18	Na					
BH18-4D2	Aug-18	Na, Cl				
	Sep-18	Na				
BH18-5D	Jun-18	Metals and ORPs				
	Jul-18	Metals and ORPs				
BH18-6	Sep-18	Na, Cl				
APEC-2	Historical Presence of Two (2) ASTs Servicing the Former Golf Club	PHCs, PAHs	Soil	TP18-1	S1	PHCs, PAHs
				TP18-2	S1	PHCs, PAHs
				TP18-3	S1	PHCs, PAHs
				TP18-4	S1	PHCs, PAHs

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 5: Summary of Metals and ORPs in Soil**

Parameter	MECP Table 8 SCS	Units	BH18-1 SS3	BH18-1 SS3 (QAQC3)	BH18-2 SS2	BH18-3 SS2	BH18-4 SS2	BH18-5 SS5	BH15A-5 SS7
Date of Collection			14-Jun-18	14-Jun-18	11-Jun-18	12-Jun-18	13-Jun-18	13-Jun-18	14-Jan-15
Date Reported			06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	29-Jan-15
Sampling Depth (mbgs)			1.5-2.1	1.5-2.1	0.8-1.4	0.8-1.4	0.8-1.4	3.1-3.7	6.1-6.7
Analytical Report Reference No.			L2114637-2	L2114637-8	L2114637-10	L2114637-12	L2114637-15	L2114637-19	6265143
Antimony	1.3	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.8
Arsenic	18	ug/g	5.9	5.6	5.3	5.0	5.9	7.5	5.0
Barium	220	ug/g	138	85.2	75.6	84.3	92.3	77.4	55.0
Beryllium	2.5	ug/g	0.88	0.74	0.73	0.70	0.82	0.90	0.70
Boron	36	ug/g	17.8	14.0	9.4	11.1	11.9	22.6	11.0
Boron (Hot Water Soluble)	1.5	ug/g	0.21	0.15	0.19	<0.10	0.13	NA	0.33
Cadmium	1.2	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Chromium	70	ug/g	24.3	21.8	22.3	21.5	23.3	25.5	21.0
Chromium VI	0.66	ug/g	<0.20	0.21	0.43	<0.20	<0.20	0.28	<0.2
Cobalt	22	ug/g	14.2	12.3	10.9	11.6	12.4	16.6	13.9
Copper	92	ug/g	35.0	28.4	27.2	25.1	30.2	39.5	30.0
Cyanide	0.051	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.040
Lead	120	ug/g	10.0	9.5	12.0	9.5	10.9	14.7	13.0
Mercury	0.27	ug/g	0.0123	0.0132	0.0235	0.0144	0.0163	0.0129	<0.10
Molybdenum	2	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	0.6
Nickel	82	ug/g	30.0	26.9	23.8	24.7	27.9	34.0	30.0
Selenium	1.5	ug/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.4
Silver	0.5	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2
Thallium	1	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.4
Uranium	2.5	ug/g	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.9
Vanadium	86	ug/g	34.4	30.4	32.9	30.4	33.0	35.4	27.0
Zinc	290	ug/g	64.6	59.3	66.6	57.3	58.4	71.9	65.0
Electrical Conductivity (2:1)	0.7	mS/cm	0.277	0.262	0.149	0.182	0.268	<b>1.82</b>	0.134
Sodium Adsorption Ratio	5	SAR	1.01	0.9	0.1	0.45	0.9	1.35	0.244
pH, 2:1 CaCl2 Extraction		pH units	8.02	7.97	7.67	7.84	7.62	7.93	7.94

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 5: Summary of Metals and ORPs in Soil**

Parameter	MECP Table 8 SCS	Units	BH15A-6 SS1	BH15A-6 SS1 (QA/QC1)	TP15A-7 Sa2	TP15A-9 Sa2	TP15A-10 Sa2	TP15A-11 Sa2	TP15A-11 Sa2 (QA/QC6)
Date of Collection			14-Jan-15	14-Jan-15	15-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15
Date Reported			29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15
Sampling Depth (mbgs)			0-0.6	0-0.6	0.3-3.2	0.3-1.1	0.3-0.9	0.3-2.0	0.3-2.0
Analytical Report Reference No.			6265144	6265145	6265146	6265147	6265148	6265149	6265150
Antimony	1.3	ug/g	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	18	ug/g	5.0	5.0	5.0	5.0	4.0	6.0	6.0
Barium	220	ug/g	87.0	87.0	139.0	121.0	57.0	88.0	112.0
Beryllium	2.5	ug/g	0.90	0.80	0.90	0.70	0.70	0.70	0.80
Boron	36	ug/g	5.0	<5	7.0	10.0	<5	7.0	8.0
Boron (Hot Water Soluble)	1.5	ug/g	0.87	0.67	0.78	0.45	0.22	0.52	0.61
Cadmium	1.2	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	70	ug/g	23.0	23.0	26.0	22.0	22.0	23.0	21.0
Chromium VI	0.66	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	22	ug/g	12.0	12.7	12.8	12.5	11.2	12.3	11.2
Copper	92	ug/g	25.0	24.0	31.0	15.0	19.0	37.0	37.0
Cyanide	0.051	ug/g	<0.040	<b>0.067</b>	0.048	<0.040	<0.040	<0.040	<0.040
Lead	120	ug/g	21.0	21.0	23.0	15.0	16.0	24.0	32.0
Mercury	0.27	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	2	ug/g	0.8	0.9	1.1	0.8	0.5	<0.5	<0.5
Nickel	82	ug/g	23.0	23.0	24.0	26.0	22.0	26.0	24.0
Selenium	1.5	ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	0.5	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	1	ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	2.5	ug/g	1	1.1	1.4	0.7	0.5	0.6	0.6
Vanadium	86	ug/g	34.0	33.0	35.0	28.0	29.0	31.0	29.0
Zinc	290	ug/g	80.0	78.0	82.0	70.0	66.0	84.0	98.0
Electrical Conductivity (2:1)	0.7	mS/cm	0.261	0.228	0.143	0.382	0.144	0.238	0.263
Sodium Adsorption Ratio	5	SAR	0.485	0.506	0.3	2.28	0.219	0.633	0.628
pH, 2:1 CaCl2 Extraction		pH units	6.93	7.19	6.50	7.62	7.23	7.64	7.73

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 5: Summary of Metals and ORPs in Soil**

Parameter	MECP Table 8 SCS	Units	TP15A-13 Sa3	TP15A-14 Sa3	TP15A-15 Sa2	TP15A-18 Sa2	TP15A-19 Sa2	TP15A-20 Sa3	TP16-01 Sa1	
Date of Collection			14-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15	17-Nov-16
Date Reported			29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	01-Dec-16
Sampling Depth (mbgs)			1.2-1.9	1.2-3.0	0.3-1.1	0.3-3.1	0.3-2.4	2.4-4.0	0.2-1.8	
Analytical Report Reference No.			6265151	6265152	6265153	6265154	6265155	6265156	8040068	
Antimony	1.3	ug/g	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	
Arsenic	18	ug/g	6.0	6.0	5.0	3.0	4.0	5.0	4	
Barium	220	ug/g	94.0	97.0	76.0	44.0	73.0	101.0	107	
Beryllium	2.5	ug/g	1.00	0.90	0.70	<0.5	0.60	0.90	0.6	
Boron	36	ug/g	<5	<5	<5	8.0	6.0	6.0	<5	
Boron (Hot Water Soluble)	1.5	ug/g	0.35	0.78	0.52	1.79	0.20	0.38	0.36	
Cadmium	1.2	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Chromium	70	ug/g	26.0	21.0	27.0	13.0	19.0	49.0	24	
Chromium VI	0.66	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Cobalt	22	ug/g	14.5	14.7	12.7	5.7	9.9	14.1	10.4	
Copper	92	ug/g	29.0	22.0	34.0	22.0	27.0	48.0	20	
Cyanide	0.051	ug/g	0.044	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	
Lead	120	ug/g	21.0	20.0	25.0	32.0	8.0	45.0	22	
Mercury	0.27	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	0.2000	<0.10	
Molybdenum	2	ug/g	0.6	0.8	0.9	<0.5	0.5	1.1	0.7	
Nickel	82	ug/g	30.0	23.0	23.0	13.0	21.0	31.0	20	
Selenium	1.5	ug/g	0.4	<0.4	<0.4	0.4	<0.4	<0.4	0.4	
Silver	0.5	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	1.40	0.3	
Thallium	1	ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	
Uranium	2.5	ug/g	0.7	1.3	0.7	0.8	0.6	0.8	0.7	
Vanadium	86	ug/g	35.0	35.0	34.0	19.0	27.0	35.0	31	
Zinc	290	ug/g	77.0	76.0	82.0	77.0	47.0	123.0	91	
Electrical Conductivity (2:1)	0.7	mS/cm	0.191	0.157	0.343	0.244	0.141	0.219	0.231	
Sodium Adsorption Ratio	5	SAR	1.58	0.644	0.451	1.03	0.49	0.451	0.23	
pH, 2:1 CaCl2 Extraction		pH units	6.10	6.35	7.07	7.36	7.73	7.37	6.92	

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 5: Summary of Metals and ORPs in Soil**

Parameter	MECP Table 8 SCS	Units	TP16-02 Sa1	TP16-03 Sa2	TP16-04 Sa3	TP16-05 Sa1	TP16-06 Sa2	TP16-07 Sa3	TP16-08 Sa1	
Date of Collection			17-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16
Date Reported			01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16
Sampling Depth (mbgs)			1.50-2.00	1.60-2.10	2.0-3.0	1.80-2.40	6.00-6.20	5.90-6.10	0.30-0.90	
Analytical Report Reference No.			8040069	8040070	8040071	8040072	8040073	8040074	8040075	
Antimony	1.3	ug/g	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	
Arsenic	18	ug/g	7	5	7	2	5	6	5	
Barium	220	ug/g	98	87	101	18	80	123	133	
Beryllium	2.5	ug/g	0.9	0.7	0.8	<0.5	0.8	0.7	0.7	
Boron	36	ug/g	<5	<5	11	<5	<5	11	12	
Boron (Hot Water Soluble)	1.5	ug/g	0.66	0.30	1.07	0.18	0.68	0.44	0.23	
Cadmium	1.2	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Chromium	70	ug/g	30	23	26	7	25	25	23	
Chromium VI	0.66	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Cobalt	22	ug/g	16.2	12.1	14.6	2.3	13.2	13.8	12.9	
Copper	92	ug/g	39	11	26	7	23	21	22	
Cyanide	0.051	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	
Lead	120	ug/g	19	16	18	6	25	17	9	
Mercury	0.27	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Molybdenum	2	ug/g	0.6	0.7	1.4	<0.5	1.0	1.1	1.0	
Nickel	82	ug/g	34	23	31	4	21	28	28	
Selenium	1.5	ug/g	0.6	<0.4	<0.4	<0.4	0.6	0.4	<0.4	
Silver	0.5	ug/g	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	
Thallium	1	ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	
Uranium	2.5	ug/g	0.9	0.7	1.3	<0.5	0.8	0.9	0.7	
Vanadium	86	ug/g	40	33	38	16	38	36	31	
Zinc	290	ug/g	93	71	93	18	83	76	62	
Electrical Conductivity (2:1)	0.7	mS/cm	0.209	0.165	0.352	0.173	0.306	0.217	0.198	
Sodium Adsorption Ratio	5	SAR	0.595	0.325	0.642	1.11	2.16	1.01	1.04	
pH, 2:1 CaCl <sub>2</sub> Extraction		pH units	6.71	7.13	7.13	7.02	6.27	7.22	7.36	

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 5: Summary of Metals and ORPs in Soil**

Parameter	MECP Table 8 SCS	Units	TP16-09 Sa2	TP16-10 Sa2	TP16-11 Sa1	TP16-13 Sa1	TP16-14 Sa2	TP16-15 Sa2	TP16-16 Sa2
Date of Collection			17-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16	18-Nov-16	18-Nov-16	18-Nov-16
Date Reported			01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16
Sampling Depth (mbgs)			0.60-4.30	2.70-3.70	2.40-3.40	2.10-2.40	0.30-1.20	0.60-1.50	0.40-1.30
Analytical Report Reference No.			8040076	8040077	8040078	8040079	8040080	8040081	8040082
Antimony	1.3	ug/g	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	18	ug/g	7	6	4	5	5	5	6
Barium	220	ug/g	79	61	<b>225</b>	96	82	84	162
Beryllium	2.5	ug/g	0.7	0.7	0.6	0.7	0.6	0.6	0.7
Boron	36	ug/g	8	7	9	10	<5	9	7
Boron (Hot Water Soluble)	1.5	ug/g	1.19	0.23	0.23	0.35	0.23	1.06	0.32
Cadmium	1.2	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	70	ug/g	22	23	24	22	25	23	26
Chromium VI	0.66	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	22	ug/g	12.1	13.2	11.2	15.2	10.8	11.2	15.0
Copper	92	ug/g	36	31	23	17	26	24	12
Cyanide	0.051	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Lead	120	ug/g	14	10	9	15	22	22	17
Mercury	0.27	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	2	ug/g	0.6	<0.5	<0.5	0.6	0.6	0.8	0.9
Nickel	82	ug/g	24	28	24	24	23	24	27
Selenium	1.5	ug/g	<0.4	<0.4	<0.4	<0.4	0.4	<0.4	<0.4
Silver	0.5	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	1	ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	2.5	ug/g	0.7	0.6	0.9	0.6	0.6	0.6	1.1
Vanadium	86	ug/g	32	30	33	30	32	29	38
Zinc	290	ug/g	68	67	53	71	91	88	73
Electrical Conductivity (2:1)	0.7	mS/cm	0.406	0.205	<b>0.723</b>	0.321	0.169	0.238	0.221
Sodium Adsorption Ratio	5	SAR	1.06	1.06	1.21	3.93	0.232	0.546	0.315
pH, 2:1 CaCl2 Extraction		pH units	7.13	7.36	7.60	7.42	7.35	7.34	7.2

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 5: Summary of Metals and ORPs in Soil**

Parameter	MECP Table 8 SCS	Units	TP16-17 Sa2	TP16-18 Sa4	TP16-19 Sa5	TP16-20 Sa6	TP16-01 Sa2	TP16-04 Sa1	TP16-08 Sa2
Date of Collection			18-Nov-16	18-Nov-16	18-Nov-16	18-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16
Date Reported			01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16
Sampling Depth (mbgs)			0.20-1.50	0.80-1.80	1.80-2.70	3.00-6.10	1.80-2.10	0.20-1.50	0.90-3.00
Analytical Report Reference No.			8040083	8040084	8040085	8040086	8040087	8040088	8040089
Antimony	1.3	ug/g	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	18	ug/g	5	5	6	5	5	6	12
Barium	220	ug/g	95	59	110	111	127	72	81
Beryllium	2.5	ug/g	0.8	0.7	0.7	0.7	0.8	0.8	0.8
Boron	36	ug/g	9	<5	11	14	5	7	9
Boron (Hot Water Soluble)	1.5	ug/g	0.20	0.34	0.38	0.69	0.35	0.53	0.50
Cadmium	1.2	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	70	ug/g	26	22	24	21	27	24	27
Chromium VI	0.66	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	22	ug/g	13.8	11.6	13.7	11.5	11.6	11.4	16.7
Copper	92	ug/g	17	28	11	30	22	29	66
Cyanide	0.051	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Lead	120	ug/g	12	14	12	9	18	16	36
Mercury	0.27	ug/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	2	ug/g	0.8	<0.5	0.8	1.2	0.7	<0.5	0.6
Nickel	82	ug/g	29	23	29	25	24	24	31
Selenium	1.5	ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	0.5	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	1	ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	2.5	ug/g	0.7	<0.5	0.7	1.2	0.8	0.7	0.7
Vanadium	86	ug/g	34	30	32	30	36	34	37
Zinc	290	ug/g	70	75	64	56	84	80	90
Electrical Conductivity (2:1)	0.7	mS/cm	0.185	0.201	0.142	0.181	0.251	0.324	0.448
Sodium Adsorption Ratio	5	SAR	0.269	0.338	0.339	0.831	0.338	0.758	3.27
pH, 2:1 CaCl2 Extraction		pH units	7.38	7.35	7.42	7.64	7.06	7.45	7.35

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 5: Summary of Metals and ORPs in Soil**

Parameter	MECP Table 8 SCS	Units	TP16-10 Sa1	TP16-14 Sa3	TP16-17 Sa4	TP16-18 Sa6
			17-Nov-16	18-Nov-16	18-Nov-16	18-Nov-16
			01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16
			0.20-2.70	1.20-3.70	3.50-4.60	2.00-2.40
			8040090	8040092	8040093	8040094
Antimony	1.3	ug/g	<0.8	<0.8	<0.8	<0.8
Arsenic	18	ug/g	5	5	5	5
Barium	220	ug/g	82	89	87	93
Beryllium	2.5	ug/g	0.7	0.7	0.6	0.8
Boron	36	ug/g	6	11	9	8
Boron (Hot Water Soluble)	1.5	ug/g	0.50	1.29	0.22	0.51
Cadmium	1.2	ug/g	<0.5	<0.5	<0.5	<0.5
Chromium	70	ug/g	25	25	23	25
Chromium VI	0.66	ug/g	<0.2	<0.2	<0.2	<0.2
Cobalt	22	ug/g	12.3	12.1	11.9	13.2
Copper	92	ug/g	36	28	18	10
Cyanide	0.051	ug/g	<0.040	<0.040	<0.040	<0.040
Lead	120	ug/g	18	23	13	16
Mercury	0.27	ug/g	<0.10	<0.10	<0.10	<0.10
Molybdenum	2	ug/g	<0.5	1.3	0.7	0.8
Nickel	82	ug/g	25	26	25	25
Selenium	1.5	ug/g	0.9	0.4	<0.4	<0.4
Silver	0.5	ug/g	<0.2	<0.2	<0.2	<0.2
Thallium	1	ug/g	<0.4	<0.4	<0.4	<0.4
Uranium	2.5	ug/g	0.7	1.0	0.6	0.8
Vanadium	86	ug/g	36	38	30	38
Zinc	290	ug/g	85	83	65	79
Electrical Conductivity (2:1)	0.7	mS/cm	0.346	0.291	0.146	0.223
Sodium Adsorption Ratio	5	SAR	1.05	1.32	0.359	0.478
pH, 2:1 CaCl2 Extraction		pH units	7.39	7.27	7.23	6.84

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 6: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	Units	BH18-1 SS5	BH18-1 SS5 (QAQC2)	BH18-2 SS2	BH18-3 SS10	BH18-4 SS9	BH18-5 SS7
Date of Collection			14-Aug-18	14-Aug-18	11-Jun-18	12-Jun-18	13-Jun-18	13-Jun-18
Date Reported			06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18
Sampling Depth (mbgs)			3.1-3.7	3.1-3.7	0.8-1.4	9.1-9.8	9.1-9.8	6.1-6.7
Analytical Report Reference No.			L2114637-4	L2114637-7	L2114637-10	L2114637-13	L2114637-17	L2114637-20
Benzene	0.02	ug/g	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	0.05	ug/g	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	0.2	ug/g	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Xylenes (Total)	0.05	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
F1-BTEX	25	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	<b>11.00</b>	10.00	<10	<10	<10	<b>18.00</b>
F3 (C16-C34)	240	ug/g	<50	<50	<50	<50	<50	64
F4 (C34-C50)	120	ug/g	<50	<50	<50	<50	<50	<50

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 6: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	Units	TP18-1 S1	TP18-1 S1 (Dup-1)	TP18-2 S1	TP18-3 S1	TP18-4 S1	BH15A-5 SS3	BH15A-5 SS6	
Date of Collection			28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	14-Jan-15	14-Jan-15
Date Reported			06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	29-Jan-15	29-Jan-15
Sampling Depth (mbgs)			0.61-1.52	0.61-1.52	0.61-1.52	0.61-1.52	0.61-1.52	0.61-1.52	1.5-2.1	4.6-5.2
Analytical Report Reference No.			L2204650-1	L2204650-5	L2204650-2	L2204650-3	L2204650-4	6265103	6265104	
Benzene	0.02	ug/g	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.02	<0.02	
Ethylbenzene	0.05	ug/g	<0.018	<0.018	<0.018	<0.018	<0.018	<0.05	<0.05	
Toluene	0.2	ug/g	<0.080	<0.080	<0.080	<0.080	<0.080	<0.05	<0.08	
Xylenes (Total)	0.05	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	
F1-BTEX	25	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
F2 (C10-C16)	10	ug/g	<10	<10	<10	<10	<10	<10	<10	
F3 (C16-C34)	240	ug/g	<50	<50	<50	<50	<50	<50	<50	
F4 (C34-C50)	120	ug/g	78	<50	<50	<50	<50	<50	<50	

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 6: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	Units	BH15A-6 SS3	BH15A-6 SS3 (QA/QC2)	BH15A-6 SS10
Date of Collection			14-Jan-15	14-Jan-15	14-Jan-15
Date Reported			29-Jan-15	29-Jan-15	29-Jan-15
Sampling Depth (mbgs)			1.5-2.3	1.5-2.1	9.1-9.7
Analytical Report Reference No.			6265106	6265108	6265110
Benzene	0.02	ug/g	<0.02	<0.02	<0.02
Ethylbenzene	0.05	ug/g	<0.05	<0.05	<0.05
Toluene	0.2	ug/g	<0.05	<0.05	<0.08
Xylenes (Total)	0.05	ug/g	<0.05	<0.05	<0.05
F1-BTEX	25	ug/g	<5.0	<5.0	<5.0
F2 (C10-C16)	10	ug/g	<10	<10	<10
F3 (C16-C34)	240	ug/g	<50	<50	<50
F4 (C34-C50)	120	ug/g	<50	<50	<50

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 7: Summary of VOCs in Soil**

Parameter	MECP Table 8 SCS	Units	BH18-1 SS5	BH18-1 SS5 (QAQC2)	BH18-2 SS2	BH18-3 SS10
Date of Collection			14-Aug-18	14-Aug-18	11-Jun-18	12-Jun-18
Date Reported			06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18
Sampling Depth (mbgs)			3.1-3.7	3.1-3.7	0.8-1.4	9.1-9.8
Analytical Report Reference No.			L2114637-4	L2114637-7	L2114637-10	L2114637-13
Acetone	0.5	ug/g	<0.50	<0.50	<0.50	<0.50
Benzene	0.02	ug/g	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Bromoform	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Chloroform	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Cis- 1,2-Dichloroethylene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichlorobenzene, 1,2-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichlorobenzene, 1,3-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichlorobenzene, 1,4-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichloroethane, 1,1-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichloroethane, 1,2-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichloroethylene, 1,1-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichloropropane, 1,2-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichloropropene, 1,3-	0.05	ug/g	<0.042	<0.042	<0.042	<0.042
Ethylbenzene	0.05	ug/g	<0.018	<0.018	<0.018	<0.018
Ethylene Dibromide	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	0.5	ug/g	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.5	ug/g	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl Ether	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
n-Hexane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Styrene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Tetrachloroethane, 1,1,1,2-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Tetrachloroethane, 1,1,2,2-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Toluene	0.2	ug/g	<0.080	<0.080	<0.080	<0.080
Trans- 1,2-Dichloroethylene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Trichloroethane, 1,1,1-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Trichloroethane, 1,1,2-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.05	ug/g	<0.010	<0.010	<0.010	<0.010
Trichlorofluoromethane	0.25	ug/g	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.02	ug/g	<0.020	<0.020	<0.020	<0.020
Xylene Mixture	0.05	ug/g	<0.050	<0.050	<0.050	<0.050

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 7: Summary of VOCs in Soil**

Parameter	MECP Table 8 SCS	Units	BH18-4 SS9	BH18-5 SS7	BH15A-5 SS3	BH15A-6 SS3
Date of Collection			13-Jun-18	13-Jun-18	14-Jan-15	14-Jan-15
Date Reported			06-Jul-18	06-Jul-18	29-Jan-15	29-Jan-15
Sampling Depth (mbgs)			9.1-9.8	6.1-6.7	1.5-2.1	1.5-2.3
Analytical Report Reference No.			L2114637-17	L2114637-20	6265103	6265106
Acetone	0.5	ug/g	<0.50	<0.50	<0.50	<0.50
Benzene	0.02	ug/g	<0.0068	<0.0068	<0.02	<0.02
Bromodichloromethane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Bromoform	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Chloroform	0.05	ug/g	<0.050	<0.050	<0.04	<0.04
Cis- 1,2-Dichloroethylene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichlorobenzene, 1,2-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichlorobenzene, 1,3-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichlorobenzene, 1,4-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichloroethane, 1,1-	0.05	ug/g	<0.050	<0.050	<0.02	<0.02
Dichloroethane, 1,2-	0.05	ug/g	<0.050	<0.050	<0.03	<0.03
Dichloroethylene, 1,1-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Dichloropropane, 1,2-	0.05	ug/g	<0.050	<0.050	<0.03	<0.03
Dichloropropene, 1,3-	0.05	ug/g	<0.042	<0.042	<0.040	<0.040
Ethylbenzene	0.05	ug/g	<0.018	<0.018	<0.050	<0.050
Ethylene Dibromide	0.05	ug/g	<0.050	<0.050	<0.04	<0.04
Methyl Ethyl Ketone	0.5	ug/g	<0.50	<0.50	<0.02	<0.02
Methyl Isobutyl Ketone	0.5	ug/g	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl Ether	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
n-Hexane	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Styrene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Tetrachloroethane, 1,1,1,2-	0.05	ug/g	<0.050	<0.050	<0.04	<0.04
Tetrachloroethane, 1,1,2,2-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Toluene	0.2	ug/g	<0.080	<0.080	<0.050	<0.050
Trans- 1,2-Dichloroethylene	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Trichloroethane, 1,1,1-	0.05	ug/g	<0.050	<0.050	<0.050	<0.050
Trichloroethane, 1,1,2-	0.05	ug/g	<0.050	<0.050	<0.04	<0.04
Trichloroethylene	0.05	ug/g	<0.010	<0.010	<0.03	<0.03
Trichlorofluoromethane	0.25	ug/g	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.02	ug/g	<0.020	<0.020	<0.020	<0.020
Xylene Mixture	0.05	ug/g	<0.050	<0.050	<0.050	<0.050

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 7: Summary of VOCs in Soil**

Parameter	MECP Table 8 SCS	Units	BH15A-6 SS3 (QA/QC2)
Date of Collection			14-Jan-15
Date Reported			29-Jan-15
Sampling Depth (mbgs)			1.5-2.1
Analytical Report Reference No.			6265108
Acetone	0.5	ug/g	<0.50
Benzene	0.02	ug/g	<0.02
Bromodichloromethane	0.05	ug/g	<0.050
Bromoform	0.05	ug/g	<0.050
Bromomethane	0.05	ug/g	<0.050
Carbon Tetrachloride	0.05	ug/g	<0.050
Chlorobenzene	0.05	ug/g	<0.050
Chloroform	0.05	ug/g	<0.04
Cis- 1,2-Dichloroethylene	0.05	ug/g	<0.050
Dibromochloromethane	0.05	ug/g	<0.050
Dichlorobenzene, 1,2-	0.05	ug/g	<0.050
Dichlorobenzene, 1,3-	0.05	ug/g	<0.050
Dichlorobenzene, 1,4-	0.05	ug/g	<0.050
Dichlorodifluoromethane	0.05	ug/g	<0.050
Dichloroethane, 1,1-	0.05	ug/g	<0.02
Dichloroethane, 1,2-	0.05	ug/g	<0.03
Dichloroethylene, 1,1-	0.05	ug/g	<0.050
Dichloropropane, 1,2-	0.05	ug/g	<0.03
Dichloropropene, 1,3-	0.05	ug/g	<0.040
Ethylbenzene	0.05	ug/g	<0.050
Ethylene Dibromide	0.05	ug/g	<0.04
Methyl Ethyl Ketone	0.5	ug/g	<0.02
Methyl Isobutyl Ketone	0.5	ug/g	<0.50
Methyl tert-butyl Ether	0.05	ug/g	<0.050
Methylene Chloride	0.05	ug/g	<0.050
n-Hexane	0.05	ug/g	<0.050
Styrene	0.05	ug/g	<0.050
Tetrachloroethane, 1,1,1,2-	0.05	ug/g	<0.04
Tetrachloroethane, 1,1,2,2-	0.05	ug/g	<0.050
Tetrachloroethylene	0.05	ug/g	<0.050
Toluene	0.2	ug/g	<0.050
Trans- 1,2-Dichloroethylene	0.05	ug/g	<0.050
Trichloroethane, 1,1,1-	0.05	ug/g	<0.050
Trichloroethane, 1,1,2-	0.05	ug/g	<0.04
Trichloroethylene	0.05	ug/g	<0.03
Trichlorofluoromethane	0.25	ug/g	<0.050
Vinyl Chloride	0.02	ug/g	<0.020
Xylene Mixture	0.05	ug/g	<0.050

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 8: Summary of PAHs in Soil**

Parameter	MECP Table 8 SCS	Units	TP18-1 S1	TP18-1 S1 (Dup-1)	TP18-2 S1	TP18-3 S1	TP18-4 S1	TP15A-6 Sa2	TP15A-7 Sa3	TP15A-15 Sa3
Date of Collection			28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	15-Jan-15	15-Jan-15	14-Jan-15
Date Reported			06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	29-Jan-15	29-Jan-15	29-Jan-15
Sampling Depth (mbgs)			0.61-1.52	0.61-1.52	0.61-1.52	0.61-1.52	0.61-1.52	0.3-1.7	3.2-4.3	1.1-3.2
Analytical Report Reference No.			L2204650-1	L2204650-5	L2204650-2	L2204650-3	L2204650-4	6265117	6265119	6265120
Acenaphthene	0.072	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	0.093	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	0.22	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benz(a)anthracene	0.36	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	0.3	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(b)fluoranthene	0.47	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	0.68	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	0.48	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	2.8	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenz(a,h)anthracene	0.1	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	0.69	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	0.19	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.23	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Naphthalene	0.09	ug/g	<0.013	<0.013	<0.013	<0.013	<0.013	<0.050	<0.050	<0.050
2-and 1-methyl Naphthalene	0.59	ug/g	<0.042	<0.042	<0.042	<0.042	<0.042	<0.050	<0.050	<0.050
Phenanthrene	0.69	ug/g	<0.046	<0.046	<0.046	<0.046	<0.046	<0.050	<0.050	<0.050
Pyrene	1	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 8: Summary of PAHs in Soil**

Parameter	MECP Table 8 SCS	Units	TP15A-17 Sa3	BH15A-5 SS4	TP15A-18 Sa3	TP15A-10 Sa3	TP16-16 Sa2	TP16-11 Sa0	TP16-19 Sa2	TP16-20 Sa2
Date of Collection			14-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15	18-Nov-16	17-Nov-16	18-Nov-16	18-Nov-16
Date Reported			29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	01-Dec-16	01-Dec-16	01-Dec-16	01-Dec-16
Sampling Depth (mbgs)			1.5-4.3	2.3-2.9	3.1-4.0	0.9-3.7	0.4-1.3	1.2-2.4	0.3-0.6	0.6-2.1
Analytical Report Reference No.			6265124	6265125	6265129	6265131	8040082	8040091	8040095	8040096
Acenaphthene	0.072	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	0.093	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Anthracene	0.22	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	0.36	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	0.3	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	0.47	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	0.68	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	0.48	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	0.06	<0.05
Chrysene	2.8	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	0.1	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Fluoranthene	0.69	ug/g	0.1	<0.050	<0.050	<0.050	<0.05	<0.05	0.07	<0.05
Fluorene	0.19	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	0.23	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Naphthalene	0.09	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	0.59	ug/g	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Phenanthrene	0.69	ug/g	0.07	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Pyrene	1	ug/g	0.07	<0.050	<0.050	<0.050	<0.05	<0.05	0.06	<0.05

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 9: Summary of OCPs in Soil**

Parameter	MECP Table 8 SCS	Units	BH18-1 SS1	BH18-1 SS1 (QAQC1)	BH18-2 SS1	BH18-3 SS1	BH18-4 SS1	BH18-5 SS1	TP15A-17 Sa2	
Date of Collection			14-Jun-18	14-Jun-18	11-Jun-18	12-Jun-18	13-Jun-18	13-Jun-18	14-Jan-15	
Date Reported			06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	06-Jul-18	29-Jan-15
Sampling Depth (mbgs)			0-0.6	0-0.6	0-0.6	0-0.6	0-0.6	0-0.6	0-0.6	0.3-1.5
Analytical Report Reference No.			L2114637-1	L2114637-6	L2114637-9	L2114637-11	L2114637-14	L2114637-18	6265112	
Aldrin	0.05	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.005	
gamma-hexachlorocyclohexane	0.01	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.005	
Chlordane (Total)	0.05	ug/g	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.007	
Total DDD	0.05	ug/g	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.007	
Total DDE	0.05	ug/g	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.007	
Total DDT	1.4	ug/g	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.007	
Dieldrin	0.05	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.005	
Endosulfan (Total)	0.04	ug/g	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.005	
Endrin	0.04	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.005	
Heptachlor	0.05	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.005	
Heptachlor Epoxide	0.05	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.005	
Hexachlorobenzene	0.02	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.005	
Hexachlorobutadiene	0.01	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Hexachloroethane	0.01	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Methoxychlor	0.05	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.005	

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 9: Summary of OCPs in Soil**

Parameter	MECP Table 8 SCS	Units	TP15A-17 Sa2 (QA/QC7)	TP15A-16 Sa2	TP15A-20 Sa2	TP15A-8 Sa2
Date of Collection			14-Jan-15	14-Jan-15	14-Jan-15	15-Jan-15
Date Reported			29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15
Sampling Depth (mbgs)			0.3-1.5	0.3-2.4	0.3-2.4	0.3-2.4
Analytical Report Reference No.			6265113	6265114	6265115	6265116
Aldrin	0.05	ug/g	<0.005	<0.005	<0.005	<0.005
gamma-hexachlorocyclohexane	0.01	ug/g	<0.005	<0.005	<0.005	<0.005
Chlordane (Total)	0.05	ug/g	<0.007	<0.007	<0.007	<0.007
Total DDD	0.05	ug/g	<0.007	<0.007	<0.007	<0.007
Total DDE	0.05	ug/g	0.016	<0.007	<0.007	<0.007
Total DDT	1.4	ug/g	<0.007	<0.007	<0.007	<0.007
Dieldrin	0.05	ug/g	<0.005	<0.005	<0.005	<0.005
Endosulfan (Total)	0.04	ug/g	<0.005	<0.005	<0.005	<0.005
Endrin	0.04	ug/g	<0.005	<0.005	<0.005	<0.005
Heptachlor	0.05	ug/g	<0.005	<0.005	<0.005	<0.005
Heptachlor Epoxide	0.05	ug/g	<0.005	<0.005	<0.005	<0.005
Hexachlorobenzene	0.02	ug/g	<0.005	<0.005	<0.005	<0.005
Hexachlorobutadiene	0.01	ug/g	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	0.01	ug/g	<0.010	<0.010	<0.010	<0.010
Methoxychlor	0.05	ug/g	<0.005	<0.005	<0.005	<0.005

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 10: Summary of PCBs**

Parameter	MECP Table 8 SCS	Units	BH15A-5 SS2	BH15A-7 SS4	TP15A-19 Sa3	TP15A-13 Sa2	TP15A-13 Sa2 (QA/QC5)	
Date of Collection			14-Jan-15	16-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15	14-Jan-15
Date Reported			29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15	29-Jan-15
Sampling Depth (mbgs)			0.8-1.4	2.3-2.9	2.4-4.3	0.3-1.2	0.3-1.2	
Analytical Report Reference No.			6265138	6265139	6265140	6265141	6265142	
Total PCBs	0.3	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 11: Summary of Metals and ORPs in Groundwater**

Parameter	MECP Table 8 SCS	Units	BH15A-5	BH15A-5	BH15A-5	BH15A-6	BH15A-7	BH15A-7	BH15A-7	BH15A-7
Date of Collection			29-Mar-18	28-Jun-18	21-Feb-19	29-Mar-18	29-Mar-18	05-Jul-18	29-Aug-18	19-Sep-18
Date Reported			03-Apr-18	09-Jul-18	26-Feb-19	03-Apr-18	03-Apr-18	12-Jul-18	07-Sep-18	01-Oct-18
Screen Interval (mbgs)			12.1-15.2	12.1-15.2	12.1-15.2	7.6-10.7	9.0-12.1	9.0-12.1	9.0-12.1	9.0-12.1
Analytical Report Reference No.			L2073904-1	L2121927-7	B946449	L2073904-2	L2073904-3	L2124761-5	L2156519-1	L2169104-8
Antimony	6	ug/L	<1.0	1.1	<2.5	<1.0	<1.0	<1.0	-	<1.0
Arsenic	25	ug/L	4.3	<1.0	5.9	<1.0	1.4	<1.0	-	2.0
Barium	1000	ug/L	13.9	11.4	<10	37.8	32.8	18.1	-	24.3
Beryllium	4	ug/L	<0.5	<1.0	<2.5	<0.5	<0.5	<1.0	-	<1.0
Boron	5000	ug/L	2580	600	3200	1560	4250	460	-	4190
Cadmium	2.1	ug/L	<0.050	<0.050	<0.50	0.083	<0.050	<0.050	-	<0.050
Chloride	790	mg/L	<b>1390</b>	313	-	<b>1160</b>	<b>1440</b>	27.2	<b>1640</b>	-
Chromium	50	ug/L	<5.0	<5.0	<25	<5.0	<5.0	<5.0	-	<5.0
Chromium VI	25	ug/L	<1.0	<0.50	-	<1.0	<1.0	<0.50	-	-
Cobalt	3.8	ug/L	<1.0	<1.0	<2.5	2.7	<b>4</b>	1.3	-	3.4
Copper	69	ug/L	<2.0	<2.0	<5.0	<2.0	<2.0	2.2	-	<2.0
Cyanide	52	ug/L	<2.0	<2.0	-	<2.0	<2.0	<2.0	-	-
Lead	10	ug/L	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	-	<0.50
Mercury	0.29	ug/L	<0.010	<0.010	-	<0.010	<0.010	<0.010	-	-
Molybdenum	70	ug/L	0.58	38.0	8.1	11.0	19.0	3.04	-	17.3
Nickel	100	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	6.9	-	<5.0
Selenium	10	ug/L	9.92	<0.50	<10	<0.50	<0.50	<0.50	-	<0.50
Silver	1.2	ug/L	<0.30	<0.50	<0.50	<0.30	<0.30	<0.50	-	<0.50
Sodium	490000	ug/L	<b>878000</b>	246000	<b>950000</b>	<b>597000</b>	<b>1020000</b>	220000	-	<b>955000</b>
Thallium	2	ug/L	<0.10	<0.10	<0.25	<0.10	<0.10	<0.10	-	<0.10
Uranium	20	ug/L	0.85	12.9	<25	10.7	6.34	<b>58</b>	-	5.37
Vanadium	6.2	ug/L	<3.9	<5.0	<2.5	<3.9	<3.9	<5.0	-	<5.0
Zinc	890	ug/L	<10	<10	0.65	<10	<10	<10	-	<10

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 11: Summary of Metals and ORPs in Groundwater**

Parameter	MECP Table 8 SCS	Units	BH15A-7	BH15A-7 (QAQC)	BH15A-7	BH15A-7 DUP 1	MW18-1S	MW18-1D	MW18-2S	MW18-2S
Date of Collection			18-Oct-18	18-Oct-18	21-Feb-19	21-Feb-19	05-Jul-18	05-Jul-18	28-Jun-18	21-Feb-19
Date Reported			25-Oct-18	25-Oct-18	26-Feb-19	26-Feb-19	12-Jul-18	12-Jul-18	09-Jul-18	26-Feb-19
Screen Interval (mbgs)			9.0-12.1	9.0-12.1	9.0-12.1	9.0-12.1	4.5-7.6	14.1-15.6	10.7-13.8	10.7-13.8
Analytical Report Reference No.			L2183471-1	L2183471-2	B946449	B946449	L2124761-1	L2124761-2	L2121927-1	B946449
Antimony	6	ug/L	<1.0	<1.0	0.84	<0.50	<1.0	<1.0	<1.0	<0.50
Arsenic	25	ug/L	1.6	1.9	<1.0	<1.0	<1.0	<1.0	12.4	19
Barium	1000	ug/L	25.0	24.9	25.0	27.0	77.5	78.2	33.7	20.0
Beryllium	4	ug/L	<1.0	<1.0	<0.50	<0.50	<1.0	<1.0	<1.0	<0.50
Boron	5000	ug/L	4440	4290	4400	4000	220	220	1870	1200
Cadmium	2.1	ug/L	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050	<0.10
Chloride	790	mg/L	-	-	-	-	215	138	670	-
Chromium	50	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium VI	25	ug/L			-	-	<0.50	<0.50	0.82	-
Cobalt	3.8	ug/L	3.4	3.7	0.6	0.6	1.8	1.9	<1.0	1.1
Copper	69	ug/L	<2.0	<2.0	4.9	5	2.3	2.6	<2.0	2.5
Cyanide	52	ug/L	-	-	-	-	<2.0	<2.0	<2.0	-
Lead	10	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Mercury	0.29	ug/L	-	-	-	-	<0.010	<0.010	<0.010	-
Molybdenum	70	ug/L	16.7	18.2	20.0	19.0	2.13	2.17	6.58	4.8
Nickel	100	ug/L	<5.0	<5.0	3.2	3.3	6.6	7.4	<5.0	3.3
Selenium	10	ug/L	<0.50	<0.50	<2.0	<2.0	<0.50	<0.50	<0.50	<2.0
Silver	1.2	ug/L	<0.50	<0.50	<0.10	<0.10	<0.50	<0.50	<0.50	<0.10
Sodium	490000	ug/L	<b>1060000</b>	<b>1090000</b>	<b>1000000</b>	<b>1100000</b>	101000	99600	422000	280000
Thallium	2	ug/L	<0.10	<0.10	<0.050	<0.050	<0.10	<0.10	<0.10	<0.050
Uranium	20	ug/L	5.56	5.46	9.5	9.6	10.7	10.5	2.56	6.1
Vanadium	6.2	ug/L	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<0.50
Zinc	890	ug/L	15	<10	5.6	5.8	<10	<10	<10	8.3

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 11: Summary of Metals and ORPs in Groundwater**

Parameter	MECP Table 8 SCS	Units	MW18-2D	MW18-2D	MW18-2D (BH18-2D)	MW18-2D (BH18-2D)	MW18-2D	BH18-2D2	BH18-2D2 (QAQC1)	MW18-3S
Date of Collection			28-Jun-18	26-Jul-18	29-Aug-18	19-Sep-18	21-Feb-19	19-Sep-18	19-Sep-18	28-Jun-18
Date Reported			09-Jul-18	31-Jul-18	07-Sep-18	01-Oct-18	26-Feb-19	01-Oct-18	01-Oct-18	09-Jul-18
Screen Interval (mbgs)			13.8-15.3	13.8-15.3	13.8-15.3	13.8-15.3	13.8-15.3	21.3-22.8	21.3-22.8	10.7-13.8
Analytical Report Reference No.			L2121927-4	L2137342-1	L2156519-2	L2169104-2	B946449	L2169104-1	L2169104-9	L2121927-2
Antimony	6	ug/L	<1.0	<1.0	-	<1.0	<0.50	1.0	<1.0	<1.0
Arsenic	25	ug/L	3.7	5.6	-	3.6	5.5	5.0	2.6	2.6
Barium	1000	ug/L	14.4	12.6	-	13.4	13.0	145	186	53.1
Beryllium	4	ug/L	<1.0	<1.0	-	<1.0	<0.50	<1.0	<1.0	<1.0
Boron	5000	ug/L	2730	2810	-	2760	2800	1630	1260	1690
Cadmium	2.1	ug/L	<0.050	<0.050	-	<0.050	<0.10	<0.050	<0.050	<0.050
Chloride	790	mg/L	<b>1290</b>	<b>1050</b>	<b>1090</b>	-	-	<b>2780</b>	<b>2320</b>	<b>848</b>
Chromium	50	ug/L	<5.0	<5.0	-	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium VI	25	ug/L	<0.50	-	-	-	-	-	-	0.65
Cobalt	3.8	ug/L	<1.0	<1.0	-	<1.0	<0.50	1.7	<1.0	<1.0
Copper	69	ug/L	<2.0	<2.0	-	<2.0	1.8	3.9	3.8	<2.0
Cyanide	52	ug/L	<2.0	-	-	-	-	-	-	<2.0
Lead	10	ug/L	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50
Mercury	0.29	ug/L	<0.010	-	-	-	-	-	-	<0.010
Molybdenum	70	ug/L	6.41	6.81	-	6.75	7.2	19.0	20.4	16.5
Nickel	100	ug/L	<5.0	<5.0	-	<5.0	<1.0	<5.0	<5.0	<5.0
Selenium	10	ug/L	<0.50	<0.50	-	<0.50	<2.0	0.77	1.10	<0.50
Silver	1.2	ug/L	<0.50	<0.50	-	<0.50	<0.10	<0.50	<0.50	<0.50
Sodium	490000	ug/L	<b>645000</b>	<b>630000</b>	-	<b>566000</b>	<b>660000</b>	<b>941000</b>	<b>1100000</b>	<b>594000</b>
Thallium	2	ug/L	<0.10	<0.10	-	<0.10	<0.050	<0.10	<0.10	<0.10
Uranium	20	ug/L	0.46	0.48	-	0.85	6.4	8.10	17.1	14.3
Vanadium	6.2	ug/L	<5.0	<5.0	-	<5.0	<0.50	<5.0	<5.0	<5.0
Zinc	890	ug/L	<10	<10	-	16	0.71	32	<10	<10

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 11: Summary of Metals and ORPs in Groundwater**

Parameter	MECP Table 8 SCS	Units	MW18-3S	MW18-3S	MW18-3S	MW18-3D	MW18-3D	MW18-3D	MW18-3D (BH18-3D)	MW18-3D
Date of Collection			05-Jul-18	26-Jul-18	21-Feb-19	28-Jun-18	26-Jul-18	29-Aug-18	19-Sep-18	21-Feb-19
Date Reported			12-Jul-18	31-Jul-18	26-Feb-19	09-Jul-18	31-Jul-18	07-Sep-18	01-Oct-18	26-Feb-19
Screen Interval (mbgs)			10.7-13.8	10.7-13.8	10.7-13.8	14.3-15.8	14.3-15.8	14.3-15.8	14.3-15.8	14.3-15.8
Analytical Report Reference No.			L2124761-3	L2137342-5	B946449	L2121927-5	L2137342-3	L2156519-3	L2169104-4	B946449
Antimony	6	ug/L	<1.0	<1.0	<2.5	<1.0	<10	-	<1.0	<2.5
Arsenic	25	ug/L	<1.0	1.3	6.6	2.0	<10	-	2.3	<5.0
Barium	1000	ug/L	17.8	39.9	25.0	186	74	-	193	58.0
Beryllium	4	ug/L	<1.0	<1.0	<2.5	<1.0	<10	-	<1.0	<2.5
Boron	5000	ug/L	450	2090	1900	2410	4500	-	1300	4200
Cadmium	2.1	ug/L	<0.050	0.088	<0.50	0.150	<0.50	-	<0.050	<0.50
Chloride	790	mg/L	36.1	922	-	4120	8670	9150	-	-
Chromium	50	ug/L	<5.0	<5.0	<25	<5.0	<50	-	<5.0	<25
Chromium VI	25	ug/L	<0.50	-	-	<0.50	-	-	-	-
Cobalt	3.8	ug/L	1.8	1.0	2.8	<1.0	<10	-	<1.0	<2.5
Copper	69	ug/L	2.1	<2.0	<5.0	<2.0	<20	-	<2.0	5.5
Cyanide	52	ug/L	<2.0	-	-	<2.0	-	-	-	-
Lead	10	ug/L	<0.50	<0.50	<2.5	1.75	<5.0	-	<0.50	<2.5
Mercury	0.29	ug/L	<0.010	-	-	<0.010	-	-	-	-
Molybdenum	70	ug/L	3.05	7.41	6.2	16.8	10.8	-	19.8	11.0
Nickel	100	ug/L	7.1	<5.0	<5.0	<5.0	<50	-	<5.0	<5.0
Selenium	10	ug/L	<0.50	<0.50	<10	<0.50	<5.0	-	0.98	<10
Silver	1.2	ug/L	<0.50	<0.50	<0.50	<0.50	<5.0	-	<0.50	<0.50
Sodium	490000	ug/L	221000	642000	600000	1690000	3430000	-	982000	3500000
Thallium	2	ug/L	0.12	<0.10	<0.25	0.85	<1.0	-	<0.10	<0.25
Uranium	20	ug/L	60	10.8	<25	4.35	1.2	-	15.9	<25
Vanadium	6.2	ug/L	<5.0	<5.0	<2.5	<5.0	<50	-	<5.0	<2.5
Zinc	890	ug/L	<10	11	9.2	14	<100	-	<10	0.89

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 11: Summary of Metals and ORPs in Groundwater**

Parameter	MECP Table 8 SCS	Units	BH18-3D2	BH18-3D2	MW18-4S	MW18-4S	MW18-4S	MW18-4D	MW18-4D	BH18-4D
Date of Collection			29-Aug-18	19-Sep-18	28-Jun-18	26-Jul-18	21-Feb-19	28-Jun-18	26-Jul-18	19-Sep-18
Date Reported			07-Sep-18	01-Oct-18	09-Jul-18	31-Jul-18	26-Feb-19	09-Jul-18	31-Jul-18	01-Oct-18
Screen Interval (mbgs)			21.3-22.8	21.3-22.8	8.2-11.3	8.2-11.3	8.2-11.3	13.7-15.2	13.7-15.2	13.7-15.2
Analytical Report Reference No.			L2156519-4	L2169104-3	L2121927-3	L2137342-2	B946449	L2121927-6	L2137342-4	L2169104-6
Antimony	6	ug/L	-	<10	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0
Arsenic	25	ug/L	-	<10	1.2	1.0	<5.0	<1.0	<1.0	3.5
Barium	1000	ug/L	-	70	30.9	16.0	13.0	16.9	37.8	20.8
Beryllium	4	ug/L	-	<10	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0
Boron	5000	ug/L	-	5300	2360	3010	2800	2990	2610	2660
Cadmium	2.1	ug/L	-	<0.50	0.077	<0.050	<0.50	0.682	<0.050	<0.050
Chloride	790	mg/L	133	-	2330	3960	-	4020	2380	-
Chromium	50	ug/L	-	<50	<5.0	<5.0	<25	<5.0	<5.0	<5.0
Chromium VI	25	ug/L	-	-	<0.50	-	-	<0.50	-	-
Cobalt	3.8	ug/L	-	<10	2.1	<1.0	<2.5	<1.0	2.1	<1.0
Copper	69	ug/L	-	<20	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0
Cyanide	52	ug/L	-	-	<2.0	-	-	<2.0	-	-
Lead	10	ug/L	-	<5.0	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Mercury	0.29	ug/L	-	-	<0.010	-	-	<0.010	-	-
Molybdenum	70	ug/L	-	10.7	13.4	11.2	5.6	11.0	13.1	10.5
Nickel	100	ug/L	-	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Selenium	10	ug/L	-	<5.0	<0.50	<0.50	<10	<0.50	<0.50	<0.50
Silver	1.2	ug/L	-	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Sodium	490000	ug/L	-	3320000	1200000	1800000	1900000	1710000	1320000	1420000
Thallium	2	ug/L	-	<1.0	<0.10	<0.10	<0.25	<0.10	<0.10	<0.10
Uranium	20	ug/L	-	<1.0	2.61	0.23	<25	0.58	3.02	0.50
Vanadium	6.2	ug/L	-	<50	<5.0	<5.0	<2.5	<5.0	<5.0	<5.0
Zinc	890	ug/L	-	<100	<10	10	<0.50	<10	<10	<10

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 11: Summary of Metals and ORPs in Groundwater**

Parameter	MECP Table 8 SCS	Units	MW18-4D	MW18-4D (DUP-1)	BH18-4D2	BH18-4D2	MW18-5D	MW18-5D	BH18-6
Date of Collection			21-Feb-19	21-Feb-19	29-Aug-18	19-Sep-18	05-Jul-18	21-Feb-19	19-Sep-18
Date Reported			26-Feb-19	26-Feb-19	07-Sep-18	01-Oct-18	12-Jul-18	26-Feb-19	01-Oct-18
Screen Interval (mbs)			13.7-15.2	13.7-15.2	21.3-22.8	21.3-22.8	12.2-15.3	12.2-15.3	13.7-15.2
Analytical Report Reference No.			B946449	B946449	L2156519-6	L2169104-5	L2124761-4	B946449	L2169104-7
Antimony	6	ug/L	<2.5	<2.5	-	<10	<1.0	<2.5	<1.0
Arsenic	25	ug/L	<5.0	<5.0	-	<10	<1.0	9.2	4.2
Barium	1000	ug/L	24.0	22.0	-	296	18.0	52.0	46.7
Beryllium	4	ug/L	<2.5	<2.5	-	<10	<1.0	<2.5	<1.0
Boron	5000	ug/L	2800	2500	-	3800	460	4900	3690
Cadmium	2.1	ug/L	<0.50	<0.50	-	<0.50	<0.050	<0.50	<0.050
Chloride	790	mg/L	-	-	12800	-	35.2	-	3920
Chromium	50	ug/L	<25	<25	-	<50	<5.0	<25	<5.0
Chromium VI	25	ug/L	-	-	-	-	<0.50	-	-
Cobalt	3.8	ug/L	<2.5	<2.5	-	<10	1.7	2.7	3.3
Copper	69	ug/L	6.9	<5.0	-	<20	2.2	<5.0	<2.0
Cyanide	52	ug/L	-	-	-	-	<2.0	-	-
Lead	10	ug/L	<2.5	<2.5	-	<5.0	<0.50	<2.5	<0.50
Mercury	0.29	ug/L	-	-	-	-	<0.010	-	-
Molybdenum	70	ug/L	11.0	9.7	-	31.0	3.22	19.0	18.4
Nickel	100	ug/L	<5.0	<5.0	-	<50	6.6	<5.0	<5.0
Selenium	10	ug/L	<10	<10	-	<5.0	<0.50	<10	0.81
Silver	1.2	ug/L	<0.50	<0.50	-	<5.0	<0.50	<0.50	<0.50
Sodium	490000	ug/L	1400000	1300000	-	4480000	219000	3400000	1770000
Thallium	2	ug/L	<0.25	<0.25	-	<1.0	<0.10	<0.25	<0.10
Uranium	20	ug/L	<25	<25	-	3.0	59	<25	9.33
Vanadium	6.2	ug/L	<2.5	<2.5	-	<50	<5.0	<2.5	<5.0
Zinc	890	ug/L	0.81	0.77	-	<100	<10	18	<10

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 12: Summary of PHCs in Groundwater**

Parameter	MECP Table 8 SCS	Units	MW15A-5	BH15A-7	MW18-1S	MW18-2S	MW18-3S	MW18-4S
Date of Collection			28-Jun-18	05-Jul-18	05-Jul-18	28-Jun-18	28-Jun-18	28-Jun-18
Date Reported			09-Jul-18	12-Jul-18	12-Jul-18	09-Jul-18	09-Jul-18	09-Jul-18
Screen Interval (mbgs)			12.1-15.2	9.0-12.1	4.5-7.6	10.7-13.8	10.7-13.8	8.2-11.3
Analytical Report Reference No.			L2121927-7	L2124761-5	L2124761-1	L2121927-1	L2121927-2	L2121927-3
Benzene	5	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	2.4	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	22	ug/L	<0.50	<0.50	<1.5	<0.50	<0.50	<0.50
Xylenes (Total)	300	ug/L	<0.50	<0.50	1.13	<0.50	<0.50	<0.50
F1 (C6 to C10) minus BTEX	420	ug/L	<25	<25	<25	<25	<25	<25
F2 (C10 to C16)	150	ug/L	<100	<100	<100	<100	<100	<100
F3 (C16 to C34)	500	ug/L	<250	<250	<250	<250	<250	<250
F4 (C34 to C50) minus PAHs	500	ug/L	<250	<250	<250	<250	<250	<250

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 13: Summary of VOCs in Groundwater**

Parameter	MECP Table 8 SCS	Units	MW15A-5	BH15A-7	MW18-1S	MW18-2S
Date of Collection			28-Jun-18	05-Jul-18	05-Jul-18	28-Jun-18
Date Reported			09-Jul-18	12-Jul-18	12-Jul-18	09-Jul-18
Screen Interval (mbgs)			12.1-15.2	9.0-12.1	4.5-7.6	10.7-13.8
Analytical Report Reference No.			L2121927-7	L2124761-5	L2124761-1	L2121927-1
Acetone	2700	ug/L	<30	<30	35	<30
Benzene	5	ug/L	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	16	ug/L	<2.0	<2.0	<2.0	<2.0
Bromoform	25	ug/L	<5.0	<5.0	<5.0	<5.0
Bromomethane	0.89	ug/L	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	ug/L	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	30	ug/L	<0.50	<0.50	<0.50	<0.50
Chloroform	2.4	ug/L	<1.0	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	1.6	ug/L	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane	25	ug/L	<2.0	<2.0	<2.0	<2.0
Dichlorobenzene, 1,2-	3	ug/L	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,3-	59	ug/L	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	1	ug/L	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	590	ug/L	<2.0	<2.0	<2.0	<2.0
Dichloroethane, 1,1-	5	ug/L	<0.50	<0.50	<0.50	<0.50
Dichloroethane, 1,2-	1.6	ug/L	<0.50	<0.50	<0.50	<0.50
Dichloroethylene, 1,1-	1.6	ug/L	<0.50	<0.50	<0.50	<0.50
Dichloropropane, 1,2-	5	ug/L	<0.50	<0.50	<0.50	<0.50
Dichloropropene, 1,3-	0.5	ug/L	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	2.4	ug/L	<0.50	<0.50	<0.50	<0.50
Ethylene Dibromide	0.2	ug/L	<0.2	<0.2	<0.2	<0.2
Methyl Ethyl Ketone	1800	ug/L	<20	<20	<20	<20
Methyl Isobutyl Ketone	640	ug/L	<20	<20	<20	<20
Methyl tert-butyl ether	15	ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	50	ug/L	<5.5	<5.0	<5.0	<5.0
n-Hexane	51	ug/L	<0.50	<0.50	<0.50	<0.50
Styrene	5.4	ug/L	<0.50	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,1,2-	1.1	ug/L	<0.50	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,2,2-	1	ug/L	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	ug/L	<0.50	<0.50	<0.50	<0.50
Toluene	22	ug/L	<0.50	<0.50	<1.5	<0.50
trans- 1,2-Dichloroethylene	1.6	ug/L	<0.50	<0.50	<0.50	<0.50
Trichloroethane, 1,1,1-	200	ug/L	<0.50	<0.50	<0.50	<0.50
Trichloroethane, 1,1,2-	4.7	ug/L	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.6	ug/L	<0.50	<0.50	<0.50	<0.50
Trichlorofluoromethane	150	ug/L	<5.0	<5.0	<5.0	<5.0
Vinyl Chloride	0.5	ug/L	<0.50	<0.50	<0.50	<0.50
Xylene Mixture	300	ug/L	<0.50	<0.50	1.13	<0.50

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 13: Summary of VOCs in Groundwater**

Parameter	MECP Table 8 SCS	Units	MW18-3S	MW18-4S	Trip Blank
Date of Collection			28-Jun-18	28-Jun-18	05-Jul-18
Date Reported			09-Jul-18	09-Jul-18	12-Jul-18
Screen Interval (mbgs)			10.7-13.8	8.2-11.3	N/A
Analytical Report Reference No.			L2121927-2	L2121927-3	L2124761-6
Acetone	2700	ug/L	<30	<30	<30
Benzene	5	ug/L	<0.50	<0.50	<0.50
Bromodichloromethane	16	ug/L	<2.0	<2.0	<2.0
Bromoform	25	ug/L	<5.0	<5.0	<5.0
Bromomethane	0.89	ug/L	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	ug/L	<0.20	<0.20	<0.20
Chlorobenzene	30	ug/L	<0.50	<0.50	<0.50
Chloroform	2.4	ug/L	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	1.6	ug/L	<0.50	<0.50	<0.50
Dibromochloromethane	25	ug/L	<2.0	<2.0	<2.0
Dichlorobenzene, 1,2-	3	ug/L	<0.50	<0.50	<0.50
Dichlorobenzene, 1,3-	59	ug/L	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	1	ug/L	<0.50	<0.50	<0.50
Dichlorodifluoromethane	590	ug/L	<2.0	<2.0	<2.0
Dichloroethane, 1,1-	5	ug/L	<0.50	<0.50	<0.50
Dichloroethane, 1,2-	1.6	ug/L	<0.50	<0.50	<0.50
Dichloroethylene, 1,1-	1.6	ug/L	<0.50	<0.50	<0.50
Dichloropropane, 1,2-	5	ug/L	<0.50	<0.50	<0.50
Dichloropropene, 1,3-	0.5	ug/L	<0.50	<0.50	<0.50
Ethylbenzene	2.4	ug/L	<0.50	<0.50	<0.50
Ethylene Dibromide	0.2	ug/L	<0.2	<0.2	<0.2
Methyl Ethyl Ketone	1800	ug/L	<20	<20	<20
Methyl Isobutyl Ketone	640	ug/L	<20	<20	<20
Methyl tert-butyl ether	15	ug/L	<2.0	<2.0	<2.0
Methylene Chloride	50	ug/L	<5.0	<5.0	<5.0
n-Hexane	51	ug/L	<0.50	<0.50	<0.50
Styrene	5.4	ug/L	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,1,2-	1.1	ug/L	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,2,2-	1	ug/L	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	ug/L	<0.50	<0.50	<0.50
Toluene	22	ug/L	<0.50	<0.50	<0.50
trans- 1,2-Dichloroethylene	1.6	ug/L	<0.50	<0.50	<0.50
Trichloroethane, 1,1,1-	200	ug/L	<0.50	<0.50	<0.50
Trichloroethane, 1,1,2-	4.7	ug/L	<0.50	<0.50	<0.50
Trichloroethylene	1.6	ug/L	<0.50	<0.50	<0.50
Trichlorofluoromethane	150	ug/L	<5.0	<5.0	<5.0
Vinyl Chloride	0.5	ug/L	<0.50	<0.50	<0.50
Xylene Mixture	300	ug/L	<0.50	<0.50	<0.50

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 14: Summary of OCPs in Groundwater**

Parameter	MECP Table 8 SCS	Units	MW18-1S	BH15A-7	MW18-2S	MW18-3S	MW18-4S	MW15A-5
Date of Collection			05-Jul-18	05-Jul-18	28-Jun-18	28-Jun-18	28-Jun-18	28-Jun-18
Date Reported			12-Jul-18	12-Jul-18	09-Jul-18	09-Jul-18	09-Jul-18	09-Jul-18
Screen Interval (mbgs)			4.5-7.6	9.0-12.1	10.7-13.8	10.7-13.8	8.2-11.3	12.1-15.2
Analytical Report Reference No.			L2124761-1	L2124761-5	L2121927-1	L2121927-2	L2121927-3	L2121927-7
Aldrin	0.35	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
gamma-hexachlorocyclohexane	0.95	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlordane (Total)	0.06	ug/L	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057
Total DDD	1.8	ug/L	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
Total DDE	10	ug/L	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Total DDT	0.05	ug/L	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
Dieldrin	0.35	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Endosulfan (Total)	0.56	ug/L	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
Endrin	0.36	ug/L	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Heptachlor	0.038	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor Epoxide	0.038	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobenzene	1	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	0.44	ug/L	<0.040	<0.040	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	2.1	ug/L	<0.030	<0.030	<0.010	<0.010	<0.010	<0.010
Methoxychlor	0.3	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section.



**Table 15: Summary of Maximum Concentrations in Soil**

	Parameter	Standard	Maximum Concentration	Location
Metals and ORPs	Antimony	1.3	<1.0	All Samples
	Arsenic	18	12	TP16-08 Sa2
	Barium	220	<b>225</b>	TP16-11 Sa1
	Beryllium	2.5	1	TP15A-13 Sa3
	Boron	36	22.6	BH18-5 SS5
	Boron (Hot Water Soluble)	1.5	<b>1.79</b>	TP15A-18 Sa2
	Cadmium	1.2	<0.50	All Samples
	Chromium	70	49	TP15A-20 Sa3
	Chromium VI	0.66	0.43	BH18-2 SS2
	Cobalt	22	16.7	TP16-08 Sa2
	Copper	92	66	TP16-08 Sa2
	Cyanide	0.051	<b>0.067</b>	BH15A-6 SS1 (QA/QC1)
	Lead	120	45	TP15A-20 Sa3
	Mercury	0.27	0.2	TP15A-20 Sa3
	Molybdenum	2	1.4	TP16-04 Sa3
	Nickel	82	34	BH18-5 SS5
	Selenium	1.5	0.9	TP16-10 Sa1
	Silver	0.5	<b>1.4</b>	TP15A-20 Sa3
	Thallium	1	<0.50	All Samples
	Uranium	2.5	1.4	TP15A-7 Sa2
	Vanadium	86	40	TP16-02 Sa1
Zinc	290	123	TP15A-20 Sa3	
Electrical Conductivity (2:1)	0.7	<b>1.82</b>	BH18-5 SS5	
Sodium Adsorption Ratio	5	3.93	TP16-13 Sa1	
pH, 2:1 CaCl <sub>2</sub> Extraction	-	8.02	BH18-1 SS3	
PHCs	Benzene	0.02	<0.0068	All Samples
	Ethylbenzene	0.05	<0.018	All Samples
	Toluene	0.2	<0.080	All Samples
	Xylenes (Total)	0.05	<0.050	All Samples
	F1-BTEX	25	<5.0	All Samples
	F2 (C10-C16)	10	<b>18.00</b>	BH18-5 SS7
	F3 (C16-C34)	240	64	BH18-5 SS7
F4 (C34-C50)	120	78	TP18-1 S1	
VOCs	Acetone	0.5	<0.50	All Samples
	Benzene	0.02	<0.0068	All Samples
	Bromodichloromethane	0.05	<0.050	All Samples
	Bromoform	0.05	<0.050	All Samples
	Bromomethane	0.05	<0.050	All Samples
	Carbon Tetrachloride	0.05	<0.050	All Samples
	Chlorobenzene	0.05	<0.050	All Samples
	Chloroform	0.05	<0.050	All Samples
	Cis- 1,2-Dichloroethylene	0.05	<0.050	All Samples
	Dibromochloromethane	0.05	<0.050	All Samples
Dichlorobenzene, 1,2-	0.05	<0.050	All Samples	



**Table 15: Summary of Maximum Concentrations in Soil**

	Parameter	Standard	Maximum Concentration	Location
VOCs	Dichlorobenzene, 1,3-	0.05	<0.050	All Samples
	Dichlorobenzene, 1,4-	0.05	<0.050	All Samples
	Dichlorodifluoromethane	0.05	<0.050	All Samples
	Dichloroethane, 1,1-	0.05	<0.050	All Samples
	Dichloroethane, 1,2-	0.05	<0.050	All Samples
	Dichloroethylene, 1,1-	0.05	<0.050	All Samples
	Dichloropropane, 1,2-	0.05	<0.050	All Samples
	Dichloropropene, 1,3-	0.05	<0.042	All Samples
	Ethylbenzene	0.05	<0.018	All Samples
	Ethylene Dibromide	0.05	<0.050	All Samples
	Methyl Ethyl Ketone	0.5	<0.50	All Samples
	Methyl Isobutyl Ketone	0.5	<0.50	All Samples
	Methyl tert-butyl Ether	0.05	<0.050	All Samples
	Methylene Chloride	0.05	<0.050	All Samples
	n-Hexane	0.05	<0.050	All Samples
	Styrene	0.05	<0.050	All Samples
	Tetrachloroethane, 1,1,1,2-	0.05	<0.050	All Samples
	Tetrachloroethane, 1,1,2,2-	0.05	<0.050	All Samples
	Tetrachloroethylene	0.05	<0.050	All Samples
	Toluene	0.2	<0.080	All Samples
	Trans- 1,2-Dichloroethylene	0.05	<0.050	All Samples
	Trichloroethane, 1,1,1-	0.05	<0.050	All Samples
	Trichloroethane, 1,1,2-	0.05	<0.050	All Samples
	Trichloroethylene	0.05	<0.010	All Samples
Trichlorofluoromethane	0.25	<0.050	All Samples	
Vinyl Chloride	0.02	<0.020	All Samples	
Xylene Mixture	0.05	<0.050	All Samples	
PAHs	Acenaphthene	0.072	<0.050	All Samples
	Acenaphthylene	0.093	<0.050	All Samples
	Anthracene	0.22	<0.050	All Samples
	Benz(a)anthracene	0.36	<0.050	All Samples
	Benzo(a)pyrene	0.3	<0.050	All Samples
	Benzo(b)fluoranthene	0.47	<0.050	All Samples
	Benzo(g,h,i)perylene	0.68	<0.050	All Samples
	Benzo(k)fluoranthene	0.48	0.06	TP16-19 Sa2
	Chrysene	2.8	<0.050	All Samples
	Dibenz(a,h)anthracene	0.1	<0.050	All Samples
	Fluoranthene	0.69	0.1	TP15A-17 Sa3
	Fluorene	0.19	<0.050	All Samples
	Indeno(1,2,3-cd)pyrene	0.23	<0.050	All Samples
	Naphthalene	0.09	<0.013	All Samples
	2-and 1-methyl Naphthalene	0.59	<0.042	All Samples
	Phenanthrene	0.69	0.07	TP15A-17 Sa3
	Pyrene	1	0.07	TP15A-17 Sa3



**Table 15: Summary of Maximum Concentrations in Soil**

	Parameter	Standard	Maximum Concentration	Location
OCPs	Aldrin	0.05	<0.020	All Samples
	gamma-hexachlorocyclohexane	0.01	<0.010	All Samples
	Chlordane (Total)	0.05	<0.028	All Samples
	Total DDD	0.05	<0.028	All Samples
	Total DDE	0.05	0.016	TP15A-17 Sa2 (QA/QC7)
	Total DDT	1.4	<0.028	All Samples
	Dieldrin	0.05	<0.020	All Samples
	Endosulfan (Total)	0.04	<0.028	All Samples
	Endrin	0.04	<0.020	All Samples
	Heptachlor	0.05	<0.020	All Samples
	Heptachlor Epoxide	0.05	<0.020	All Samples
	Hexachlorobenzene	0.02	<0.010	All Samples
	Hexachlorobutadiene	0.01	<0.010	All Samples
	Hexachloroethane	0.01	<0.010	All Samples
	Methoxychlor	0.05	<0.020	All Samples
	Total PCBs	0.3	<0.1	All Samples



**Table 16: Summary of Maximum Concentrations in Groundwater**

	Parameter	Standard	Maximum Concentration	Location
Metals and ORPs	Antimony	6	1.1	BH15A-5
	Arsenic	25	19	MW18-2S
	Barium	1000	296	BH18-4D2
	Beryllium	4	<0.5	All Samples
	Boron	5000	5300	BH18-3D2
	Cadmium	2.1	0.682	MW18-4D
	Chloride	790	<b>12800</b>	BH18-4D2
	Chromium	50	<5.0	All Samples
	Chromium VI	25	0.82	MW18-2S
	Cobalt	3.8	3.9	BH15A-7
	Copper	69	6.9	MW18-4D
	Cyanide	52	<2.0	All Samples
	Lead	10	1.75	MW18-3D
	Mercury	0.29	<0.010	All Samples
	Molybdenum	70	38	BH15A-5
	Nickel	100	7.4	MW18-1D
	Selenium	10	9.92	BH15A-5
	Silver	1.2	<0.30	All Samples
	Sodium	490000	<b>4480000</b>	BH18-4D2
	Thallium	2	0.85	MW18-3D
Uranium	20	<b>59.7</b>	MW18-3S	
Vanadium	6.2	<3.9	All Samples	
Zinc	890	32	BH18-2D2	
PHCs	Benzene	5	<0.50	All Samples
	Ethylbenzene	2.4	<0.50	All Samples
	Toluene	22	<0.50	All Samples
	Xylenes (Total)	300	1.13	MW18-1S
	F1 (C6 to C10) minus BTEX	420	<25	All Samples
	F2 (C10 to C16)	150	<100	All Samples
	F3 (C16 to C34)	500	<250	All Samples
	F4 (C34 to C50) minus PAHs	500	<250	All Samples
VOCs	Acetone	2700	35	MW18-1S
	Benzene	5	<0.50	All Samples
	Bromodichloromethane	16	<2.0	All Samples
	Bromoform	25	<5.0	All Samples
	Bromomethane	0.89	<0.50	All Samples
	Carbon Tetrachloride	0.79	<0.20	All Samples
	Chlorobenzene	30	<0.50	All Samples
	Chloroform	2.4	<1.0	All Samples
	cis- 1,2-Dichloroethylene	1.6	<0.50	All Samples
	Dibromochloromethane	25	<2.0	All Samples
	Dichlorobenzene, 1,2-	3	<0.50	All Samples
	Dichlorobenzene, 1,3-	59	<0.50	All Samples



**Table 16: Summary of Maximum Concentrations in Groundwater**

	Parameter	Standard	Maximum Concentration	Location
VOCs	Dichlorobenzene, 1,4-	1	<0.50	All Samples
	Dichlorodifluoromethane	590	<2.0	All Samples
	Dichloroethane, 1,1-	5	<0.50	All Samples
	Dichloroethane, 1,2-	1.6	<0.50	All Samples
	Dichloroethylene, 1,1-	1.6	<0.50	All Samples
	Dichloropropane, 1,2-	5	<0.50	All Samples
	Dichloropropene, 1,3-	0.5	<0.50	All Samples
	Ethylbenzene	2.4	<0.50	All Samples
	Ethylene Dibromide	0.2	<0.2	All Samples
	Methyl Ethyl Ketone	1800	<20	All Samples
	Methyl Isobutyl Ketone	640	<20	All Samples
	Methyl tert-butyl ether	15	<2.0	All Samples
	Methylene Chloride	50	<5.5	All Samples
	n-Hexane	51	<0.50	All Samples
	Styrene	5.4	<0.50	All Samples
	Tetrachloroethane, 1,1,1,2-	1.1	<0.50	All Samples
	Tetrachloroethane, 1,1,2,2-	1	<0.50	All Samples
	Tetrachloroethylene	1.6	<0.50	All Samples
	Toluene	22	<0.50	All Samples
	trans- 1,2-Dichloroethylene	1.6	<0.50	All Samples
	Trichloroethane, 1,1,1-	200	<0.50	All Samples
	Trichloroethane, 1,1,2-	4.7	<0.50	All Samples
	Trichloroethylene	1.6	<0.50	All Samples
	Trichlorofluoromethane	150	<5.0	All Samples
Vinyl Chloride	0.5	<0.50	All Samples	
Xylene Mixture	300	1.13	MW18-1S	
OCPs	Aldrin	0.35	<0.010	All Samples
	gamma-hexachlorocyclohexane	0.95	<0.010	All Samples
	Chlordane (Total)	0.06	<0.057	All Samples
	Total DDD	1.8	<0.042	All Samples
	Total DDE	10	<0.011	All Samples
	Total DDT	0.05	<0.042	All Samples
	Dieldrin	0.35	<0.050	All Samples
	Endosulfan (Total)	0.56	<0.042	All Samples
	Endrin	0.36	<0.040	All Samples
	Heptachlor	0.038	<0.010	All Samples
	Heptachlor Epoxide	0.038	<0.010	All Samples
	Hexachlorobenzene	1	<0.010	All Samples
	Hexachlorobutadiene	0.44	<0.040	All Samples
	Hexachloroethane	2.1	<0.030	All Samples
Methoxychlor	0.3	<0.050	All Samples	



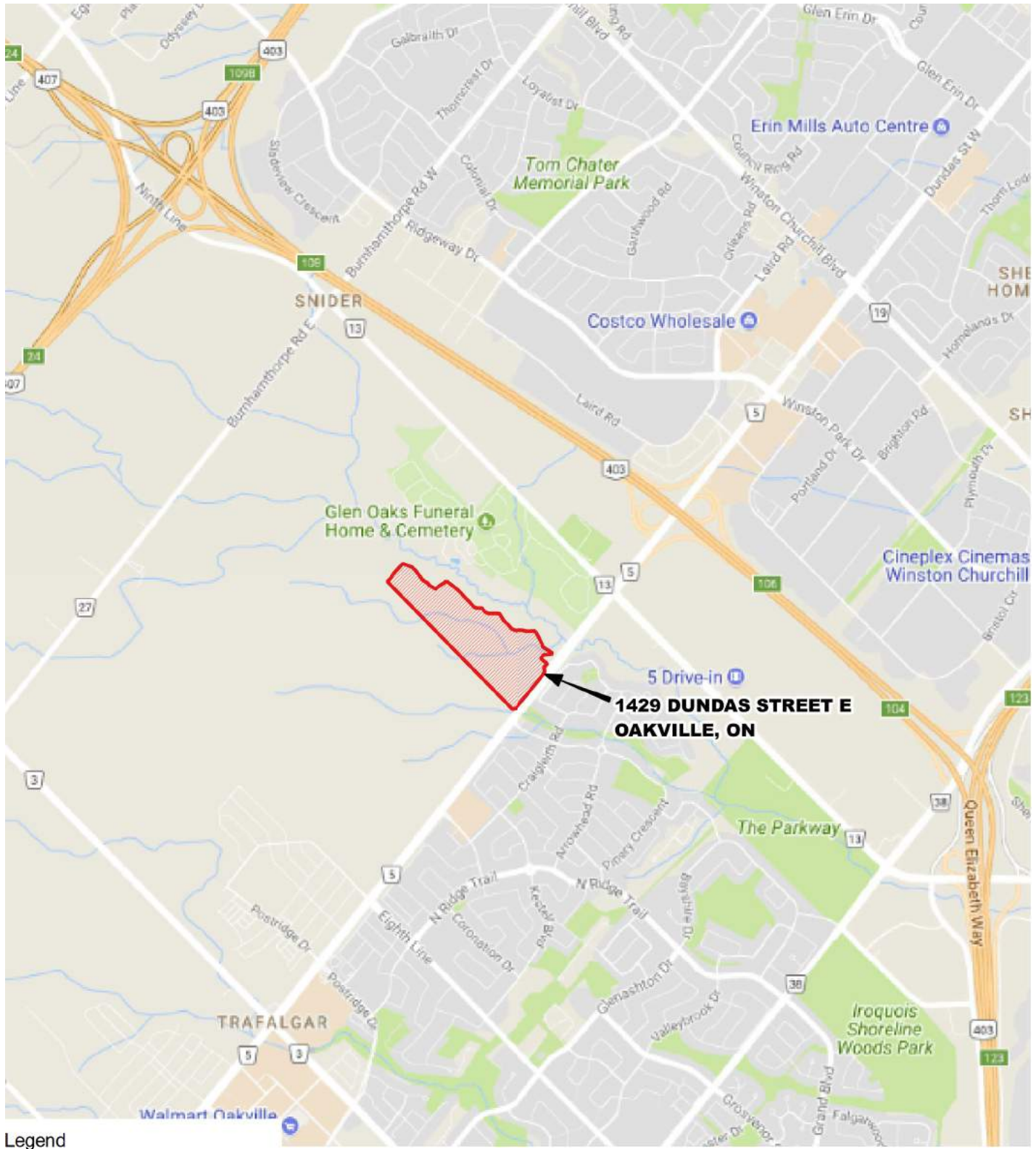
**Notes for Soil & Groundwater Summary Tables**


<b>Result</b>	Concentration exceeds site conditions standards
<b>Result</b>	Detection limit exceeds site condition standards
<b>Units</b>	Units for all groundwater analyses are in µg/L (ppb) unless otherwise indicated
mm	Milimeters
m	Meters
mbgs	Meters below ground surface
masl	Meters above sea level
SCS	Site Condition Standards
NA	Not Applicable
ORPs	Other Registered Parameters
PHCs	Petroleum Hydrocarbons
BTEX	Benzene, toluene, ethylbenzene, xylenes (total)
VOCs	Volatile Organic Compounds
PAHs	Polycyclic Aromatic Hydrocarbons
OCPs	Organochlorine Pesticide
PCBs	Polychlorinated Biphenyls
MECP Table 8 SCS	Generic Condition Standards in a Potable Groundwater Condition for Use within 30 m of a Water Body as contained in Table 8 of the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", published by the MECP on April 15, 2011

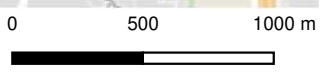


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# Figures



**Legend**  
 Approximate Property Boundary



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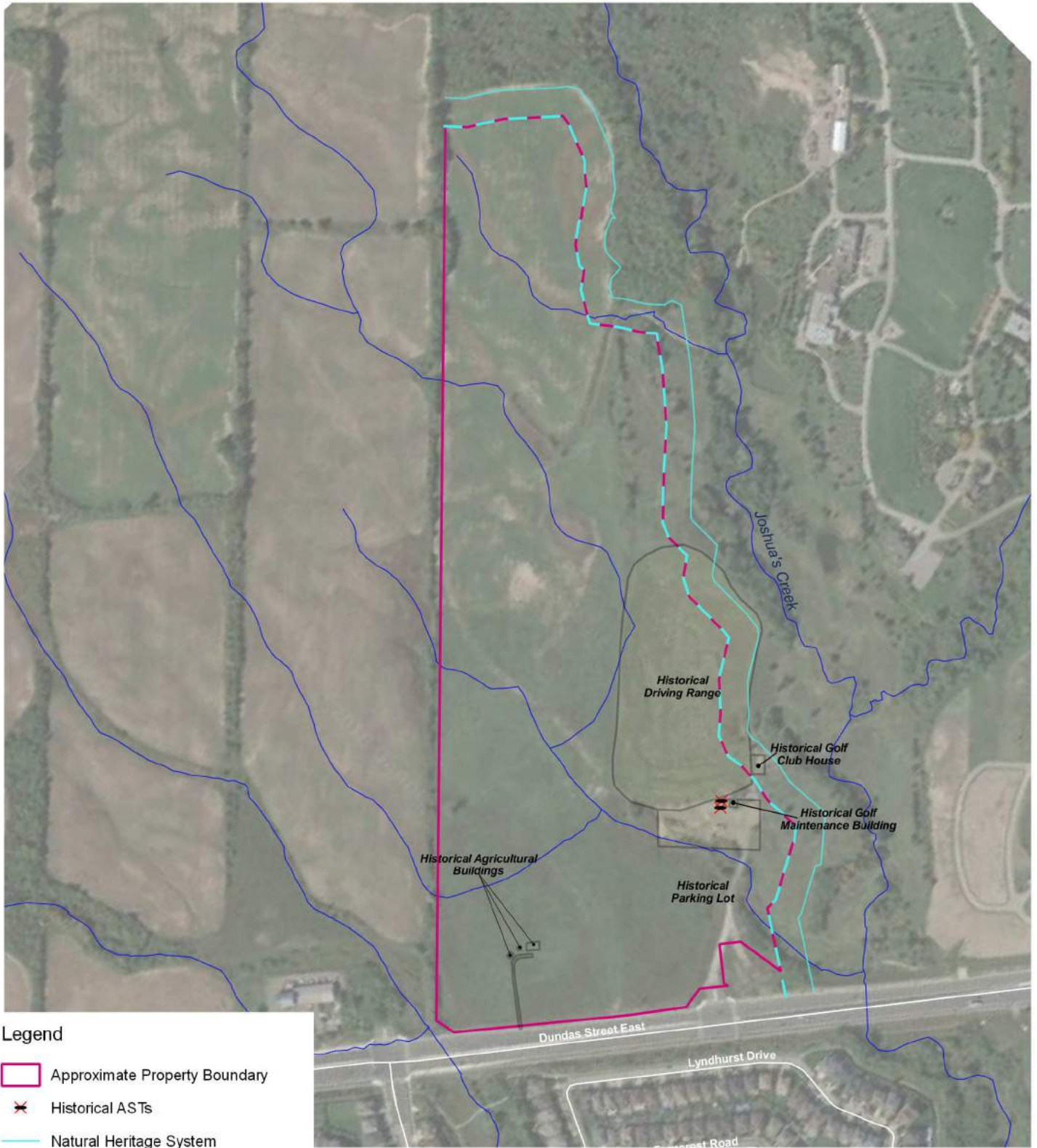
**Project:** PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

**Title:** **SITE LOCATION PLAN**



<b>Client:</b> BRESSA DEVELOPMENTS LTD.	<b>Size:</b> 8.5 x 11	<b>Approved By:</b> R.F	<b>Drawn By:</b> S.Y	<b>Date:</b> July 2019
	<b>Rev.</b> 1	<b>Scale:</b> As Shown	<b>Project No.:</b> 18-549-100	<b>Figure No.:</b> 1

Image/Map Source: Google Street Map



**Legend**

- Approximate Property Boundary
- ✕ Historical ASTs
- Natural Heritage System
- Natural Heritage System (30m offset)



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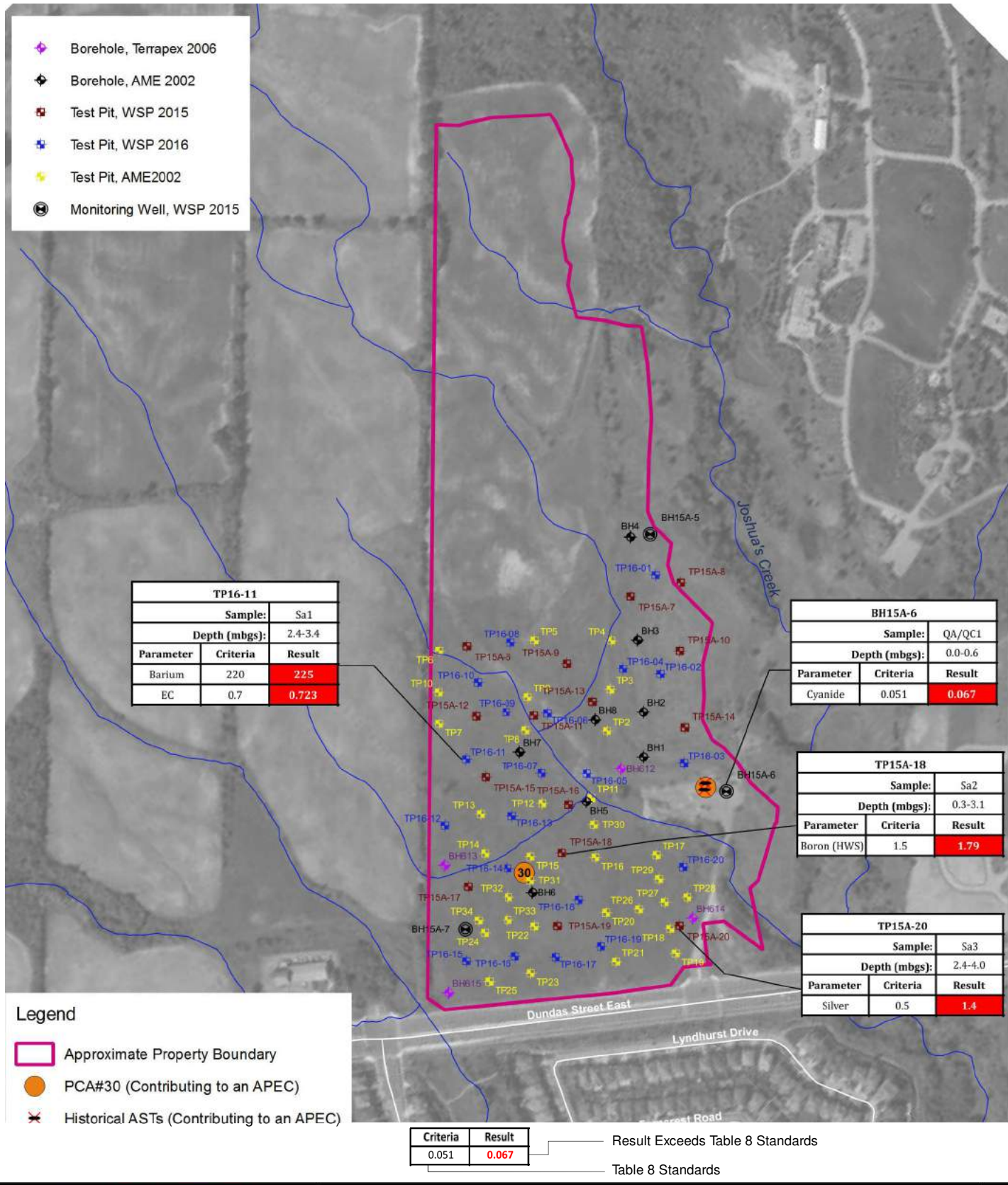
**Project:** PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

**Title:** **PROPERTY SITE PLAN**



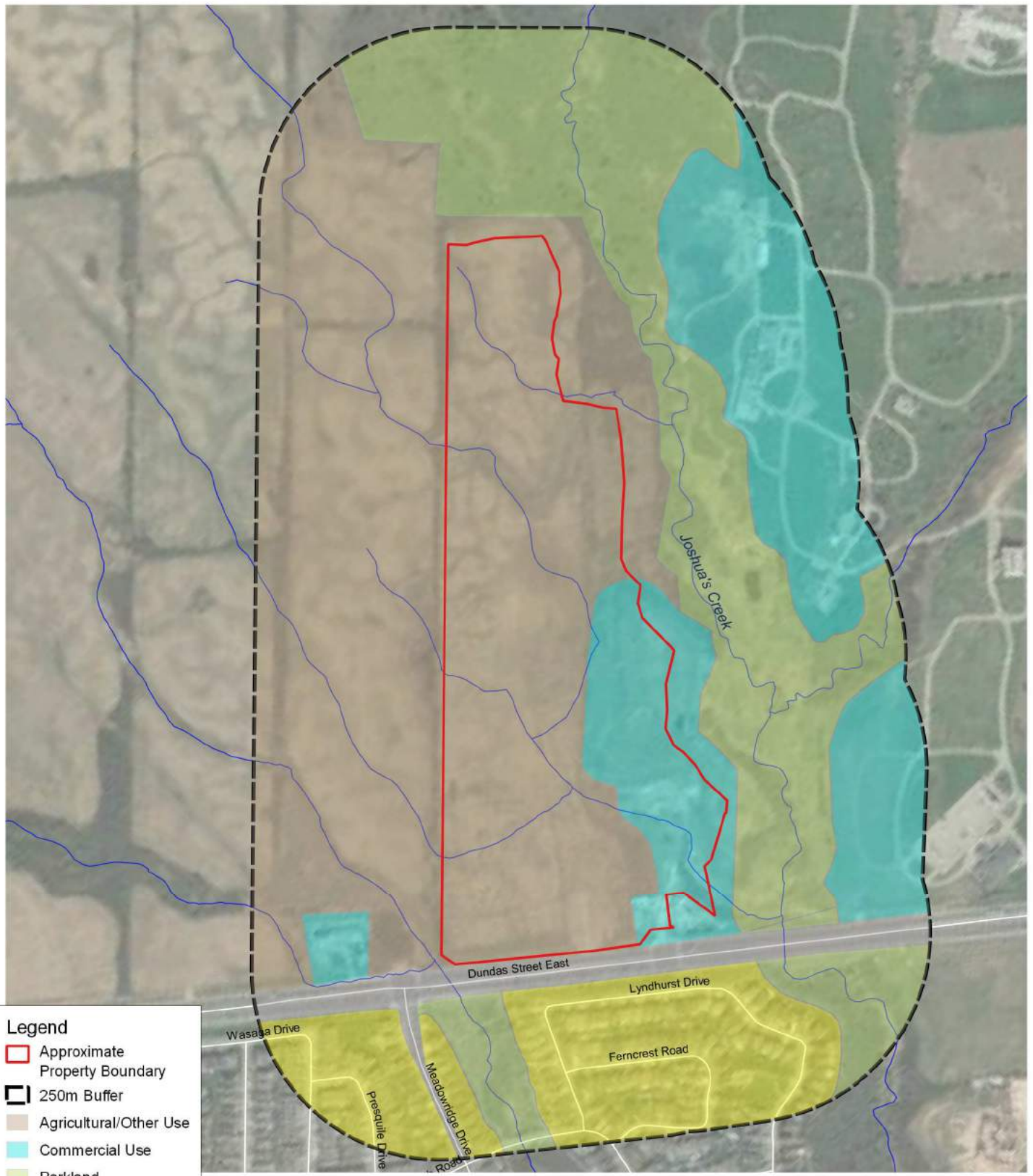
**Client:**  
 BRESSA DEVELOPMENTS LTD.

<b>Size:</b> 8.5 x 11	<b>Approved By:</b> R.F	<b>Drawn By:</b> S.Y	<b>Date:</b> July 2019
<b>Rev.</b> 1	<b>Scale:</b> As Shown	<b>Project No.:</b> 18-549-100	<b>Figure No.:</b> <b>2A</b>
<small>Image/Map Source: Google Satellite Image</small>			



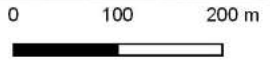
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Client: <b>MATTAMY DEVELOPMENT CORPORATION</b>	Project:	PHASE TWO ENVIRONMENTAL SITE ASSESSMENT Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
	Title:	<b>SUMMARY OF HISTORICAL ENVIRONMENTAL WORK AND SOIL IMPACTS IDENTIFIED</b>			
Rev. 1	Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019	
	Scale: As Shown	Project No.:	18-549-40	Figure No.:	<b>2B</b>
Image/Map Source: Google Satellite Image					



**Legend**

- Approximate Property Boundary
- 250m Buffer
- Agricultural/Other Use
- Commercial Use
- Parkland
- Residential Use



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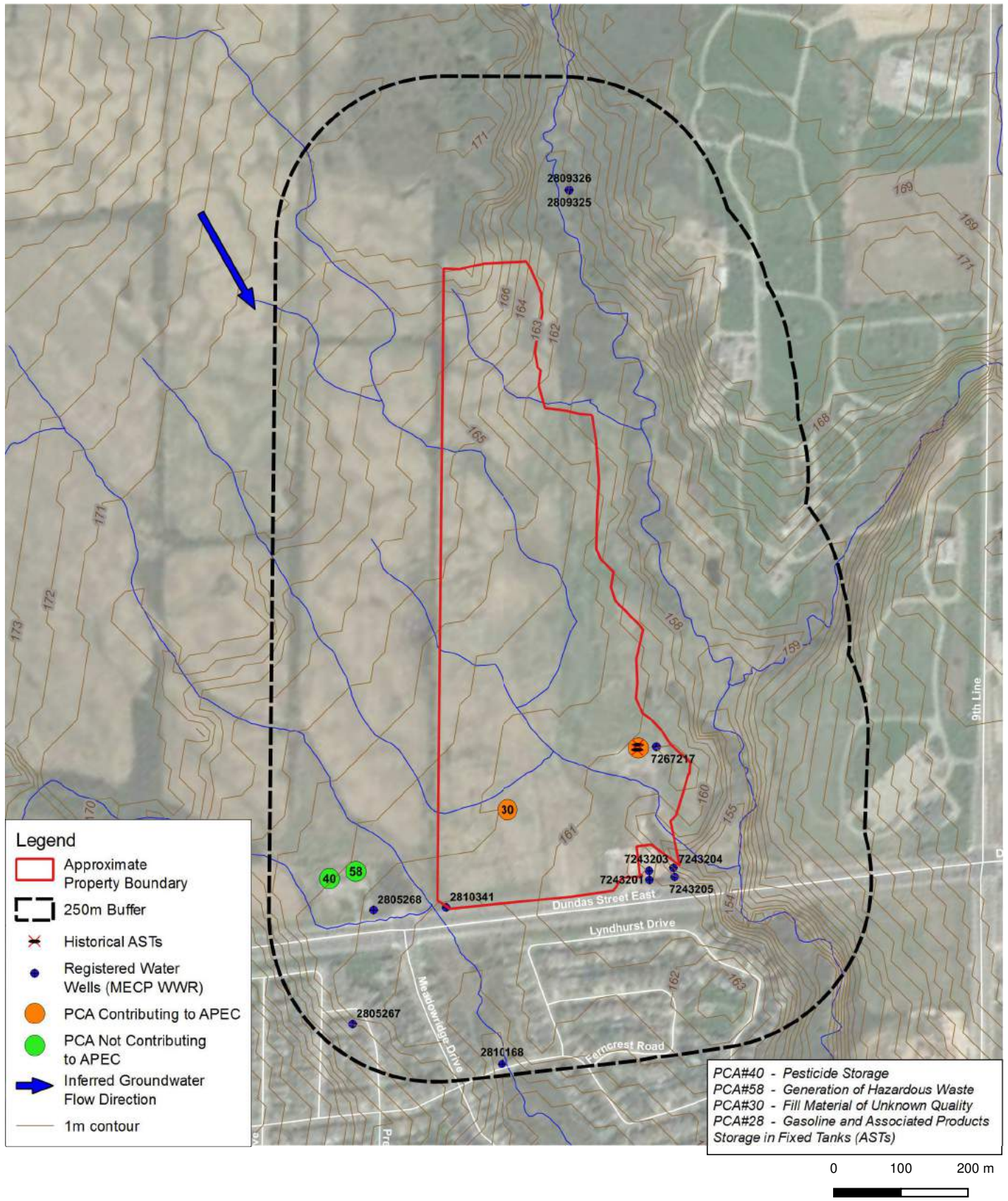
**Project:** PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

**Title:** PHASE ONE STUDY AREA



**Client:** BRESSA DEVELOPMENTS LTD.

<b>Size:</b> 8.5 x 11	<b>Approved By:</b> R.F	<b>Drawn By:</b> S.Y	<b>Date:</b> July 2019
<b>Rev.</b> 1	<b>Scale:</b> As Shown	<b>Project No.:</b> 18-549-100	<b>Figure No.:</b> <b>3A</b>
<b>Image/Map Source:</b> Google Satellite Map			



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **PCA WITH PHASE ONE STUDY AREA**

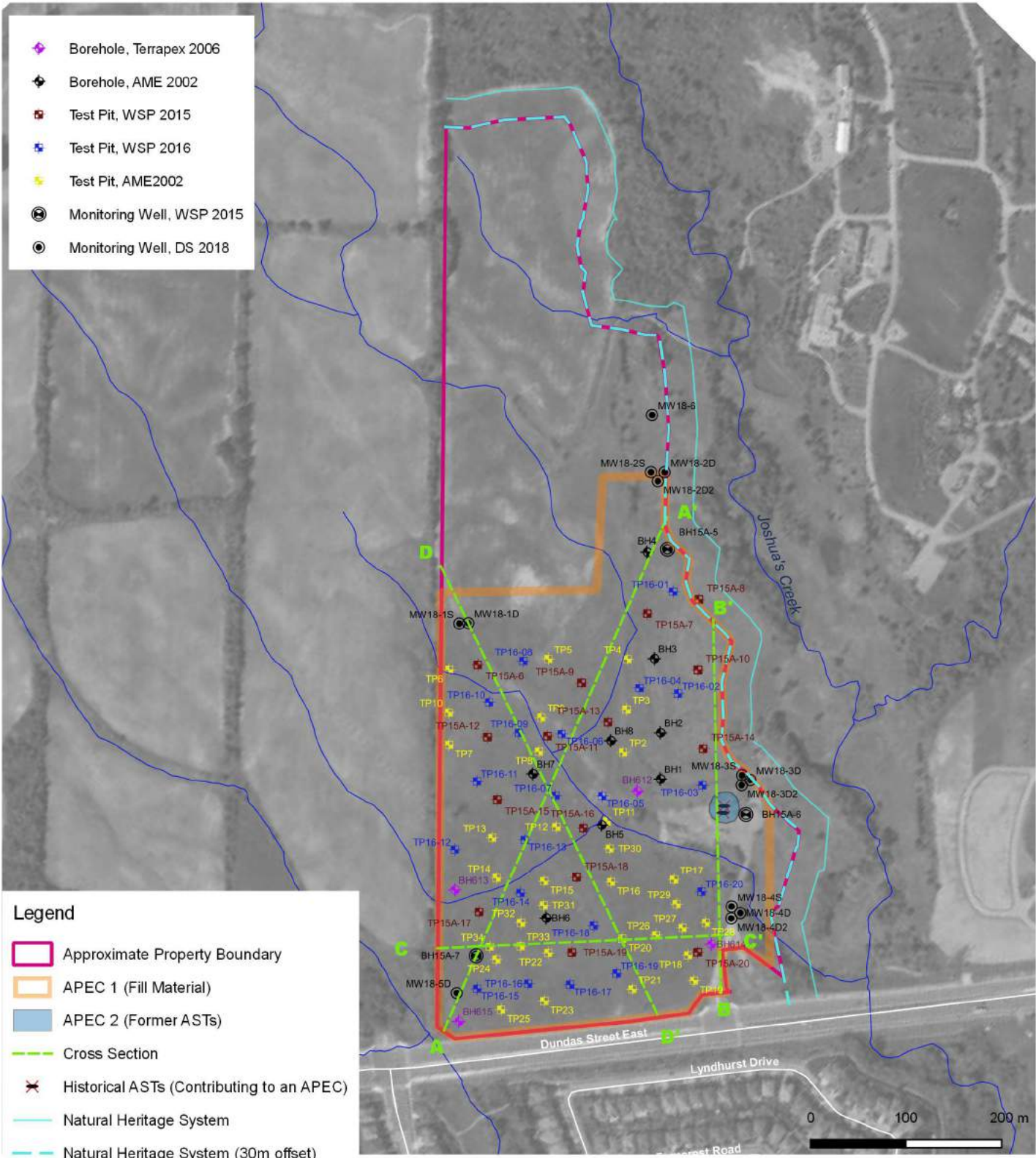


Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11      Approved By: R.F      Drawn By: S.Y      Date: July 2019

Rev. 1      Scale: As Shown      Project No.: 18-549-100      Figure No.: **3B**

Image/Map Source: Google Satellite Image



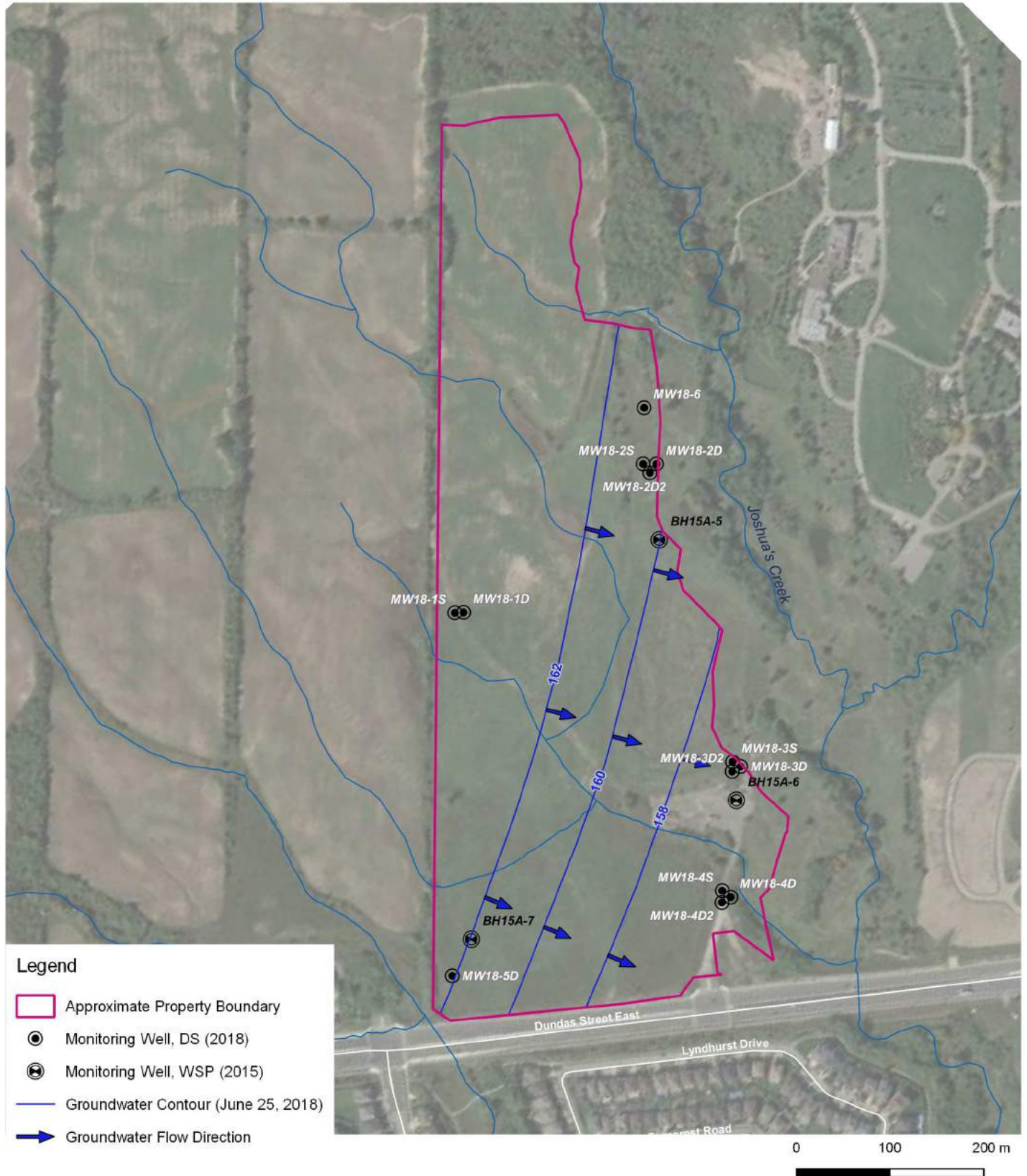
**Legend**

- Approximate Property Boundary
- APEC 1 (Fill Material)
- APEC 2 (Former ASTs)
- Cross Section
- ✕ Historical ASTs (Contributing to an APEC)
- Natural Heritage System
- Natural Heritage System (30m offset)



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT Bressa Development Lands, 1429 Dundas Street, Oakville, ON		Title: <b>BOREHOLE/TEST PIT LOCATION PLAN WITH APECs</b>				
Client:	BRESSA DEVELOPMENTS LTD.					
Size:						8.5 x 11
Rev.	1	Scale:	As Shown	Project No.:	18-549-100	
		Date:	July 2019		Figure No.:	<b>4</b>
Image/Map Source: Google Satellite Image						



**Legend**

- Approximate Property Boundary
- Monitoring Well, DS (2018)
- Monitoring Well, WSP (2015)
- Groundwater Contour (June 25, 2018)
- Groundwater Flow Direction



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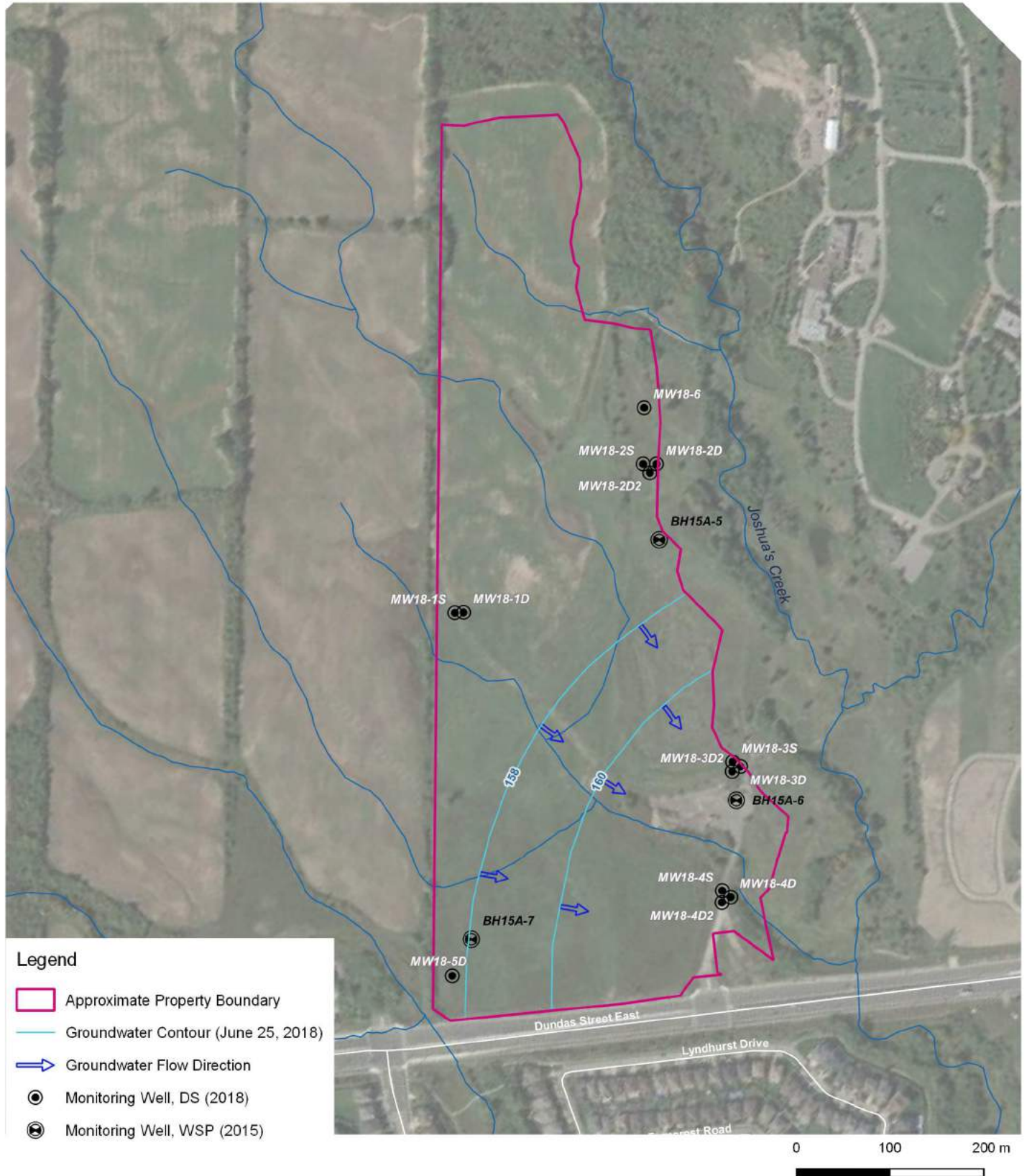
**Project:** PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

**Title:** GROUNDWATER ELEVATION CONTOURS AND FLOW DIRECTION (OVERBURDEN/WEATHERED ZONE)



**Client:**  
 BRESSA DEVELOPMENTS LTD.

<b>Size:</b> 8.5 x 11	<b>Approved By:</b> R.F	<b>Drawn By:</b> S.Y	<b>Date:</b> July 2019
<b>Rev.</b> 1	<b>Scale:</b> As Shown	<b>Project No.:</b> 18-549-100	<b>Figure No.:</b> <b>5A</b>
<small>Image/Map Source: Google Satellite Image</small>			



**Legend**

- Approximate Property Boundary
- Groundwater Contour (June 25, 2018)
- ➔ Groundwater Flow Direction
- Monitoring Well, DS (2018)
- Monitoring Well, WSP (2015)



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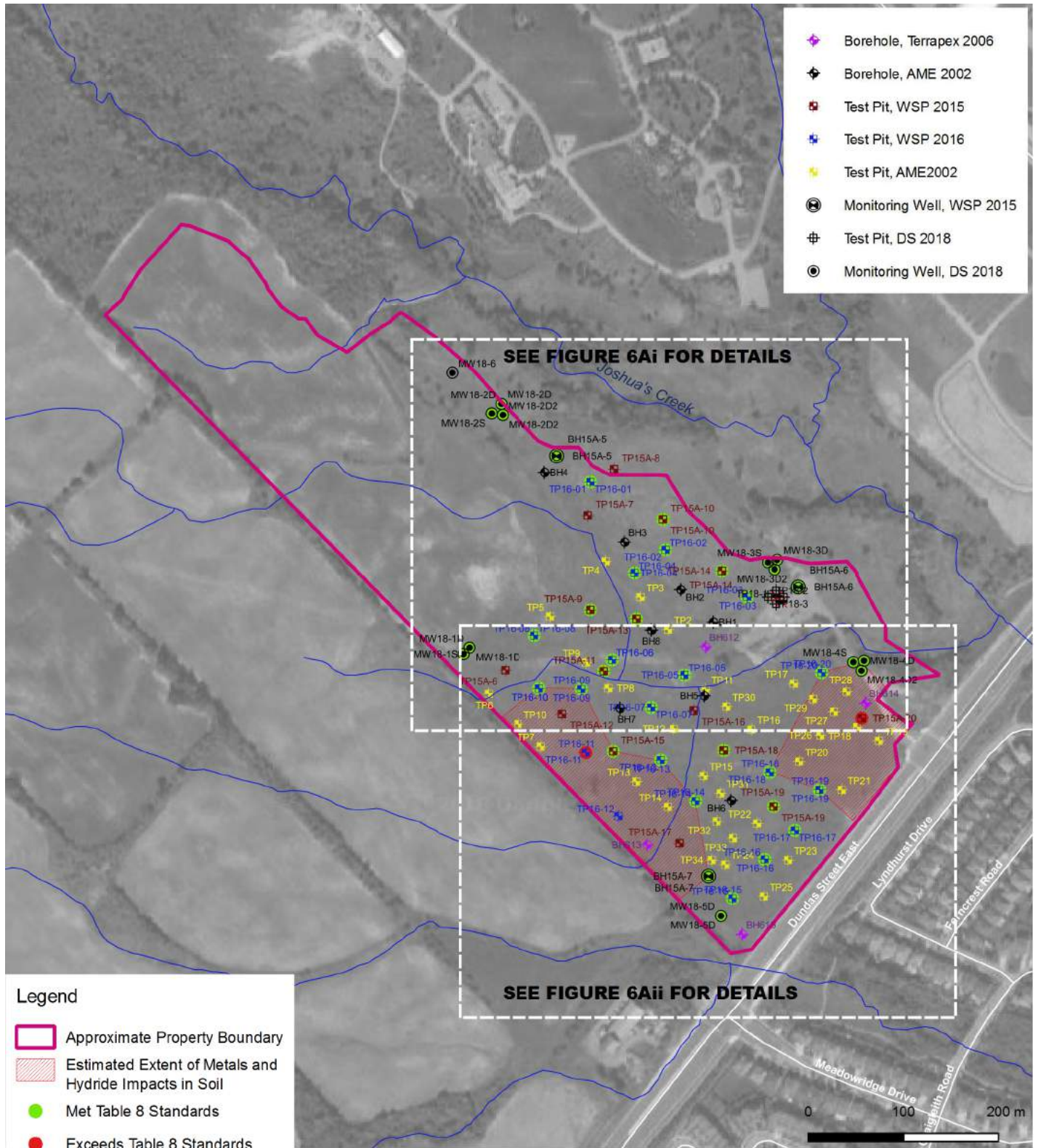
**Project:** PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

**Title:** GROUNDWATER ELEVATION CONTOURS AND FLOW DIRECTION (BEDROCK)



**Client:**  
 BRESSA DEVELOPMENTS LTD.

<b>Size:</b> 8.5 x 11	<b>Approved By:</b> R.F	<b>Drawn By:</b> S.Y	<b>Date:</b> July 2019
<b>Rev.</b> 1	<b>Scale:</b> As Shown	<b>Project No.:</b> 18-549-100	<b>Figure No.:</b> <b>5B</b>
<small>Image/Map Source: Google Satellite Image</small>			



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **SOIL CHARACTERIZATION - METALS AND HYDRIDES**



Client: BRESSA DEVELOPMENTS LTD.

Size: 8.5 x 11

Approved By: R.F

Drawn By: S.Y

Date: July 2019

Rev. 1

Scale: As Shown

Project No.: 18-549-100

Figure No.: **6A**

Image/Map Source: Google Satellite Image

BH18-2	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Barium	75.6
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-01		
Sample:	Sa1	Sa2
Depth (mbgs):	0.2-1.8	1.8-2.1
Barium	107	127
Silver	0.3	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS

TP15A-10	
Sample:	Sa2
Depth (mbgs):	0.3-0.9
Barium	57
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH15A-5	
Sample:	SS7
Depth (mbgs):	6.1-6.7
Barium	55
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-04		
Sample:	Sa1	Sa3
Depth (mbgs):	0.2-1.5	2.0-3.0
Barium	72	101
Silver	<0.2	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS

TP16-02	
Sample:	Sa1
Depth (mbgs):	1.5-2.0
Barium	98
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-9	
Sample:	Sa2
Depth (mbgs):	0.3-1.1
Barium	121
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH18-3	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Barium	84.3
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-14	
Sample:	Sa3
Depth (mbgs):	1.2-3.0
Barium	97
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-06	
Sample:	Sa2
Depth (mbgs):	6.0-6.2
Barium	80
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-08		
Sample:	Sa1	Sa2
Depth (mbgs):	0.3-0.9	0.9-3.0
Barium	133	81
Silver	<0.2	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS

TP16-03	
Sample:	Sa2
Depth (mbgs):	1.6-2.1
Barium	87
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH15A-6	
Sample:	SS1
Depth (mbgs):	0.0-0.6
Barium	87
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH18-1	
Sample:	SS3
Depth (mbgs):	1.5-2.1
Barium	138
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-10		
Sample:	Sa1	Sa2
Depth (mbgs):	0.2-2.7	2.7-3.7
Barium	82	61
Silver	<0.2	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS

TP16-20	
Sample:	Sa6
Depth (mbgs):	3.0-6.1
Barium	111
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH18-4	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Barium	92.3
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-09	
Sample:	Sa2
Depth (mbgs):	0.6-4.3
Barium	79
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-11	
Sample:	Sa2
Depth (mbgs):	0.3-2.0
Barium	88
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-13	
Sample:	Sa3
Depth (mbgs):	1.2-1.9
Barium	112
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-05	
Sample:	Sa1
Depth (mbgs):	1.8-2.4
Barium	18
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-20	
Sample:	Sa3
Depth (mbgs):	2.4-4.0
Barium	101
Silver	1.4
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

Parameter	Ontario Regulation 153/04 Table 8 SCS
Barium (µg/g)	220
Silver (µg/g)	0.5

TP16-07	
Sample:	Sa3
Depth (mbgs):	5.9-6.1
Barium	123
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

- Legend**
- Approximate Property Boundary
  - Estimated Extent of Metals and Hydride Impacts in Soil
  - Met Table 8 Standards
  - Exceeds Table 8 Standards
  - ◆ Borehole, Terrapex 2006
  - ◆ Borehole, AME 2002
  - ◆ Test Pit, WSP 2015
  - ◆ Test Pit, WSP 2016
  - ★ Test Pit, AME2002
  - ⊕ Monitoring Well, WSP 2015
  - ⊕ Test Pit, DS 2018
  - ⊕ Monitoring Well, DS 2018



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Client: **BRESSA DEVELOPMENTS LTD.**

Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON**

Title: **SOIL CHARACTERIZATION - METALS AND HYDRIDES**

Size: 11x17  
 Approved By: R.F  
 Drawn By: S.Y  
 Date: July 2019

Rev: 1  
 Scale: As Shown  
 Project No.: 18-549-100  
 Figure No.: **6Ai**

Image/Map Source: Google Satellite Image



TP16-08		
Sample:	Sa1	Sa2
Depth (mbgs):	0.3-0.9	0.9-3.0
Barium	133	81
Silver	<0.2	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS

TP16-06	
Sample:	Sa2
Depth (mbgs):	6.0-6.2
Barium	80
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-07	
Sample:	Sa3
Depth (mbgs):	5.9-6.1
Barium	123
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-05	
Sample:	Sa1
Depth (mbgs):	1.8-2.4
Barium	18
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-20	
Sample:	Sa6
Depth (mbgs):	3.0-6.1
Barium	111
Silver	<0.2
Metals (excl. Ba, Ag)	Met T3 SCS
Metals (Hydride Forming)	Met T3 SCS

BH18-4	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Barium	92.3
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-09	
Sample:	Sa2
Depth (mbgs):	0.6-4.3
Barium	79
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

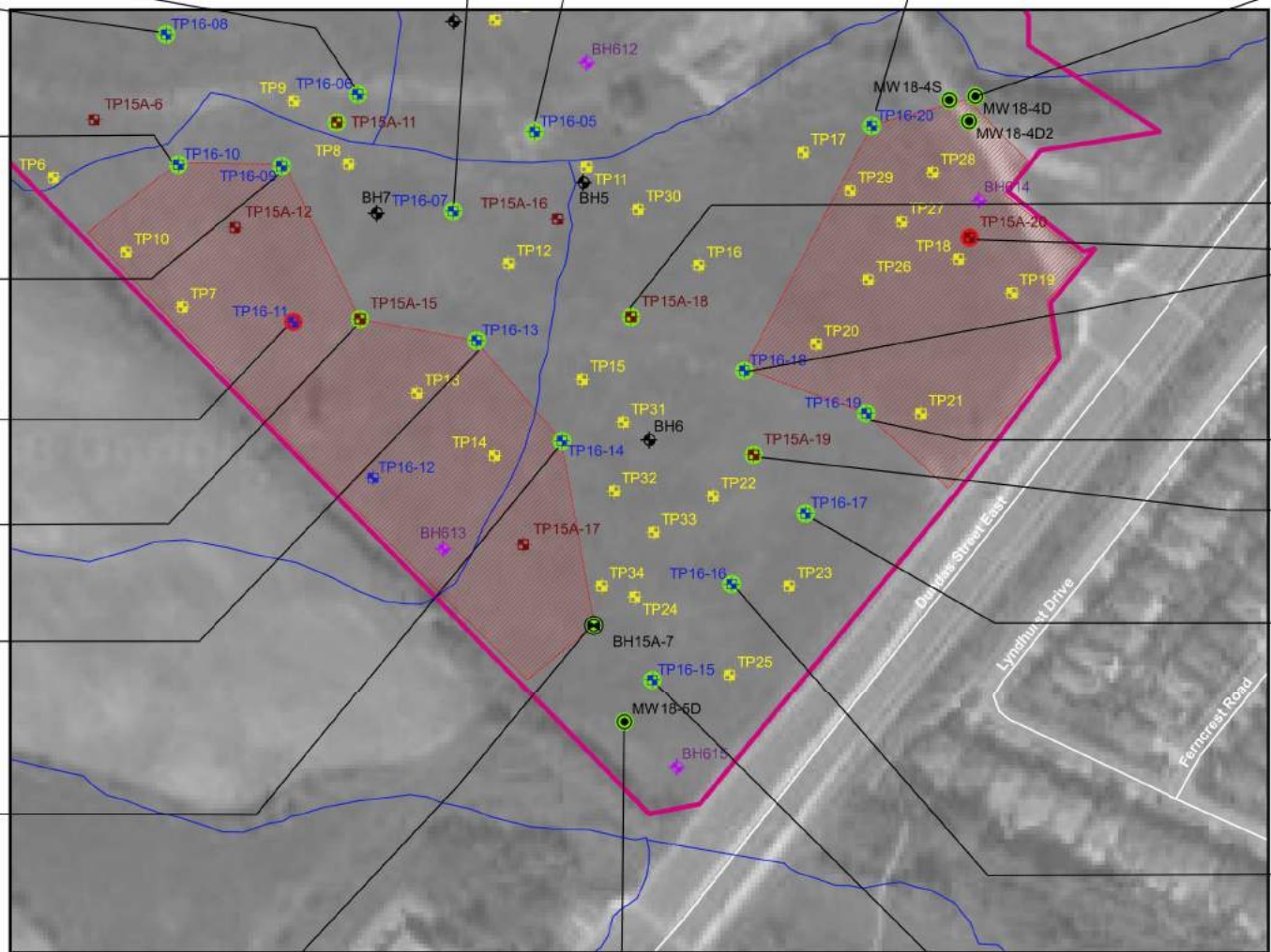
TP16-10		
Sample:	Sa1	Sa2
Depth (mbgs):	0.2-2.7	2.7-3.7
Barium	82	61
Silver	<0.2	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS

TP16-11	
Sample:	Sa1
Depth (mbgs):	2.4-3.4
Barium	225
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-15	
Sample:	Sa2
Depth (mbgs):	0.3-1.1
Barium	76
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-13	
Sample:	Sa1
Depth (mbgs):	2.1-2.4
Barium	96
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-14		
Sample:	Sa2	Sa3
Depth (mbgs):	0.3-1.2	1.2-3.7
Barium	82	89
Silver	<0.2	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS



TP15A-18	
Sample:	Sa2
Depth (mbgs):	0.3-3.1
Barium	44
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-20	
Sample:	Sa3
Depth (mbgs):	2.4-4.0
Barium	101
Silver	1.4
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-18		
Sample:	Sa4	Sa6
Depth (mbgs):	0.8-1.8	2.0-2.4
Barium	59	93
Silver	<0.2	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS

TP16-19	
Sample:	Sa5
Depth (mbgs):	1.8-2.7
Barium	110
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-19	
Sample:	Sa2
Depth (mbgs):	0.3-2.4
Barium	73
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-17		
Sample:	Sa2	Sa4
Depth (mbgs):	0.2-1.5	3.5-4.6
Barium	95	87
Silver	<0.2	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS	Met T8 SCS

TP16-16	
Sample:	Sa2
Depth (mbgs):	0.4-1.3
Barium	162
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

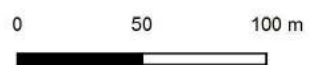
TP15A-7	
Sample:	Sa2
Depth (mbgs):	0.3-3.2
Barium	139
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH18-5	
Sample:	SS5
Depth (mbgs):	3.1-3.7
Barium	77.4
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-15	
Sample:	Sa2
Depth (mbgs):	0.6-1.5
Barium	84
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

Parameter	Ontario Regulation 153/04 Table 8 SCS
Barium (µg/g)	220
Silver (µg/g)	0.5

- Legend**
- Approximate Property Boundary
  - Estimated Extent of Metals and Hydride Impacts in Soil
  - Met Table 8 Standards
  - Exceeds Table 8 Standards
  - Borehole, Terrapex 2006
  - Borehole, AME 2002
  - Test Pit, WSP 2015
  - Test Pit, WSP 2016
  - Test Pit, AME2002
  - Monitoring Well, WSP 2015
  - Test Pit, DS 2018
  - Monitoring Well, DS 2018



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Client: **BRESSA DEVELOPMENTS LTD.**

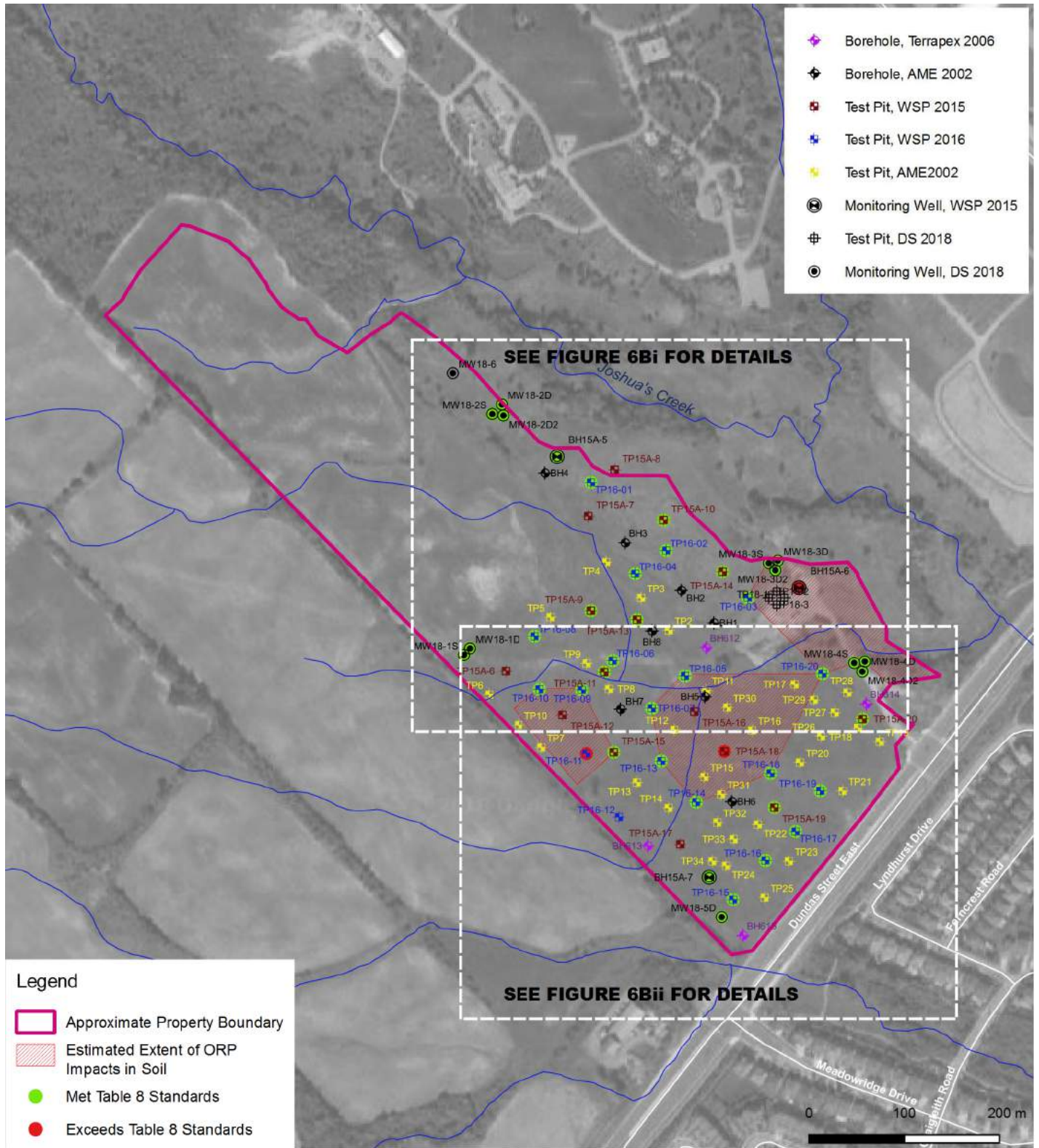
Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **SOIL CHARACTERIZATION - METALS AND HYDRIDES**

Size:	11x17	Approved By:	R.F	Drawn By:	S.Y	Date:	July 2019
Rev:	1	Scale:	As Shown	Project No.:	18-549-100	Figure No.:	6Aii

Image/Map Source: Google Satellite Image





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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **SOIL CHARACTERIZATION - ORPs**



Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11

Approved By: R.F

Drawn By: S.Y

Date: July 2019

Rev. 1

Scale: As Shown

Project No.: 18-549-100

Figure No.: **6B**

Image/Map Source: Google Satellite Image

BH18-2	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Boron (HWS)	0.19
Cyanide	<0.050
EC	0.149
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP16-01		
Sample:	Sa1	Sa2
Depth (mbgs):	0.2-1.8	1.8-2.1
Boron (HWS)	0.36	0.35
Cyanide	<0.040	<0.040
EC	0.231	0.251
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS

TP15A-10	
Sample:	Sa2
Depth (mbgs):	0.3-0.9
Boron (HWS)	0.22
Cyanide	<0.040
EC	0.144
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

BH15A-5	
Sample:	SS7
Depth (mbgs):	6.1-6.7
Boron (HWS)	0.33
Cyanide	<0.040
EC	0.134
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP16-04		
Sample:	Sa1	Sa3
Depth (mbgs):	0.2-1.5	2.0-3.0
Boron (HWS)	0.53	1.07
Cyanide	<0.040	<0.040
EC	0.324	0.352
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS

TP16-02	
Sample:	Sa1
Depth (mbgs):	1.5-2.0
Boron (HWS)	0.66
Cyanide	<0.040
EC	0.209
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP15A-9	
Sample:	Sa2
Depth (mbgs):	0.3-1.1
Boron (HWS)	0.45
Cyanide	<0.040
EC	0.382
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

BH18-3	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Boron (HWS)	<0.10
Cyanide	<0.050
EC	0.182
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP15A-14	
Sample:	Sa3
Depth (mbgs):	1.2-3.0
Boron (HWS)	0.78
Cyanide	<0.040
EC	0.157
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP16-06	
Sample:	Sa2
Depth (mbgs):	6.0-6.2
Boron (HWS)	0.68
Cyanide	<0.040
EC	0.306
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP16-08		
Sample:	Sa1	Sa2
Depth (mbgs):	0.3-0.9	0.9-3.0
Boron (HWS)	0.23	0.5
Cyanide	<0.040	<0.040
EC	0.198	0.448
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS

TP16-03	
Sample:	Sa2
Depth (mbgs):	1.6-2.1
Boron (HWS)	0.3
Cyanide	<0.040
EC	0.165
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

BH15A-6	
Sample:	SS1
Depth (mbgs):	0.0-0.6
Boron (HWS)	0.87
Cyanide	<0.040
EC	0.261
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

BH18-1	
Sample:	SS3
Depth (mbgs):	1.5-2.1
Boron (HWS)	0.21
Cyanide	<0.050
EC	0.277
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP16-10		
Sample:	Sa1	Sa2
Depth (mbgs):	0.2-2.7	2.7-3.7
Boron (HWS)	0.5	0.23
Cyanide	<0.040	<0.040
EC	0.346	0.205
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS

TP16-20	
Sample:	Sa6
Depth (mbgs):	3.0-6.1
Boron (HWS)	0.69
Cyanide	<0.040
EC	0.181
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

BH18-4	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Boron (HWS)	0.13
Cyanide	<0.050
EC	0.268
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP16-09	
Sample:	Sa2
Depth (mbgs):	0.6-4.3
Boron (HWS)	1.19
Cyanide	<0.040
EC	0.406
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

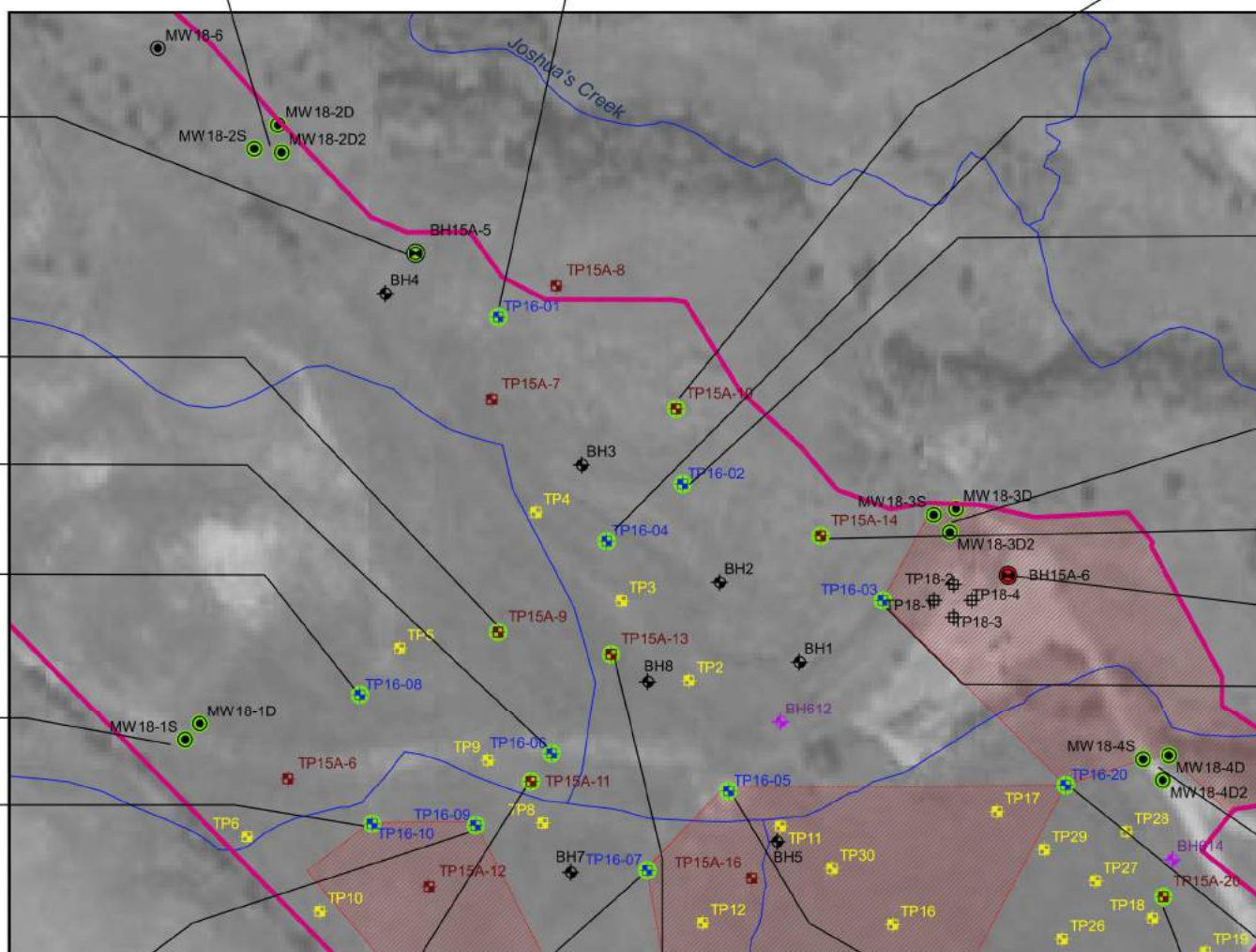
TP15A-11	
Sample:	Sa2
Depth (mbgs):	0.3-2.0
Boron (HWS)	0.52
Cyanide	<0.040
EC	0.238
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP15A-13	
Sample:	Sa3
Depth (mbgs):	1.2-1.9
Boron (HWS)	0.35
Cyanide	<0.040
EC	0.191
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

TP16-05	
Sample:	Sa1
Depth (mbgs):	1.8-2.4
Boron (HWS)	0.18
Cyanide	<0.040
EC	0.173
ORPs (Cr VI, Hg, SAR)	Met T8 SCS

Parameter	Ontario Regulation 153/04 Table 8 SCS
Boron (HWS) (µg/g)	1.5
Cyanide (µg/g)	0.051
EC (mS/cm)	0.7

TP16-07	
Sample:	Sa3
Depth (mbgs):	5.9-6.1
Boron (HWS)	0.44
Cyanide	<0.040
EC	0.217
ORPs (Cr VI, Hg, SAR)	Met T8 SCS



- Legend**
- Approximate Property Boundary
  - Estimated Extent of ORP Impacts in Soil
  - Met Table 8 Standards
  - Exceeds Table 8 Standards
  - Borehole, Terrapex 2006
  - Borehole, AME 2002
  - Test Pit, WSP 2015
  - Test Pit, WSP 2016
  - Test Pit, AME2002
  - Monitoring Well, WSP 2015
  - Test Pit, DS 2018
  - Monitoring Well, DS 2018

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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **SOIL CHARACTERIZATION - ORPs**

Client: **BRESSA DEVELOPMENTS LTD.**

Size: 11x17	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev: 1	Scale: As Shown	Project No.: 18-549-100	Figure No.: <b>6Bi</b>

Image/Map Source: Google Satellite Image

TP16-08		
Sample:	Sa1	Sa2
Depth (mbgs):	0.3-0.9	0.9-3.0
Boron (HWS)	0.23	0.5
Cyanide	<0.040	<0.040
EC	0.198	0.448
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS

TP16-06		
Sample:	Sa2	
Depth (mbgs):	6.0-6.2	
Boron (HWS)	0.68	
Cyanide	<0.040	
EC	0.306	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-07		
Sample:	Sa3	
Depth (mbgs):	5.9-6.1	
Boron (HWS)	0.44	
Cyanide	<0.040	
EC	0.217	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-05		
Sample:	Sa1	
Depth (mbgs):	1.8-2.4	
Boron (HWS)	0.18	
Cyanide	<0.040	
EC	0.173	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-20		
Sample:	Sa6	
Depth (mbgs):	3.0-6.1	
Boron (HWS)	0.69	
Cyanide	<0.040	
EC	0.181	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

BH18-4		
Sample:	SS2	
Depth (mbgs):	0.8-1.4	
Boron (HWS)	0.13	
Cyanide	<0.050	
EC	0.268	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP15A-11		
Sample:	Sa2	
Depth (mbgs):	0.3-2.0	
Boron (HWS)	0.52	
Cyanide	<0.040	
EC	0.238	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-10			
Sample:	Sa1	Sa2	
Depth (mbgs):	0.2-2.7	2.7-3.7	
Boron (HWS)	0.5	0.23	
Cyanide	<0.040	<0.040	
EC	0.346	0.205	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS	

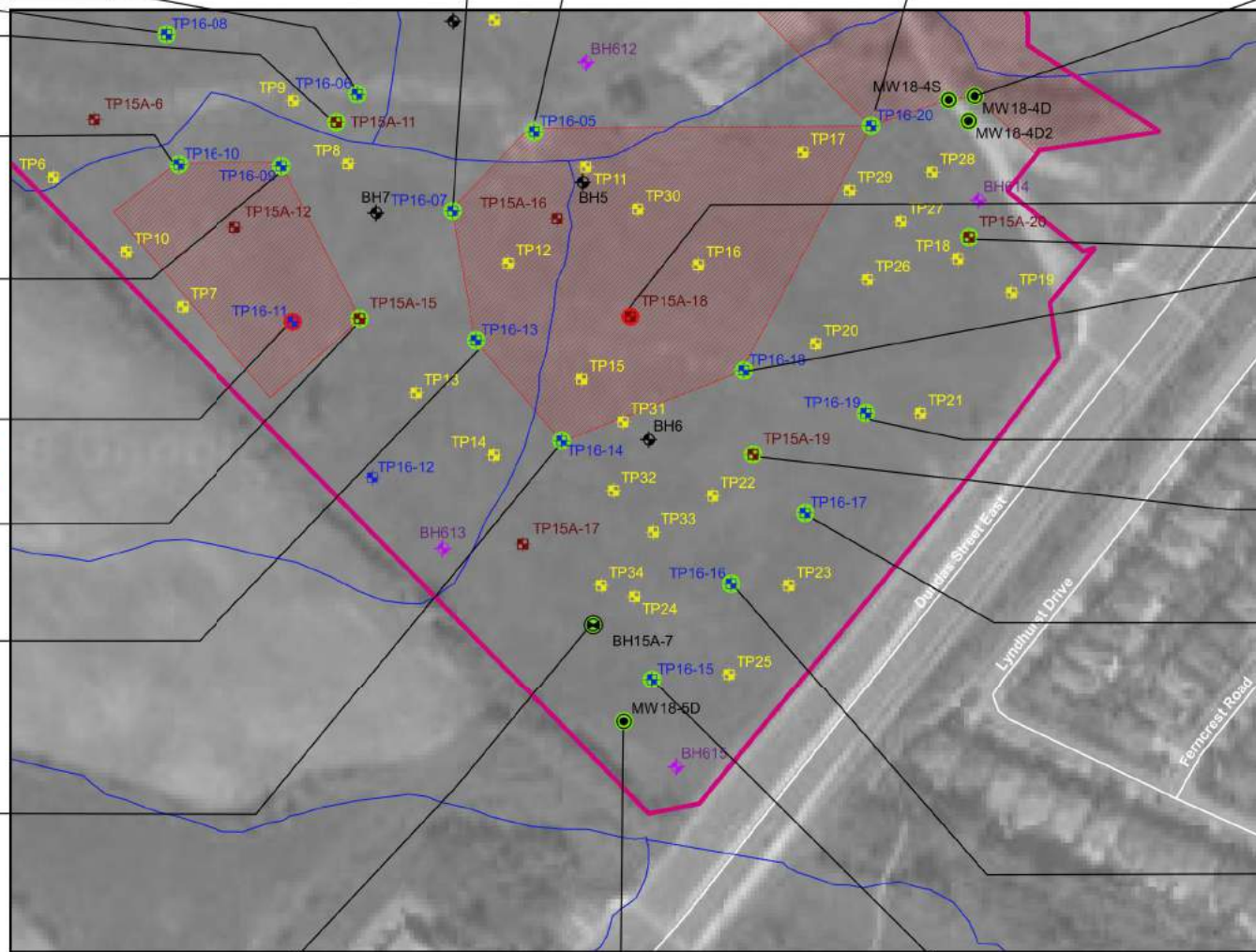
TP16-09		
Sample:	Sa2	
Depth (mbgs):	0.6-4.3	
Boron (HWS)	1.19	
Cyanide	<0.040	
EC	0.406	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-11		
Sample:	Sa1	
Depth (mbgs):	2.3-3.4	
Boron (HWS)	0.23	
Cyanide	<0.040	
EC	0.723	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP15A-15		
Sample:	Sa2	
Depth (mbgs):	0.3-1.1	
Boron (HWS)	0.52	
Cyanide	<0.040	
EC	0.343	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-13		
Sample:	Sa1	
Depth (mbgs):	2.1-2.4	
Boron (HWS)	0.35	
Cyanide	<0.040	
EC	0.321	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-14			
Sample:	Sa2	Sa3	
Depth (mbgs):	0.3-1.2	1.2-3.7	
Boron (HWS)	0.23	1.29	
Cyanide	<0.040	<0.040	
EC	0.169	0.291	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS	



TP15A-18		
Sample:	Sa2	
Depth (mbgs):	0.3-3.1	
Boron (HWS)	1.79	
Cyanide	<0.040	
EC	0.244	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP15A-20		
Sample:	Sa3	
Depth (mbgs):	2.4-4.0	
Boron (HWS)	0.38	
Cyanide	<0.040	
EC	0.219	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-18			
Sample:	Sa4	Sa6	
Depth (mbgs):	0.8-1.8	2.0-2.4	
Boron (HWS)	0.34	0.51	
Cyanide	<0.040	<0.040	
EC	0.201	0.223	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS	

TP16-19		
Sample:	Sa5	
Depth (mbgs):	1.8-2.7	
Boron (HWS)	0.38	
Cyanide	<0.040	
EC	0.142	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP15A-19		
Sample:	Sa2	
Depth (mbgs):	0.3-2.4	
Boron (HWS)	0.2	
Cyanide	<0.040	
EC	0.141	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-17			
Sample:	Sa2	Sa4	
Depth (mbgs):	0.2-1.5	3.5-4.6	
Boron (HWS)	0.2	0.22	
Cyanide	<0.040	<0.040	
EC	0.185	0.146	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	Met T8 SCS	

TP16-16		
Sample:	Sa2	
Depth (mbgs):	0.4-1.3	
Boron (HWS)	0.32	
Cyanide	<0.040	
EC	0.221	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP15A-7		
Sample:	Sa2	
Depth (mbgs):	0.3-3.2	
Boron (HWS)	0.78	
Cyanide	0.048	
EC	0.143	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

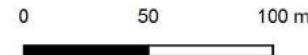
BH18-5		
Sample:	SS5	
Depth (mbgs):	3.1-3.7	
Boron (HWS)	N/A	
EC	1.82*	
Cyanide	<0.050	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

TP16-15		
Sample:	Sa2	
Depth (mbgs):	0.6-1.5	
Boron (HWS)	1.06	
Cyanide	<0.040	
EC	0.238	
ORPs (Cr VI, Hg, SAR)	Met T8 SCS	

Parameter	Ontario Regulation 153/04 Table 8 SCS
Boron (HWS) (µg/g)	1.5
Cyanide (µg/g)	0.051
EC (mS/cm)	0.7

Legend

- Approximate Property Boundary
- Estimated Extent of ORP Impacts in Soil
- Met Table 8 Standards
- Exceeds Table 8 Standards
- Borehole, Terrapex 2006
- Borehole, AME 2002
- Test Pit, WSP 2015
- Test Pit, WSP 2016
- Test Pit, AME2002
- Monitoring Well, WSP 2015
- Test Pit, DS 2018
- Monitoring Well, DS 2018



\* Not considered to be contamination. Refer to Section 5.6.6 of Phase Two ESA Report



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
Bressa Development Lands, 1429 Dundas Street, Oakville, ON

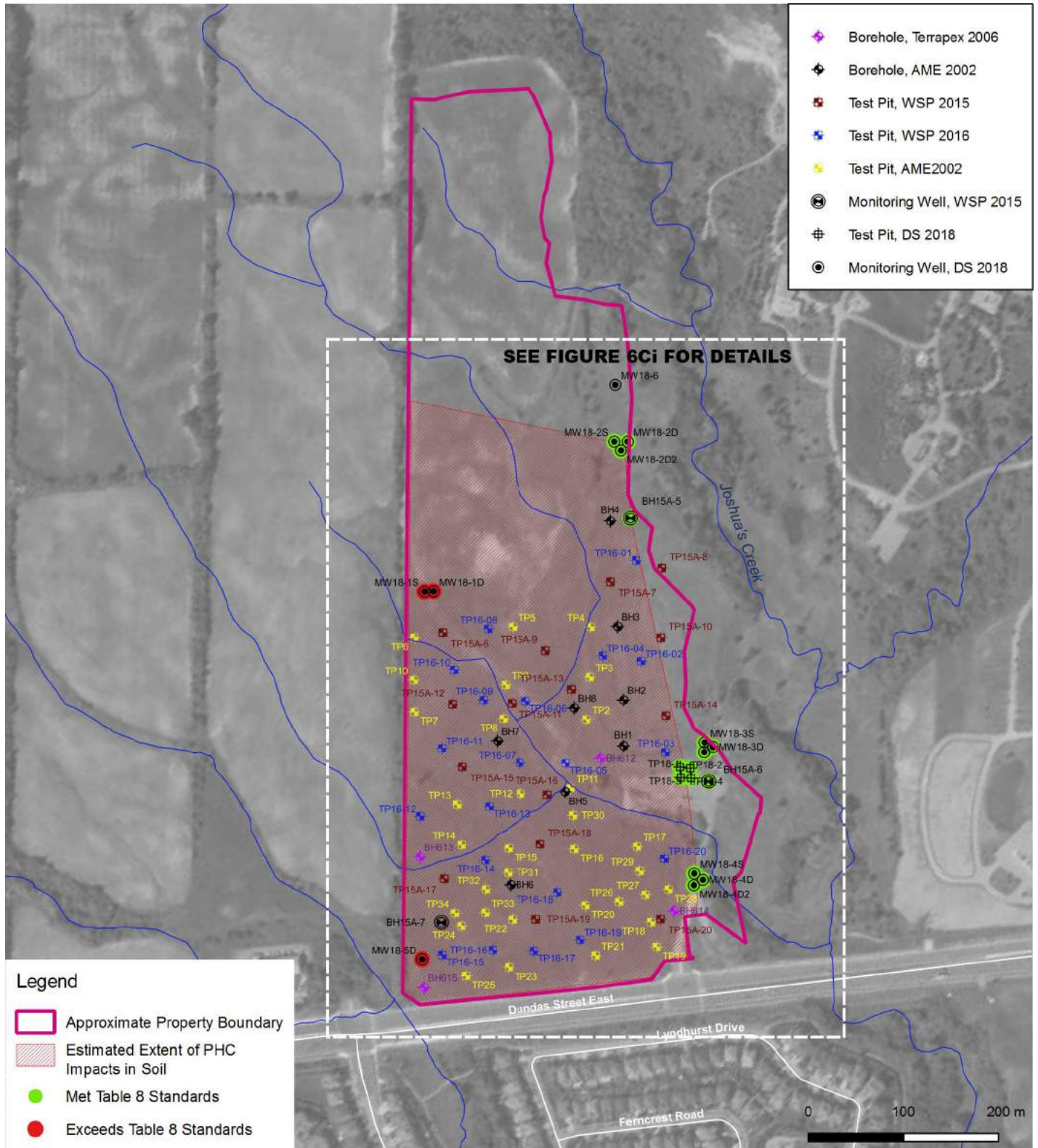
Title: **SOIL CHARACTERIZATION - ORPs**

Client: BRESSA DEVELOPMENTS LTD.  
Size: 11x17  
Approved By: R.F  
Drawn By: S.Y  
Date: July 2019

Rev: 1  
Scale: As Shown  
Project No.: 18-549-100  
Figure No.: **6Bii**

Image/Map Source: Google Satellite Image





**Legend**

- Approximate Property Boundary
- Estimated Extent of PHC Impacts in Soil
- Met Table 8 Standards
- Exceeds Table 8 Standards



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**Project:** PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

**Title:** SOIL CHARACTERIZATION - PHCs



**Client:**  
 BRESSA DEVELOPMENTS LTD.

**Size:** 8.5 x 11      **Approved By:** R.F      **Drawn By:** S.Y      **Date:** July 2019

**Rev. 1**      **Scale:** As Shown      **Project No.:** 18-549-100      **Figure No.:** 6C

Image/Map Source: Google Satellite Image

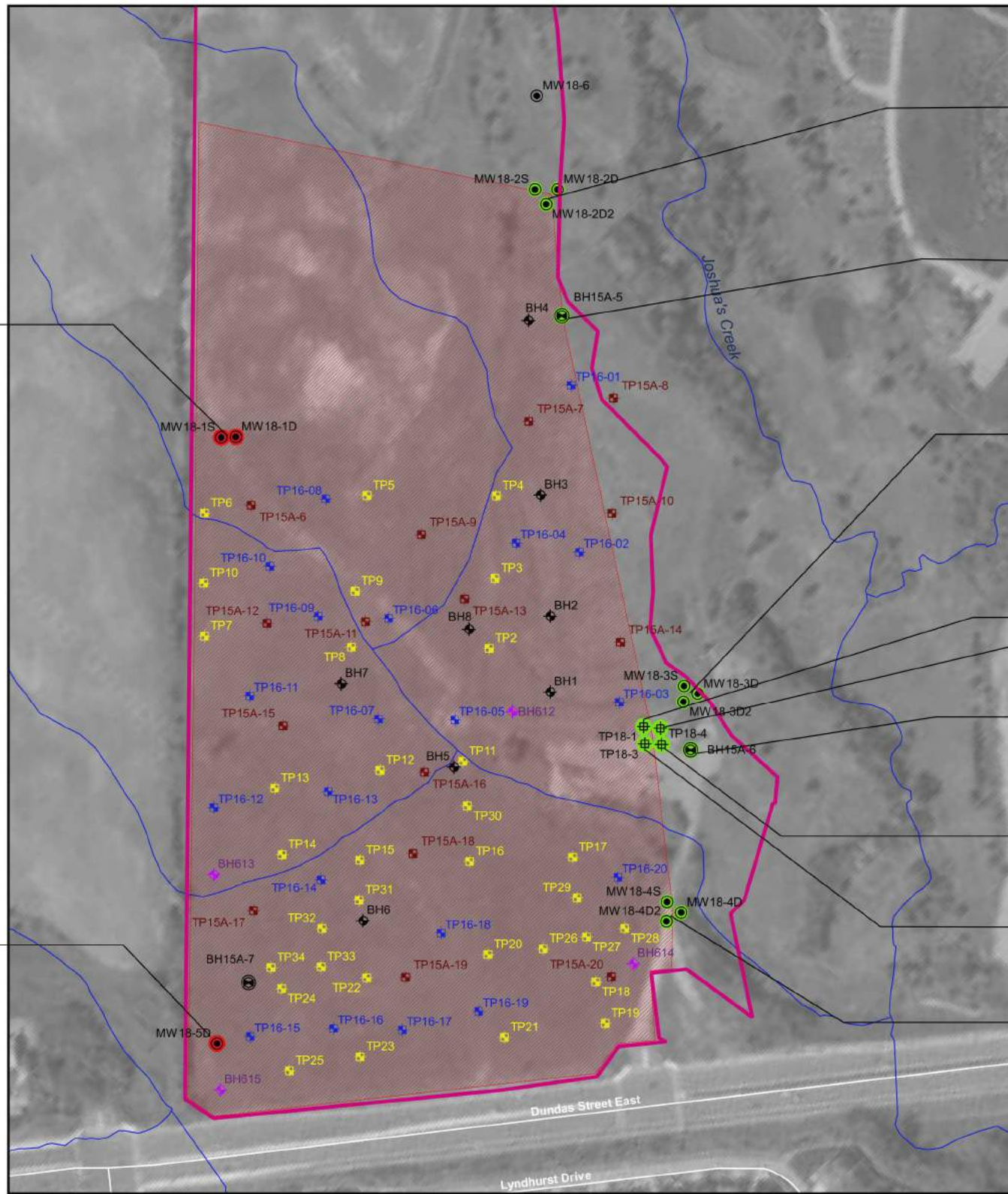
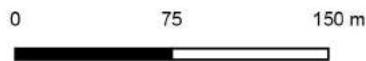
BH18-1	
Sample:	SS5
Depth (mbgs):	3.1-3.7
F2 (C10-C16)	<b>11.00</b>
PHCs (excl. F2)	Met T8 SCS

BH18-5	
Sample:	SS7
Depth (mbgs):	6.1-6.7
F2 (C10-C16)	<b>18.00</b>
PHCs (excl. F2)	Met T8 SCS

Parameter	Ontario Regulation 153/04 Table 8 SCS
F2 (C10-C16) (µg/g)	10

**Legend**

- Approximate Property Boundary
- Estimated Extent of PHC Impacts in Soil
- Met Table 8 Standards
- Exceeds Table 8 Standards
- ◆ Borehole, Terrapex 2006
- ◆ Borehole, AME 2002
- ◆ Test Pit, WSP 2015
- ◆ Test Pit, WSP 2016
- ★ Test Pit, AME2002
- Monitoring Well, WSP 2015
- Test Pit, DS 2018
- Monitoring Well, DS 2018



BH18-2	
Sample:	SS2
Depth (mbgs):	0.8-1.4
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS

BH15A-5		
Sample:	SS3	SS6
Depth (mbgs):	1.5-2.1	4.6-5.2
F2 (C10-C16)	<10	<10
PHCs (excl. F2)	Met T8 SCS	Met T8 SCS

BH18-3	
Sample:	SS10
Depth (mbgs):	9.1-9.8
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS

TP18-1	
Sample:	S1
Depth (mbgs):	0.0-1.5
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS

TP18-2	
Sample:	S1
Depth (mbgs):	0.0-1.5
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS

BH15A-6		
Sample:	SS3	SS10
Depth (mbgs):	1.5-2.1	9.1-9.7
F2 (C10-C16)	<10	<10
PHCs (excl. F2)	Met T8 SCS	Met T8 SCS

TP18-4	
Sample:	S1
Depth (mbgs):	0.0-1.5
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS

TP18-3	
Sample:	S1
Depth (mbgs):	0.0-1.5
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS

BH18-4	
Sample:	SS9
Depth (mbgs):	9.1-9.8
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS



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Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
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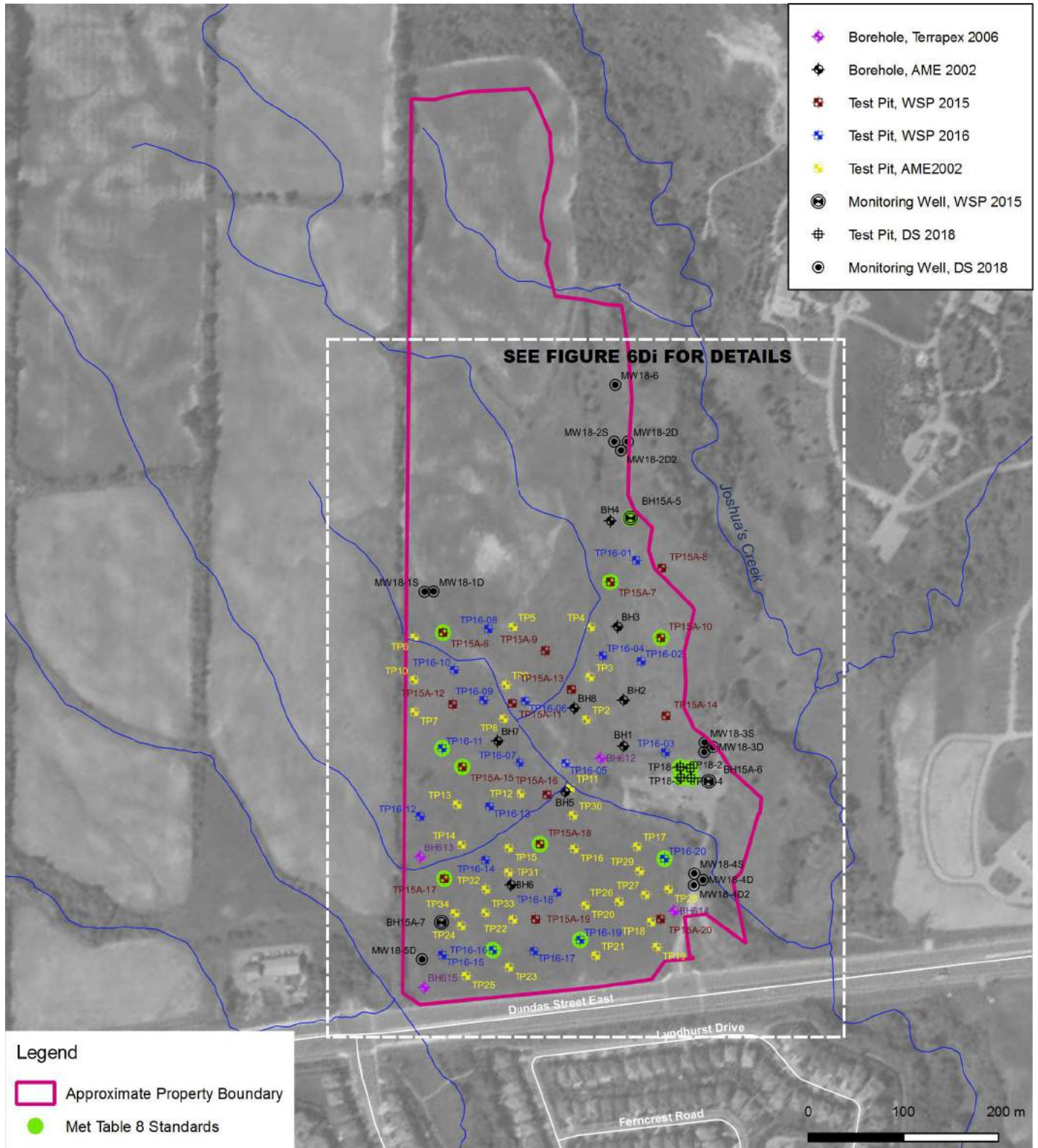
Title: **SOIL CHARACTERIZATION - PHCs**



Size: 11x17  
Approved By: R.F  
Drawn By: S.Y  
Date: July 2019

Rev: 1  
Scale: As Shown  
Project No.: 18-549-100  
Figure No.: **6Ci**

Image/Map Source: Google Satellite Image



**Legend**

- Approximate Property Boundary
- Met Table 8 Standards



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**Project:** PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

**Title:** SOIL CHARACTERIZATION - PAHs



**Client:** BRESSA DEVELOPMENTS LTD.

**Size:** 8.5 x 11

**Approved By:** R.F

**Drawn By:** S.Y

**Date:** July 2019

**Rev.**  
1

**Scale:** As Shown

**Project No.:** 18-549-100

**Figure No.:** 6D

*Image/Map Source: Google Satellite Image*

TP15A-7	
Sample:	Sa3
Depth (mbgs):	3.2-4.3
PAHs	Met T8 SCS

TP15A-6	
Sample:	Sa2
Depth (mbgs):	0.3-1.7
PAHs	Met T8 SCS

TP16-11	
Sample:	Sa0
Depth (mbgs):	1.2-2.4
PAHs	Met T8 SCS

TP15A-15	
Sample:	Sa3
Depth (mbgs):	1.1-3.2
PAHs	Met T8 SCS

TP15A-18	
Sample:	Sa3
Depth (mbgs):	3.1-4.0
PAHs	Met T8 SCS

TP15A-17	
Sample:	Sa3
Depth (mbgs):	1.5-4.3
PAHs	Met T8 SCS

TP16-16	
Sample:	Sa2
Depth (mbgs):	0.4-1.3
PAHs	Met T8 SCS

BH15A-5	
Sample:	SS4
Depth (mbgs):	2.3-2.9
PAHs	Met T8 SCS

TP15A-10	
Sample:	SA3
Depth (mbgs):	0.9-3.7
PAHs	Met T8 SCS

TP18-1	
Sample:	S1
Depth (mbgs):	0.0-1.5
PAHs	Met T8 SCS

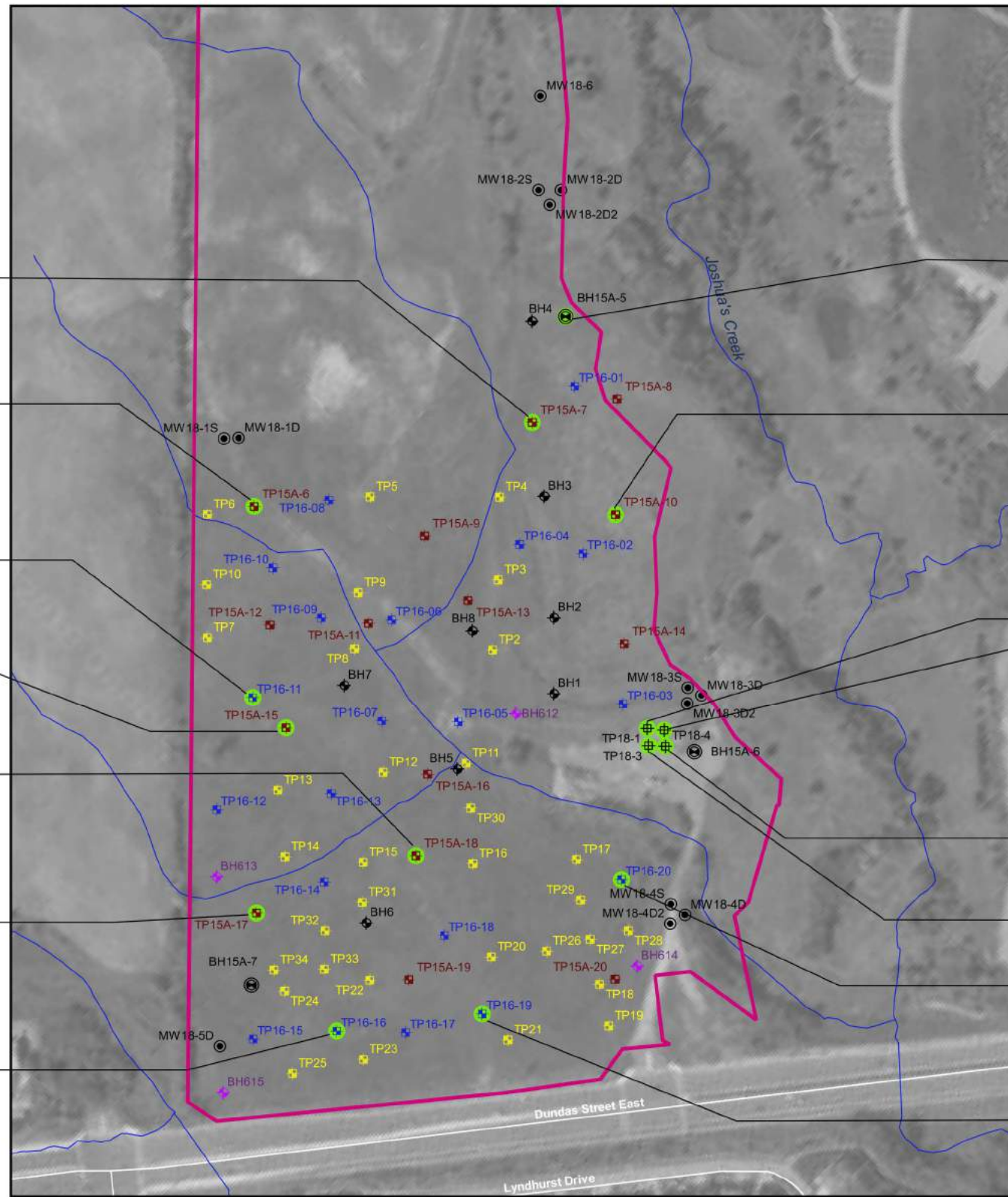
TP18-2	
Sample:	S1
Depth (mbgs):	0.0-1.5
PAHs	Met T8 SCS

TP18-4	
Sample:	S1
Depth (mbgs):	0.0-1.5
PAHs	Met T8 SCS

TP18-3	
Sample:	S1
Depth (mbgs):	0.0-1.5
PAHs	Met T8 SCS

TP16-20	
Sample:	Sa2
Depth (mbgs):	0.6-2.1
PAHs	Met T8 SCS

TP16-19	
Sample:	Sa2
Depth (mbgs):	0.3-0.6
PAHs	Met T8 SCS



- Legend**
- Approximate Property Boundary
  - Met Table 8 Standards
  - ◆ Borehole, Terrapex 2006
  - ◆ Borehole, AME 2002
  - ◆ Test Pit, WSP 2015
  - ◆ Test Pit, WSP 2016
  - ◆ Test Pit, AME2002
  - Monitoring Well, WSP 2015
  - Test Pit, DS 2018
  - Monitoring Well, DS 2018



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Client: **BRESSA DEVELOPMENTS LTD.**

Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
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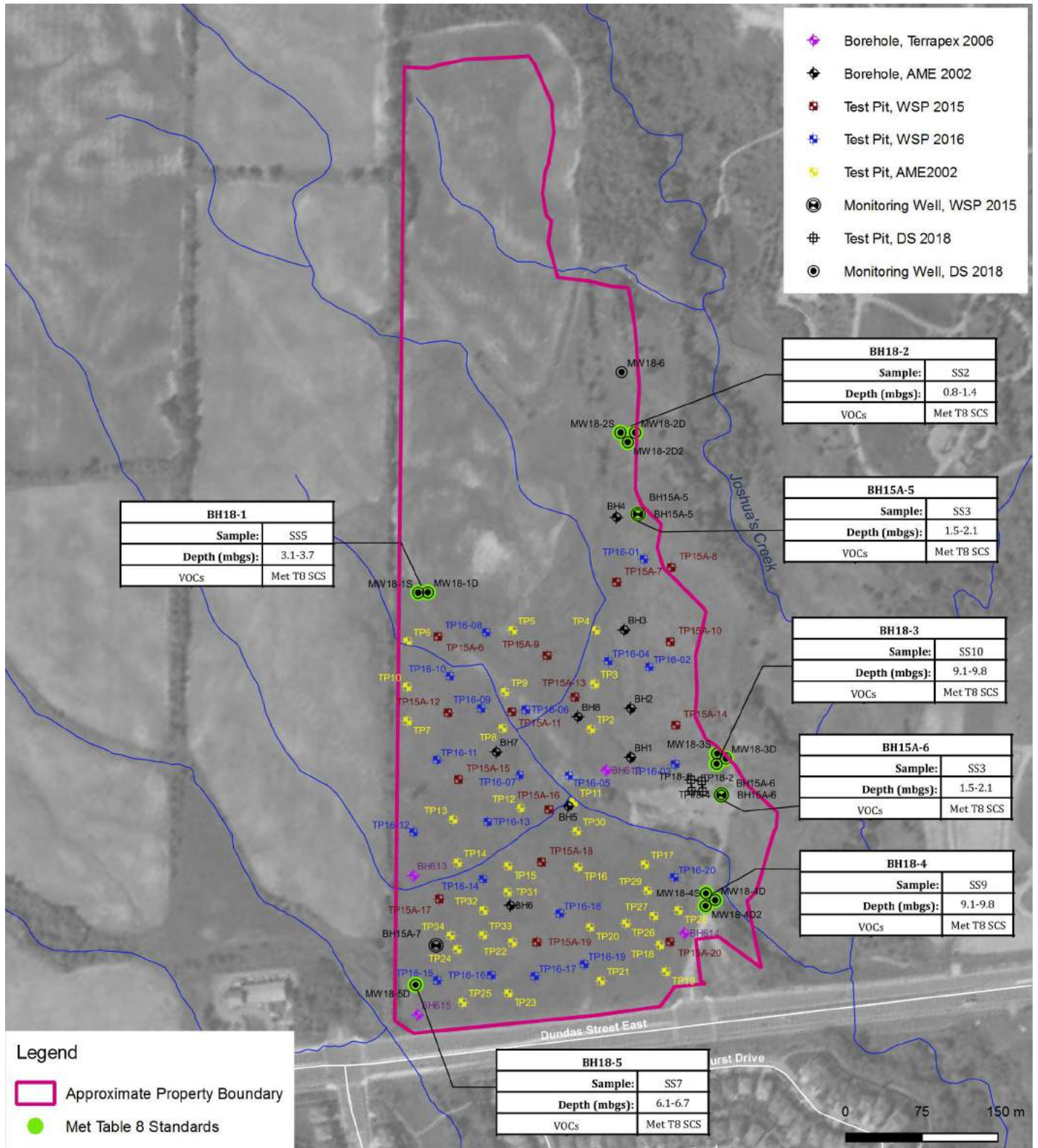
Title: **SOIL CHARACTERIZATION - PAHs**

Size: 11x17 Approved By: R.F Drawn By: S.Y Date: July 2019

Rev: 1 Scale: As Shown Project No.: 18-549-100 Figure No.: **6Di**

Image/Map Source: Google Satellite Image





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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **SOIL CHARACTERIZATION - VOCs**

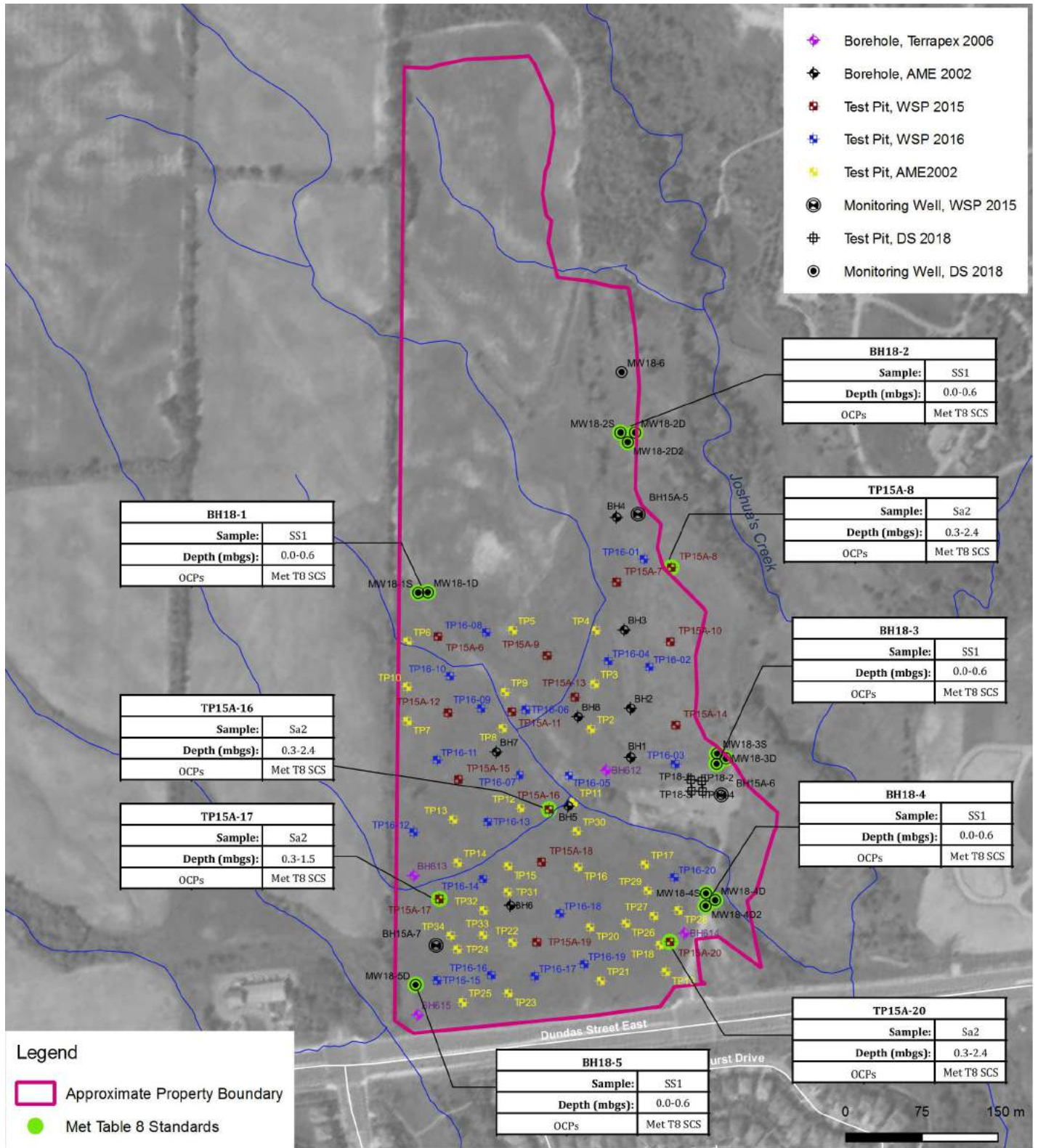


Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11      Approved By: R.F      Drawn By: S.Y      Date: July 2019

Rev. 1      Scale: As Shown      Project No.: 18-549-100      Figure No.: **6E**

Image/Map Source: Google Satellite Image



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **SOIL CHARACTERIZATION - OCPs**



Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11

Approved By: R.F

Drawn By: S.Y

Date: July 2019

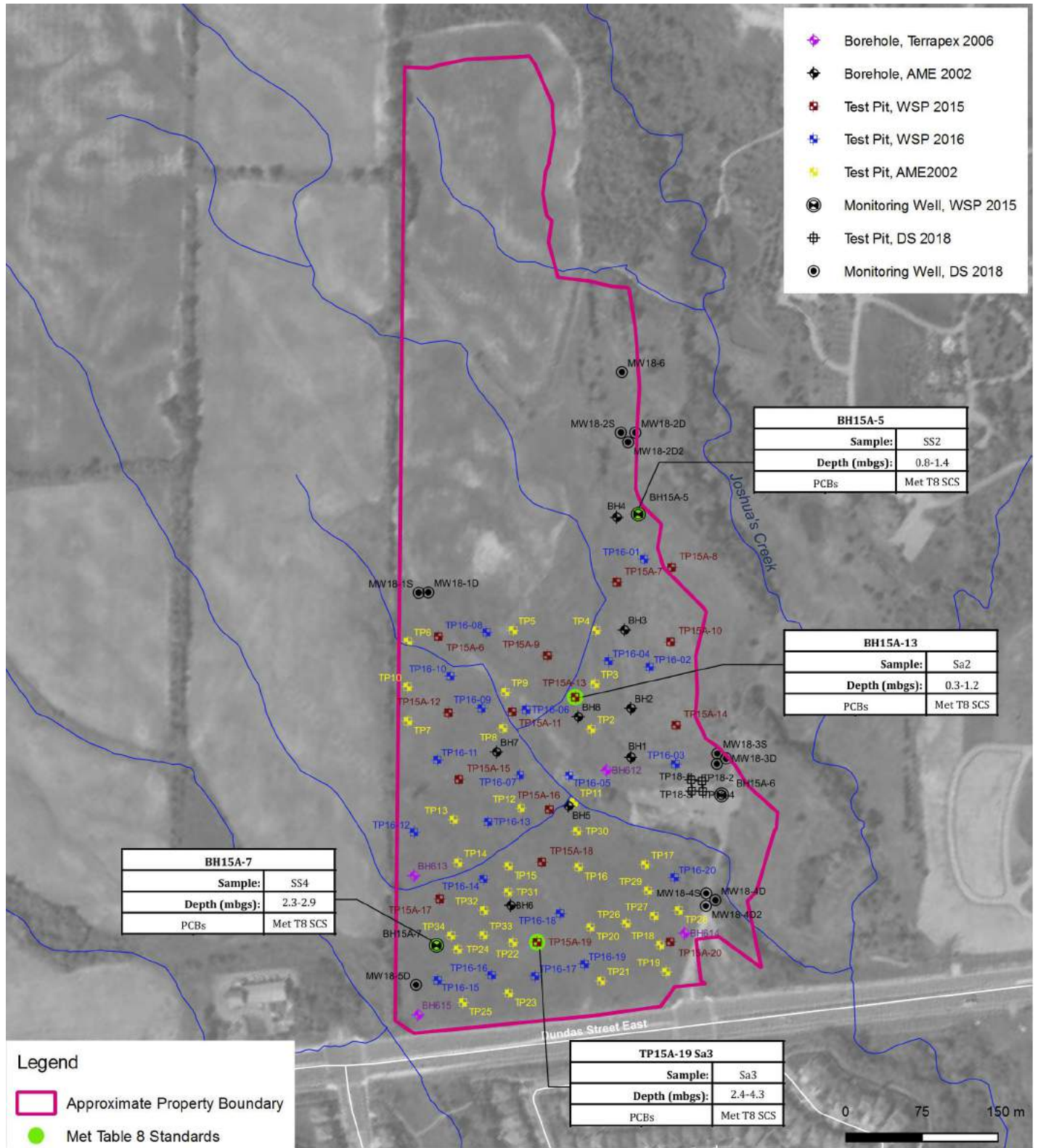
Rev. 1

Scale: As Shown

Project No.: 18-549-100

Figure No.: **6F**

Image/Map Source: Google Satellite Image



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **SOIL CHARACTERIZATION - PCBs**



Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11

Approved By: R.F

Drawn By: S.Y

Date: July 2019

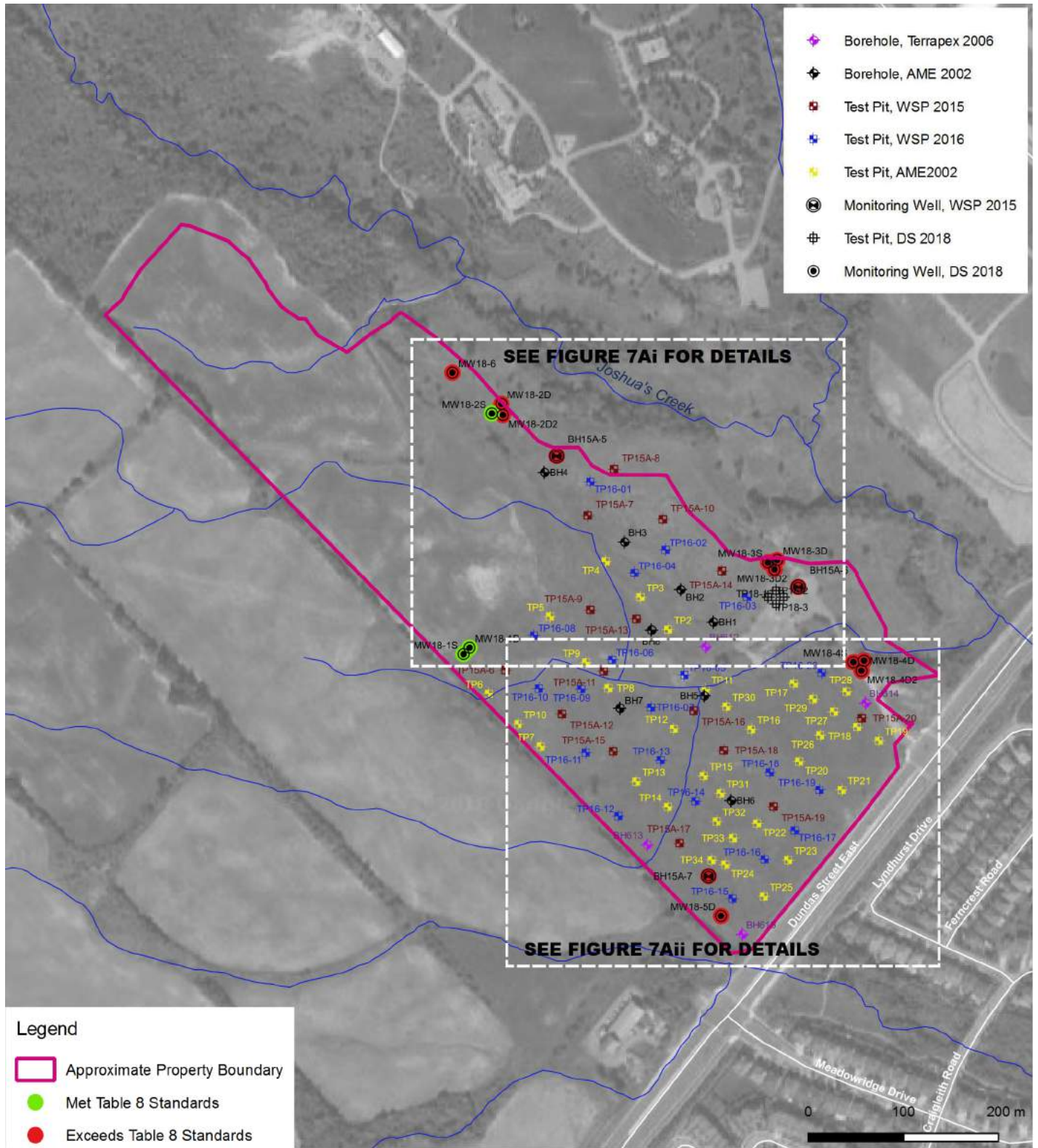
Rev. 1

Scale: As Shown

Project No.: 18-549-100

Figure No.: **6G**

Image/Map Source: Google Satellite Image



**Legend**

- Approximate Property Boundary
- Met Table 8 Standards
- Exceeds Table 8 Standards



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**Project:** PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

**Title:** GROUNDWATER CHARACTERIZATION - METALS & ORPs



**Client:**  
 BRESSA DEVELOPMENTS LTD.

**Size:**  
 8.5 x 11

**Approved By:** R.F

**Drawn By:** S.Y

**Date:** July 2019

**Rev.**  
 1

**Scale:** As Shown

**Project No.:** 18-549-100

**Figure No.:** 7A

**Image/Map Source:** Google Satellite Image

BH18-6	
Unit Screened:	Bedrock
Well Screen Interval (mbs):	13.7-15.2
Date:	19-Sep-18
Parameter	Result
Boron	3690
Chloride	3920*
Cobalt	3.3
Sodium	1770000*
Uranium	9.33

MW18-2D					
Unit Screened:	Bedrock				
Well Screen Interval (mbs):	13.8-15.3				
Date:	28-Jun-18	26-Jul-18	29-Aug-18	19-Sep-18	21-Feb-19
Parameter	Result				
Boron	2730	2810	-	2760	2800
Chloride	1290*	1050*	1090*	-	-
Cobalt	<1.0	<1.0	-	<1.0	<0.50
Sodium	645000*	630000*	-	566000*	660000*
Uranium	0.46	0.48	-	0.85	6.4

BH15A-5			
Unit Screened:	Weathered Shale/Till Complex		
Well Screen Interval (mbs):	12.4-15.2		
Date:	29-Mar-18	28-Jun-18	21-Feb-19
Parameter	Result		
Boron	2580	600	3200
Chloride	1390*	313	-
Cobalt	<1.0	<1.0	<2.5
Sodium	878000*	246000	950000*
Uranium	0.85	12.9	<25

MW18-2S		
Unit Screened:	Overburden	
Well Screen Interval (mbs):	10.7-13.8	
Date:	28-Jun-18	21-Feb-19
Parameter	Result	
Boron	1870	1200
Chloride	670	-
Cobalt	<1.0	1.1
Sodium	422000	280000
Uranium	2.56	6.1

MW18-2D2	
Unit Screened:	Bedrock
Well Screen Interval (mbs):	21.3-22.8
Date:	19-Sep-18
Parameter	Result
Boron	1630
Chloride	2780*
Cobalt	1.7
Sodium	941000*
Uranium	8.10

MW18-1D	
Unit Screened:	Bedrock
Well Screen Interval (mbs):	14.1-15.6
Date:	05-Jul-18
Parameter	Result
Boron	220
Chloride	138
Cobalt	1.9
Sodium	99600
Uranium	10.5

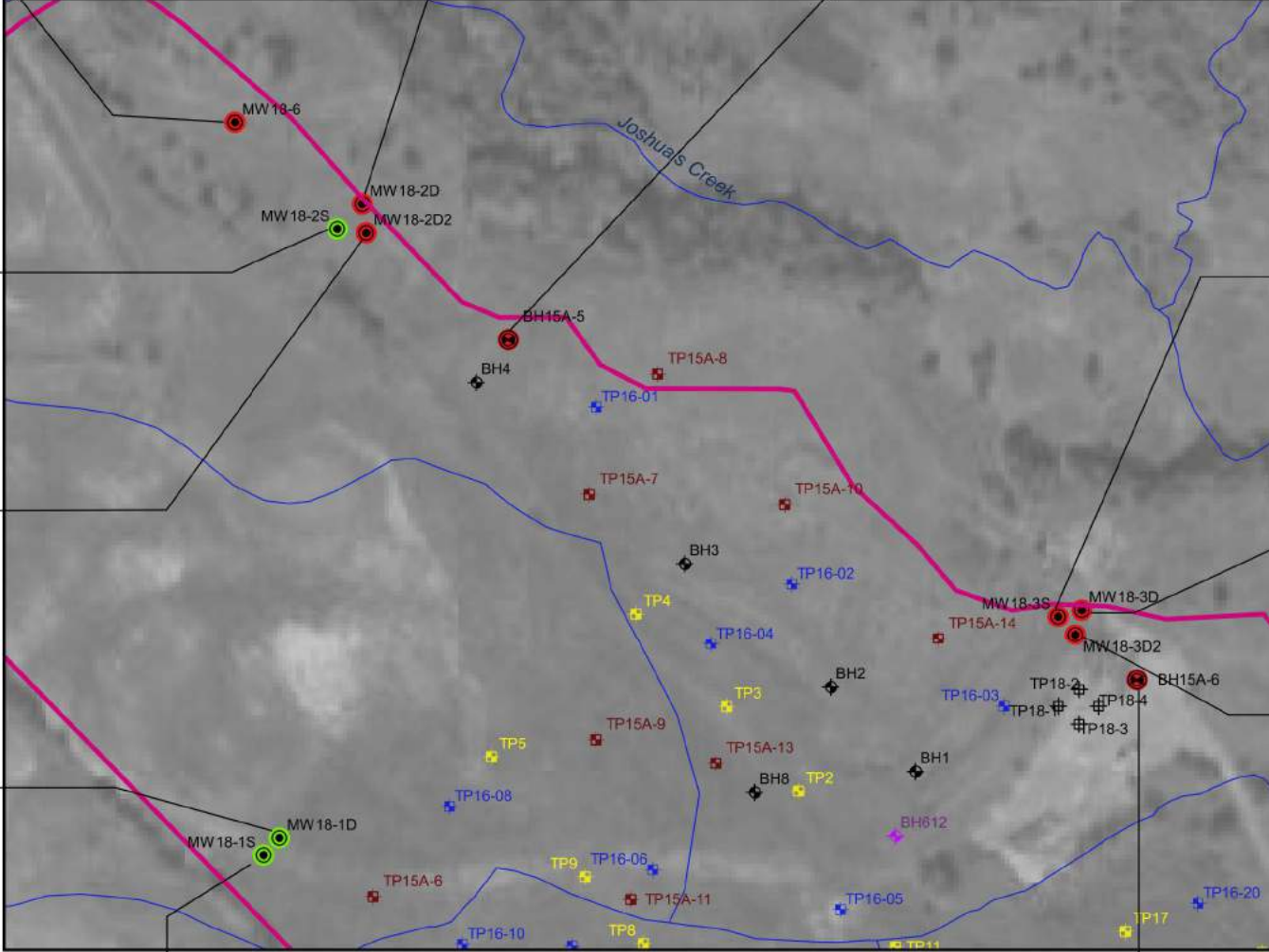
MW18-1S	
Unit Screened:	Overburden
Well Screen Interval (mbs):	4.50-7.60
Date:	05-Jul-18
Parameter	Result
Boron	220
Chloride	215
Cobalt	1.8
Sodium	101000
Uranium	10.7

BH15A-6	
Unit Screened:	Weathered Shale/Till Complex
Well Screen Interval (mbs):	7.6-10.7
Date:	29-Mar-18
Parameter	Result
Boron	1560
Chloride	1160*
Cobalt	2.7
Sodium	597000*
Uranium	10.7

MW18-3S				
Unit Screened:	Weathered Shale/Till Complex			
Well Screen Interval (mbs):	10.7-13.8			
Date:	28-Jun-18	05-Jul-18	26-Jul-18	21-Feb-19
Parameter	Result			
Boron	1690	450	2090	1900
Chloride	848*	36.1	922*	-
Cobalt	<1.0	1.8	1.0	2.8
Sodium	594000*	221000	642000*	600000*
Uranium	14.3	59.7*	10.8	<25

MW18-3D					
Unit Screened:	Bedrock				
Well Screen Interval (mbs):	14.3-15.8				
Date:	28-Jun-18	26-Jul-18	29-Aug-18	19-Sep-18	21-Feb-19
Parameter	Result				
Boron	2410	4500	-	1300	4200
Chloride	4120*	8670*	9150*	-	-
Cobalt	<1.0	<10	-	<1.0	<2.5
Sodium	1690000*	3430000*	-	982000*	3500000*
Uranium	4.35	1.2	-	15.9	<25

MW18-3D2		
Unit Screened:	Bedrock	
Well Screen Interval (mbs):	21.3-22.8	
Date:	29-Aug-18	19-Sep-18
Parameter	Result	
Boron	-	5300*
Chloride	133	-
Cobalt	-	<10
Sodium	-	3320000*
Uranium	-	<1.0



Parameter	Ontario Regulation 153/04 Table 8 SCS
Boron (µg/L)	5000
Chloride (mg/L)	790
Cobalt (µg/L)	3.8
Sodium (µg/L)	490000
Uranium (µg/L)	20

\*Not Considered to be Contamination Refer to Section 5.7.5 of Phase Two ESA Report.

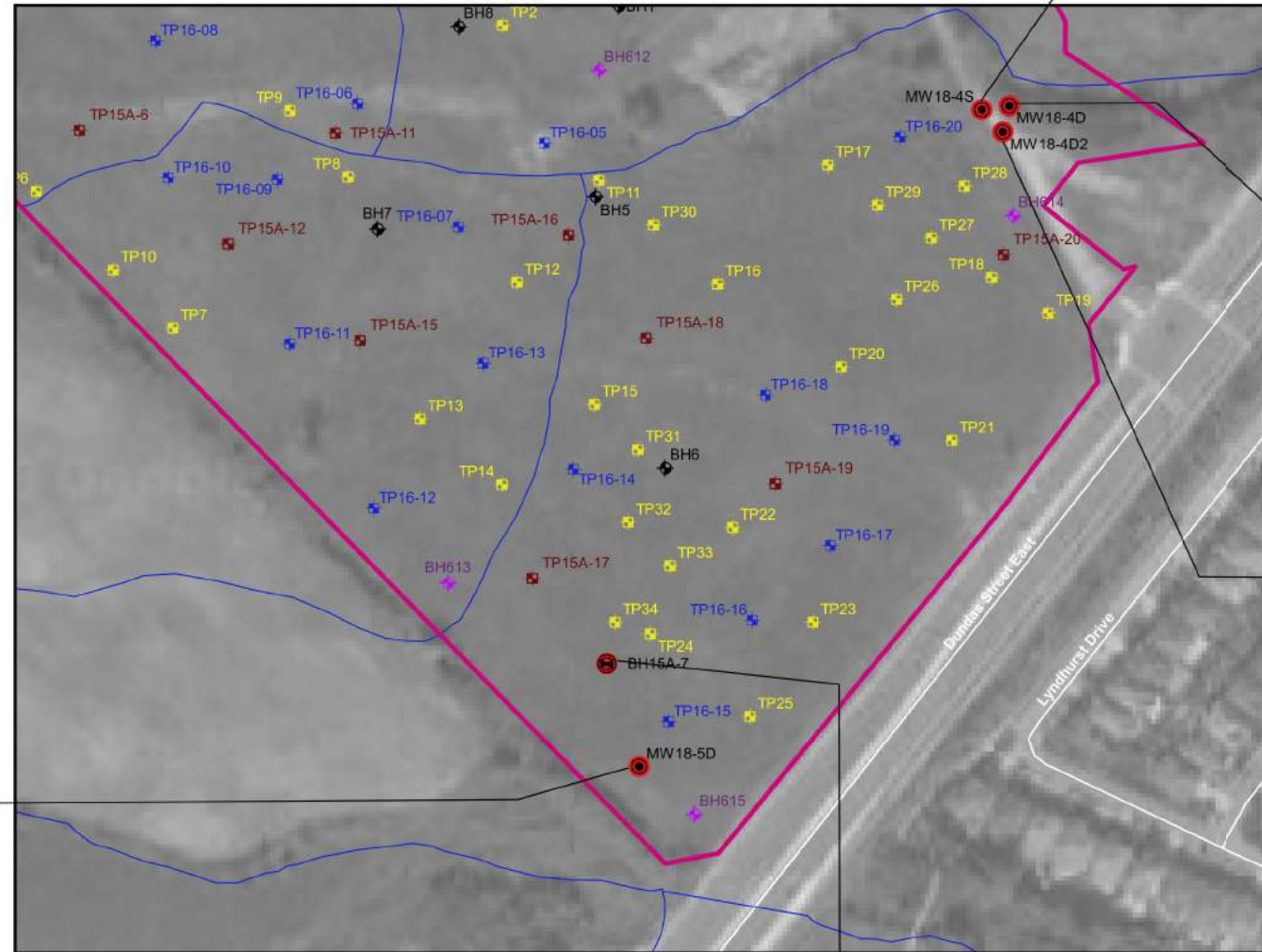
- Legend**
- Approximate Property Boundary
  - Met Table 8 Standards
  - Exceeds Table 8 Standards
  - Refer to Section 7 in Report
  - ◆ Borehole, Terrapex 2006
  - ◆ Borehole, AME 2002
  - ◆ Test Pit, WSP 2015
  - ◆ Test Pit, WSP 2016
  - ★ Test Pit, AME2002
  - ⊕ Monitoring Well, WSP 2015
  - ⊕ Test Pit, DS 2018
  - ⊕ Monitoring Well, DS 2018



 <b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca	Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
	Title: <b>GROUNDWATER CHARACTERIZATION - METALS &amp; ORPs</b>			
Client: <b>BRESSA DEVELOPMENTS LTD.</b>	Size: 11x17	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev: 1	Scale: As Shown	Project No.: 18-549-100	Figure No.: <b>7Ai</b>	
Image/Map Source: Google Satellite Image				

Parameter	Ontario Regulation 153/04 Table 8 SCS
Boron (µg/L)	5000
Chloride (mg/L)	790
Cobalt (µg/L)	3.8
Sodium (µg/L)	490000
Uranium (µg/L)	20

MW18-5D		
Unit Screened:	Bedrock	
Well Screen Interval (mbgs):	12.2-15.3	
Date:	05-Jul-18	21-Feb-19
Parameter	Result	
Boron	460	4900
Chloride	35.2	-
Cobalt	1.7	2.7
Sodium	219000	3400000*
Uranium	59	<25



MW18-4S			
Unit Screened:	Weathered Shale/Till Complex		
Well Screen Interval (mbgs):	8.2-11.3		
Date:	28-Jun-18	26-Jul-18	21-Feb-19
Parameter	Result		
Boron	2360	3010	2800
Chloride	2330*	3960*	-
Cobalt	2.1	<1.0	<2.5
Sodium	1200000*	1800000*	1900000*
Uranium	2.61	0.23	<25

MW18-4D						DUP-1
Unit Screened:	Bedrock					
Well Screen Interval (mbgs):	13.7-15.2					
Date:	28-Jun-18	26-Jul-18	19-Sep-18	21-Feb-19	21-Feb-19	
Parameter	Result					
Boron	2990	2610	2660	2800	2500	
Chloride	4020*	2380*	-	-	-	
Cobalt	<1.0	2.1	<1.0	<2.5	<2.5	
Sodium	1710000*	1320000*	1420000*	1400000*	1300000*	
Uranium	0.58	3.02	0.50	<25	<25	

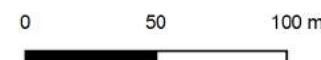
MW18-4D2				QAQC1
Unit Screened:	Bedrock			
Well Screen Interval (mbgs):	21.3-22.8			
Date:	29-Aug-18	19-Sep-18	19-Sep-18	
Parameter	Result			
Boron	-	3800	1260	
Chloride	12800*	-	2320*	
Cobalt	-	<10	<1.0	
Sodium	-	4480000*	1100000*	
Uranium	-	3.0	17.1	

BH15A-7						
Unit Screened:	Weathered Shale/Till Complex					
Well Screen Interval (mbgs):	9.0-12.1					
Date:	29-Mar-18	05-Jul-18	29-Aug-18	19-Sep-18	18-Oct-18	21-Feb-19
Parameter	Result					
Boron	4250	460	-	4190	4440	4400
Chloride	1440*	27.2	1640*	-	-	-
Cobalt	3.9	1.3	-	3.4	3.4	0.62
Sodium	1020000*	220000	-	955000*	1060000*	1000000*
Uranium	6.34	58.1	-	5.37	5.56	9.5

\*Not Considered to be Contamination  
Refer to Section 5.7.5 of Phase Two ESA Report.

Legend

- Approximate Property Boundary
- Met Table 8 Standards
- Exceeds Table 8 Standards
- Refer to Section 7 in Report
- ◆ Borehole, Terrapex 2006
- ◆ Borehole, AME 2002
- ◆ Test Pit, WSP 2015
- ◆ Test Pit, WSP 2016
- ★ Test Pit, AME2002
- Monitoring Well, WSP 2015
- Test Pit, DS 2018
- Monitoring Well, DS 2018



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Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
Bressa Development Lands, 1429 Dundas Street, Oakville, ON

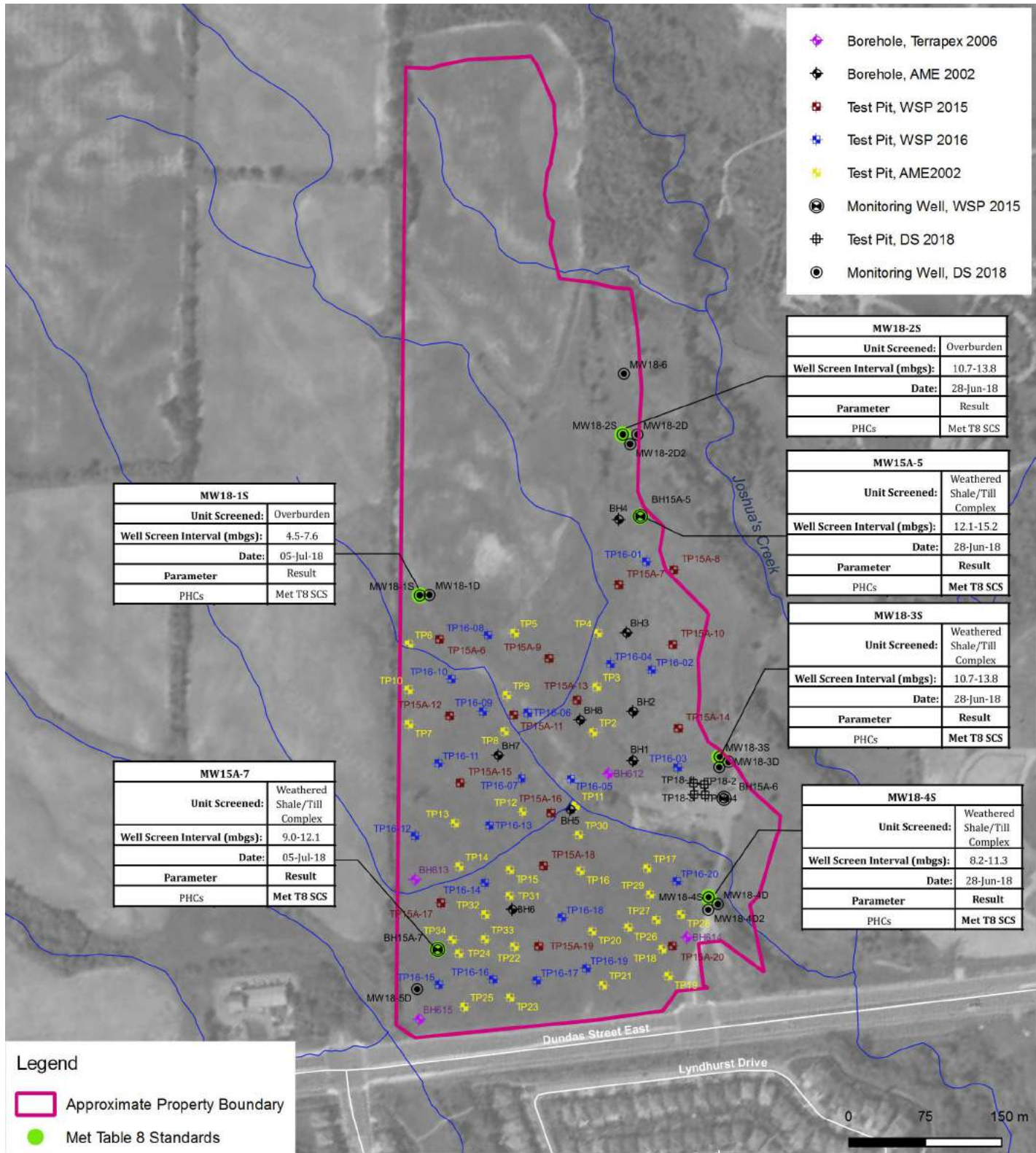
Title: **GROUNDWATER CHARACTERIZATION - METALS & ORPs**

Size: 11x17  
Approved By: R.F  
Drawn By: S.Y  
Date: July 2019

Rev: 1  
Scale: As Shown  
Project No.: 18-549-100  
Figure No.: **7Aii**

Image/Map Source: Google Satellite Image





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 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GROUNDWATER CHARACTERIZATION - PHCs**

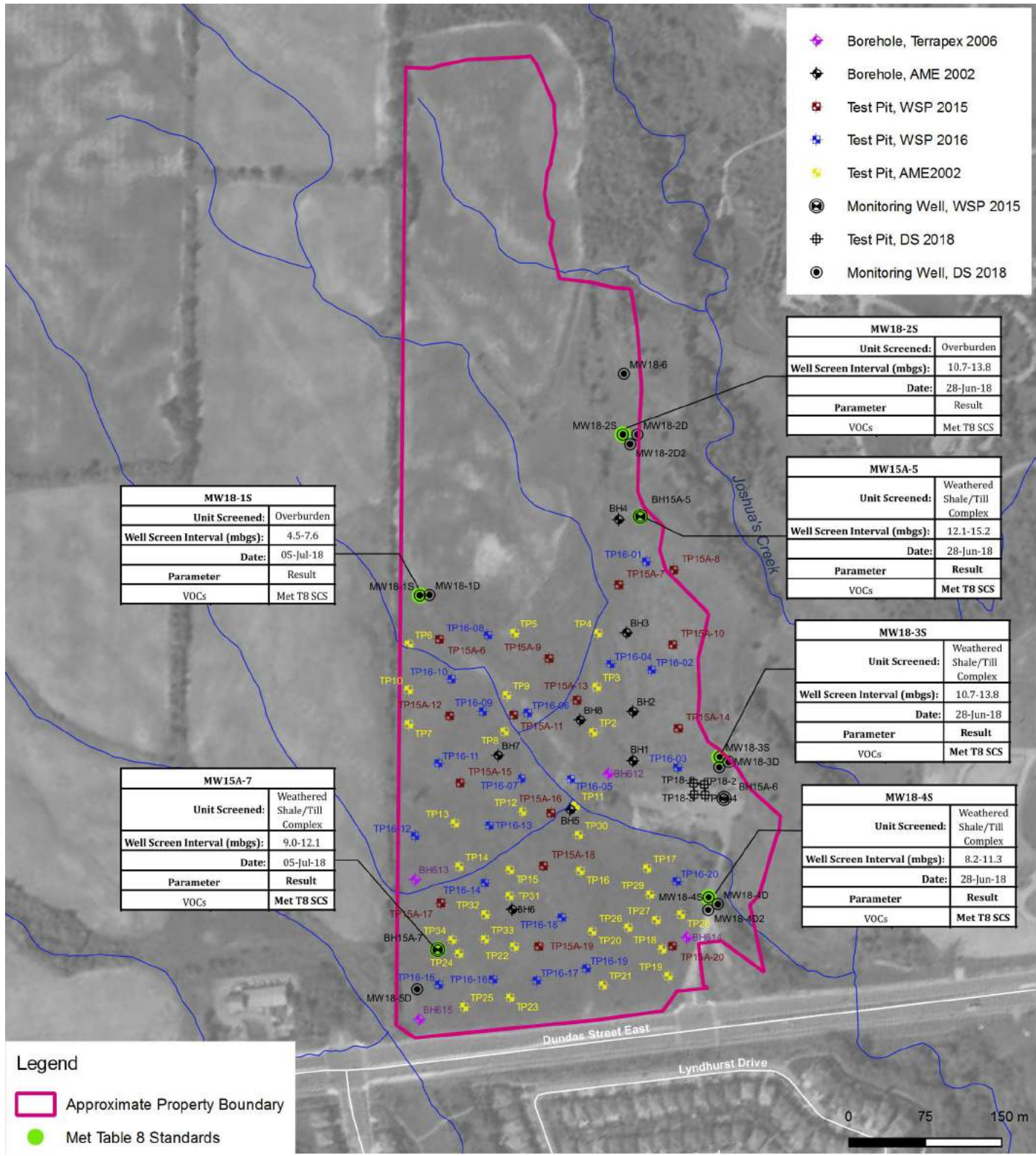


Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11      Approved By: R.F      Drawn By: S.Y      Date: July 2019

Rev. 1      Scale: As Shown      Project No.: 18-549-100      Figure No.: **7B**

Image/Map Source: Google Satellite Image



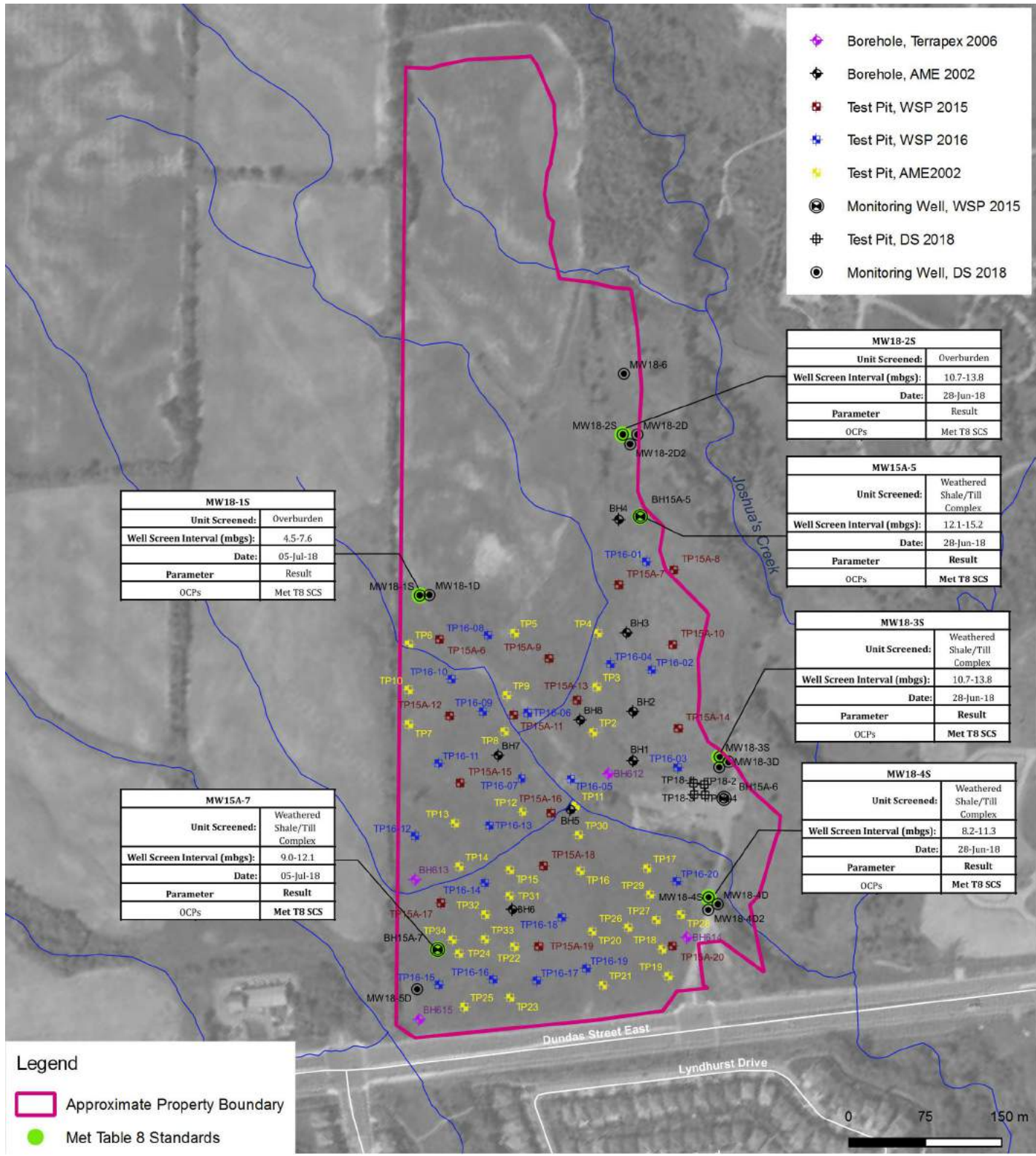
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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GROUNDWATER CHARACTERIZATION - VOCs**



Client: <b>BRESSA DEVELOPMENTS LTD.</b>	Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
	Rev. 1	Scale: As Shown	Project No.: 18-549-100	Figure No.: <b>7C</b>
Image/Map Source: Google Satellite Image				



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

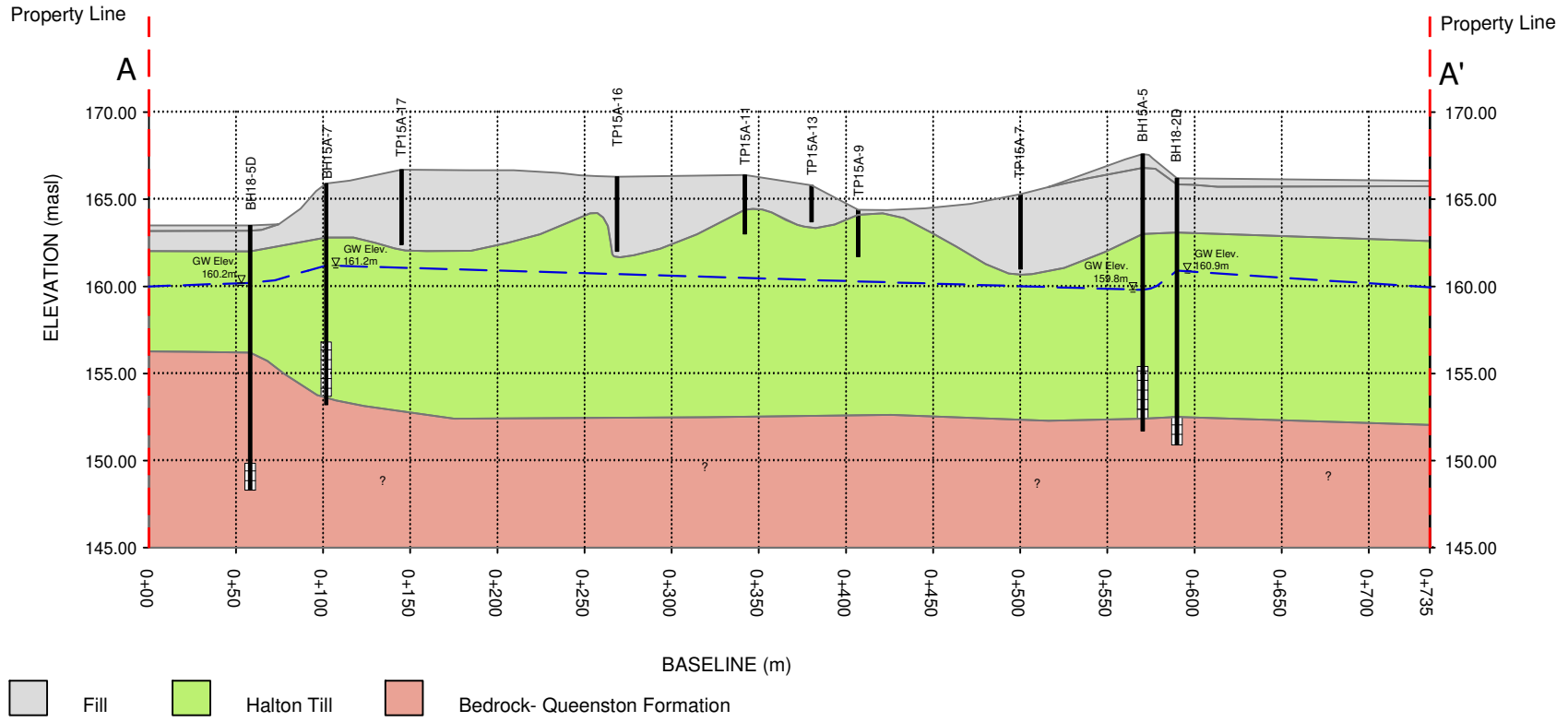
Title: **GROUNDWATER CHARACTERIZATION - OCPs**



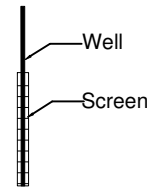
Client: <b>BRESSA DEVELOPMENTS LTD.</b>	Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
	Rev. 1	Scale: As Shown	Project No.: 18-549-100	Figure No.: <b>7D</b>

Image/Map Source: Google Satellite Image

Path:----



— Potentiometric Surface (June 25, 2018)



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION A-A'**

Client:  
**BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:4000	Project No: 18-549-100	Figure No. <b>8A</b>

Path:----

BH18-5	
Sample:	SS5
Depth (mbgs):	3.1-3.7
Barium	77.4
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-11	
Sample:	Sa2
Depth (mbgs):	0.3-2.0
Barium	88
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-13	
Sample:	Sa3
Depth (mbgs):	1.2-1.9
Barium	112
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

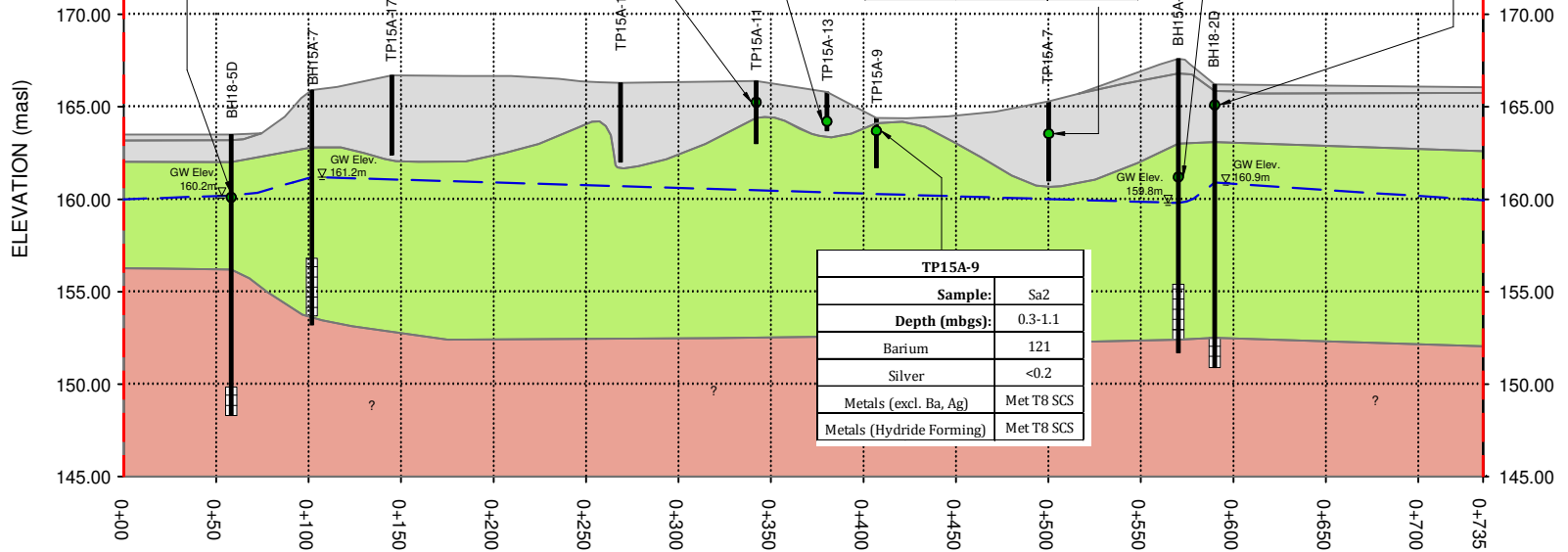
TP15A-7	
Sample:	Sa2
Depth (mbgs):	0.3-3.2
Barium	139
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH15A-5	
Sample:	SS7
Depth (mbgs):	6.1-6.7
Barium	55
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH18-2	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Barium	75.6
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

Property Line

A



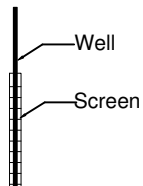
Property Line

A'

Fill
  Halton Till
  Bedrock- Queenston Formation

— Potentiometric Surface (June 25, 2018)

● Met Table 8 Standards



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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION A-A' WITH METALS AND HYDRIDE IMPACTS IN SOIL**

Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11

Approved By: R.F

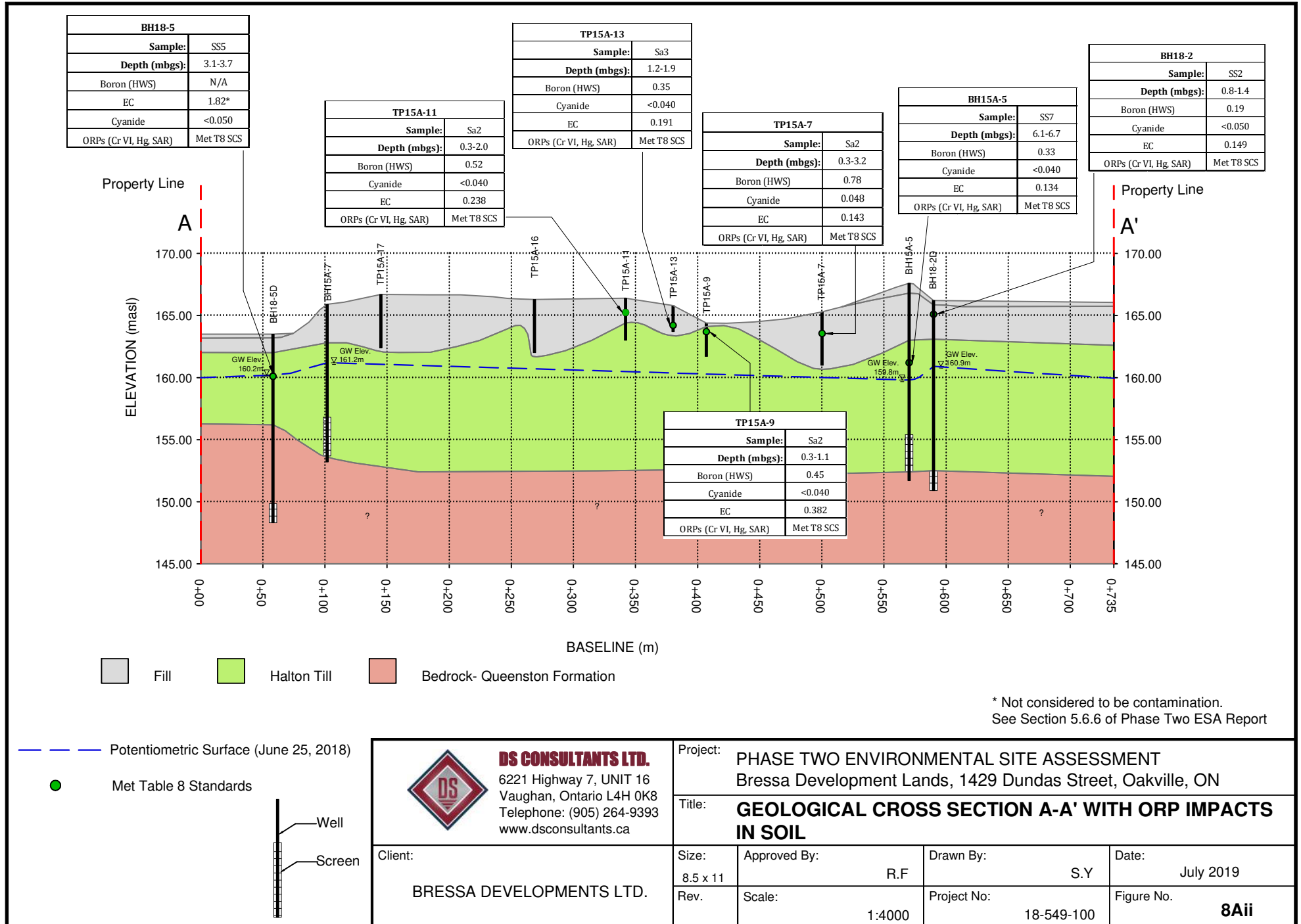
Drawn By: S.Y

Date: July 2019

Rev. Scale: 1:4000

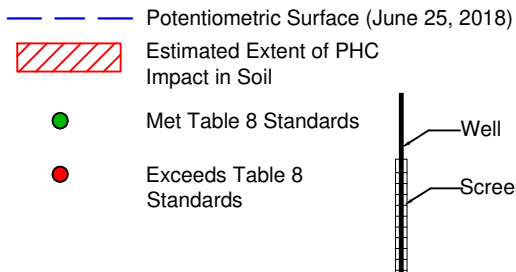
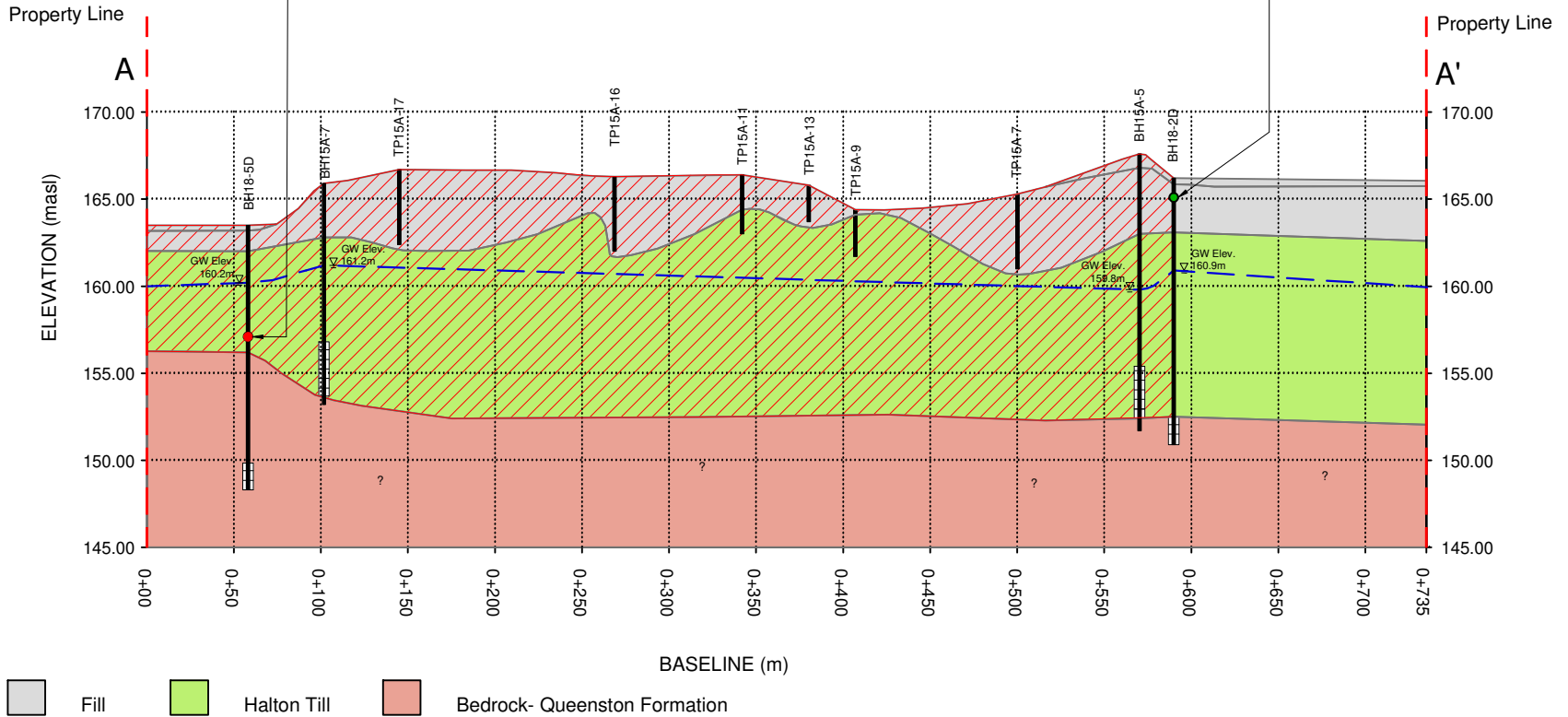
Project No: 18-549-100

Figure No. **8Ai**



BH18-5	
Sample:	SS7
Depth (mbgs):	6.1-6.7
F2 (C10-C16)	18.00
PHCs (excl. F2)	Met T8 SCS

BH18-2	
Sample:	SS2
Depth (mbgs):	0.8-1.4
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS



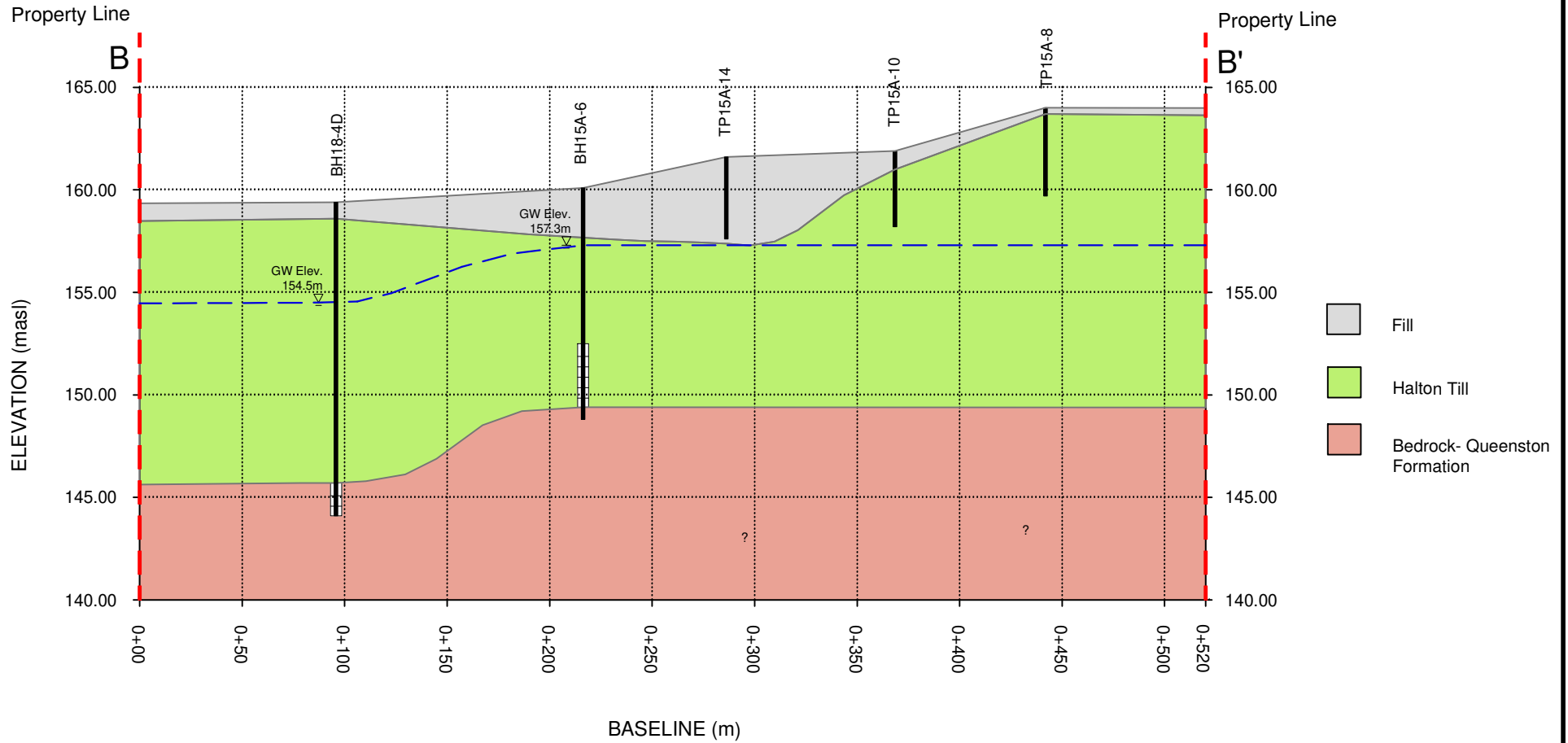
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Client:  
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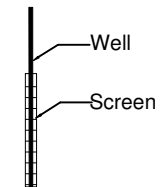
Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION A-A' WITH PHC IMPACTS IN SOIL**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:4000	Project No: 18-549-100	Figure No. <b>8Aiii</b>



— Potentiometric Surface (June 25, 2018)



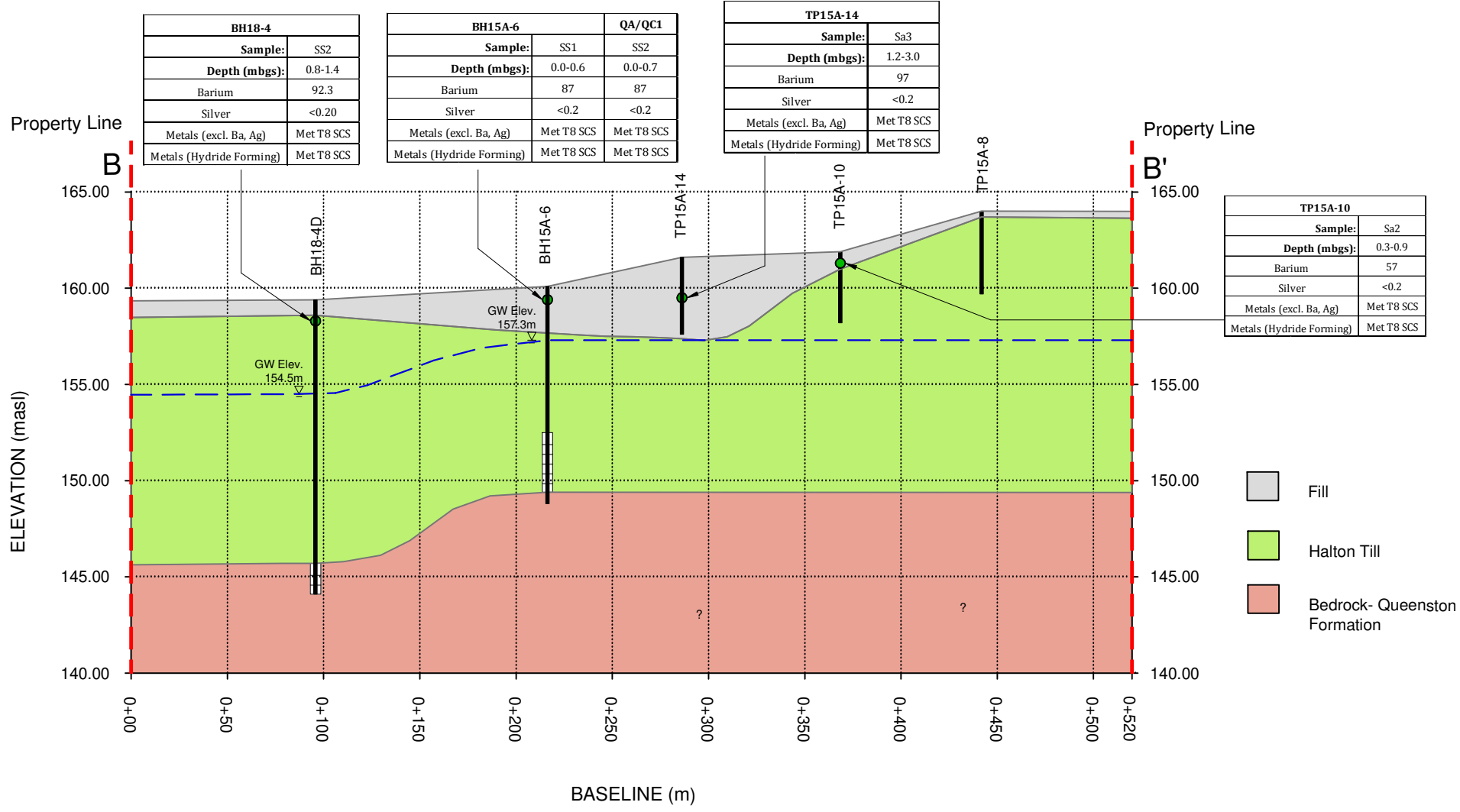
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Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
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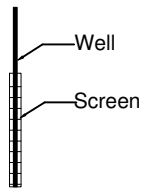
Title: **GEOLOGICAL CROSS SECTION B-B'**

Client:  
**BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8B</b>



--- Potentiometric Surface (June 25, 2018)  
 ● Met Table 8 Standards



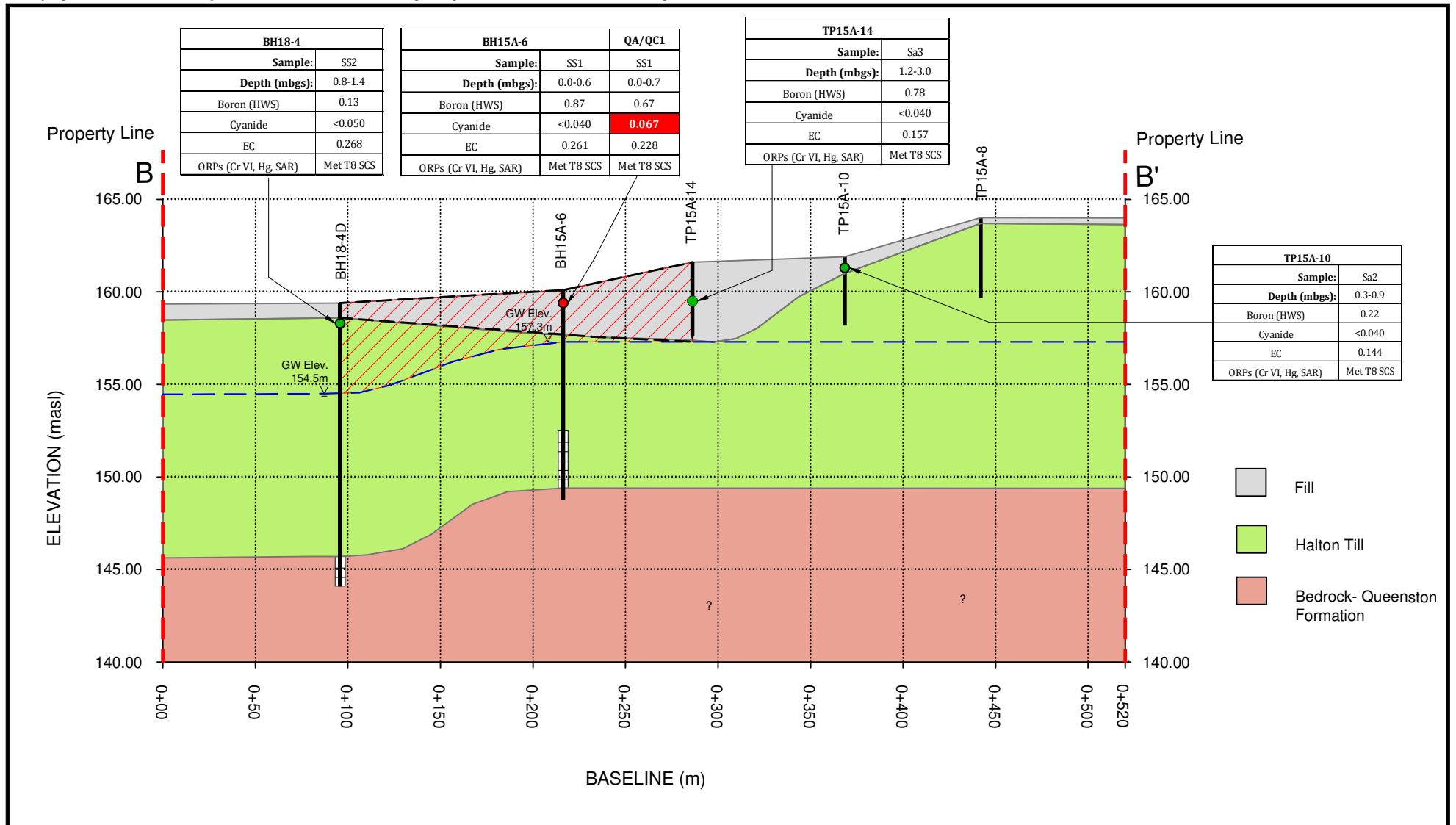
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Client:  
**BRESSA DEVELOPMENTS LTD.**

Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION B-B' WITH METALS AND HYDRIDE IMPACTS IN SOIL**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8Bi</b>



- Potentiometric Surface (June 25, 2018)
- Estimated Extent of ORP Impact in Soil
- Fill
- Met Table 8 Standards
- Exceeds Table 8 Standards
- Well
- Screen

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 Telephone: (905) 264-9393  
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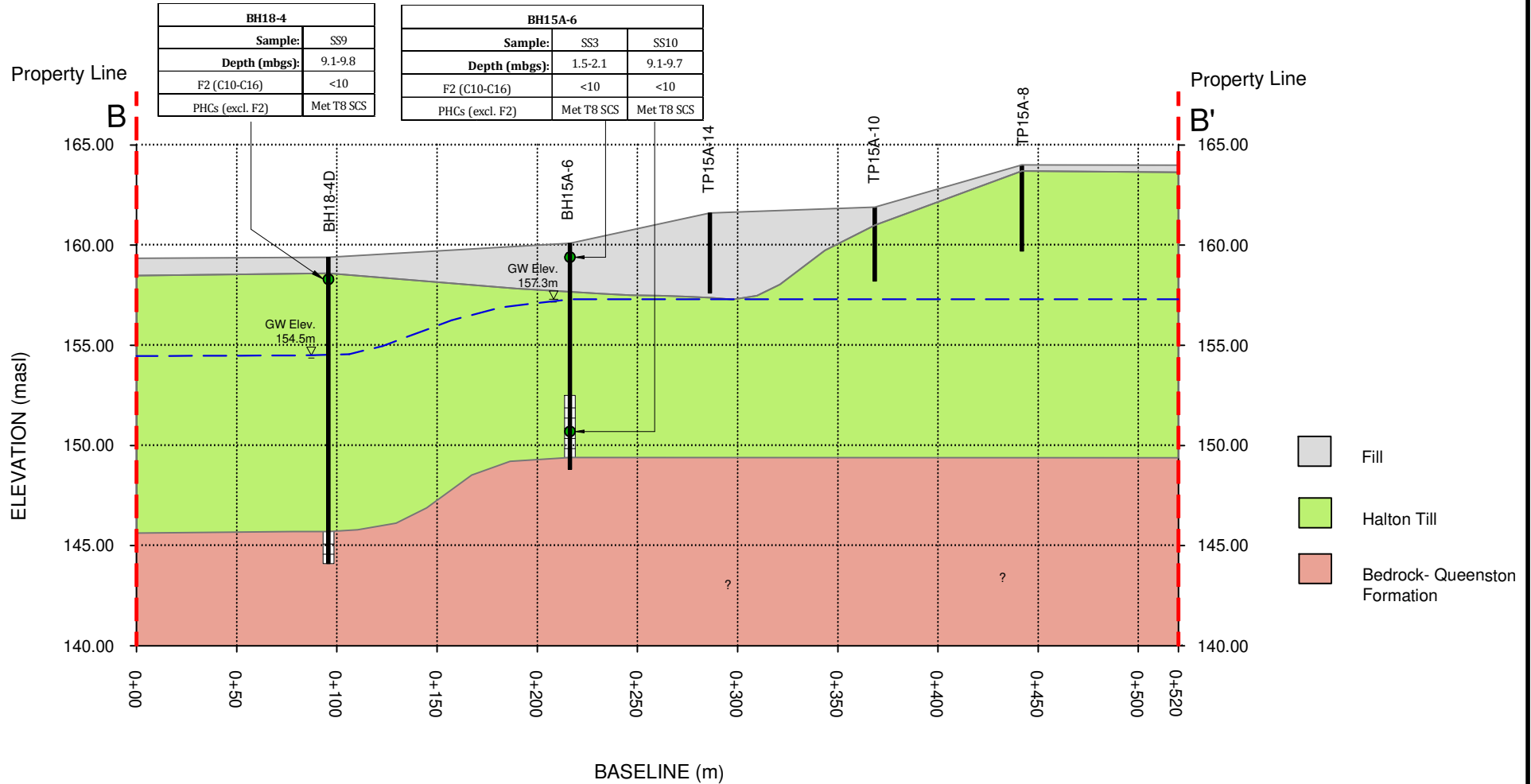
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Client: **BRESSA DEVELOPMENTS LTD.**

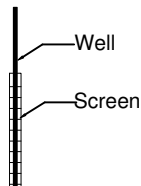
Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION B-B' WITH ORP IMPACTS IN SOIL**

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	R.F	S.Y	July 2019
Rev.	Scale:	Project No:	Figure No.
	1:3000	18-549-100	<b>8Bii</b>



— Potentiometric Surface (June 25, 2018)  
 ● Met Table 8 Standards



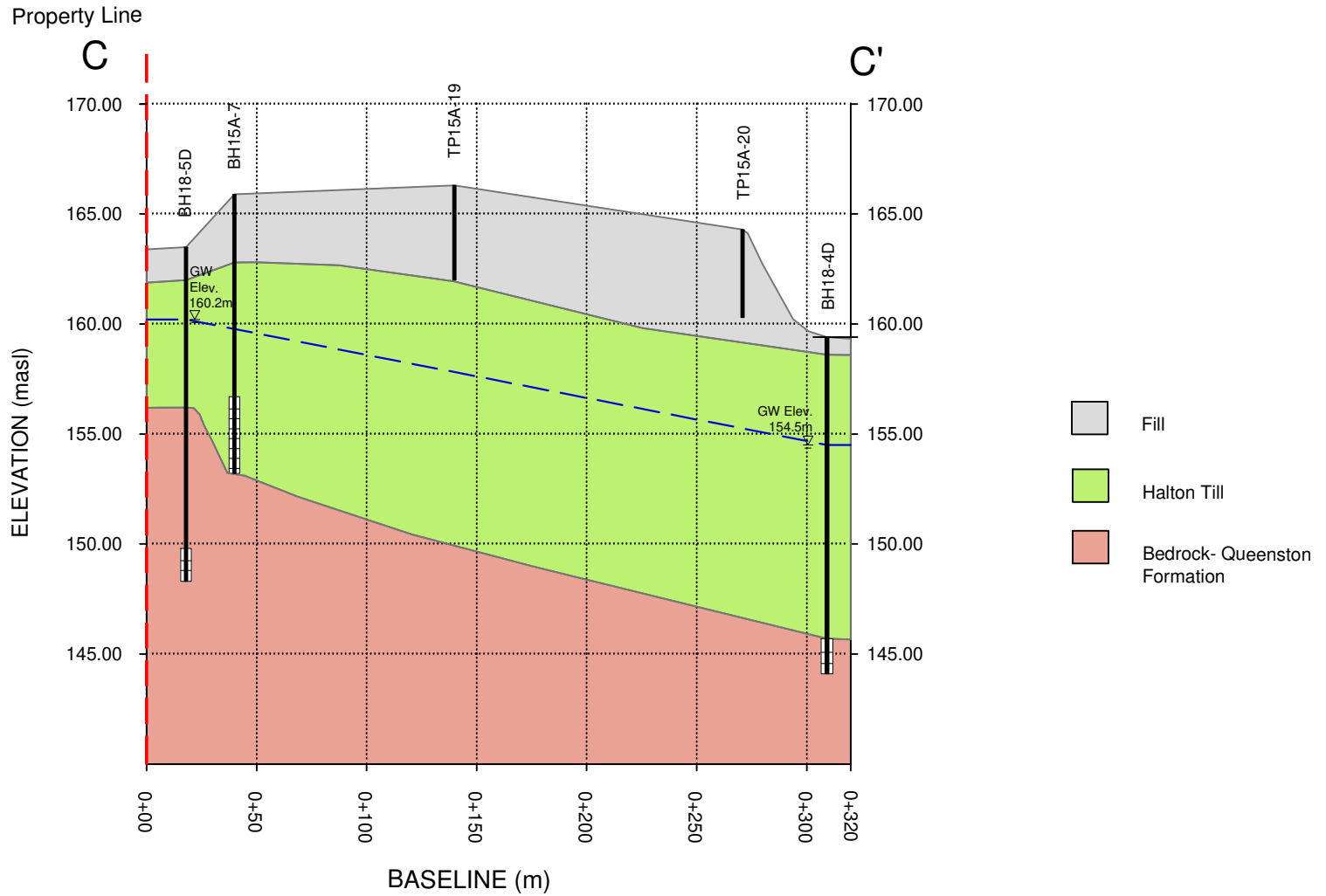
**DS CONSULTANTS LTD.**  
 6221 Highway 7, UNIT 16  
 Vaughan, Ontario L4H 0K8  
 Telephone: (905) 264-9393  
 www.dsconsultants.ca

Client:

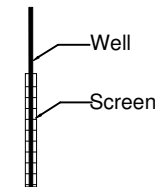
BRESSA DEVELOPMENTS LTD.

Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON  
 Title: **GEOLOGICAL CROSS SECTION B-B' WITH PHC IMPACTS  
 IN SOIL**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8Biii</b>



— Potentiometric Surface (June 25, 2018)



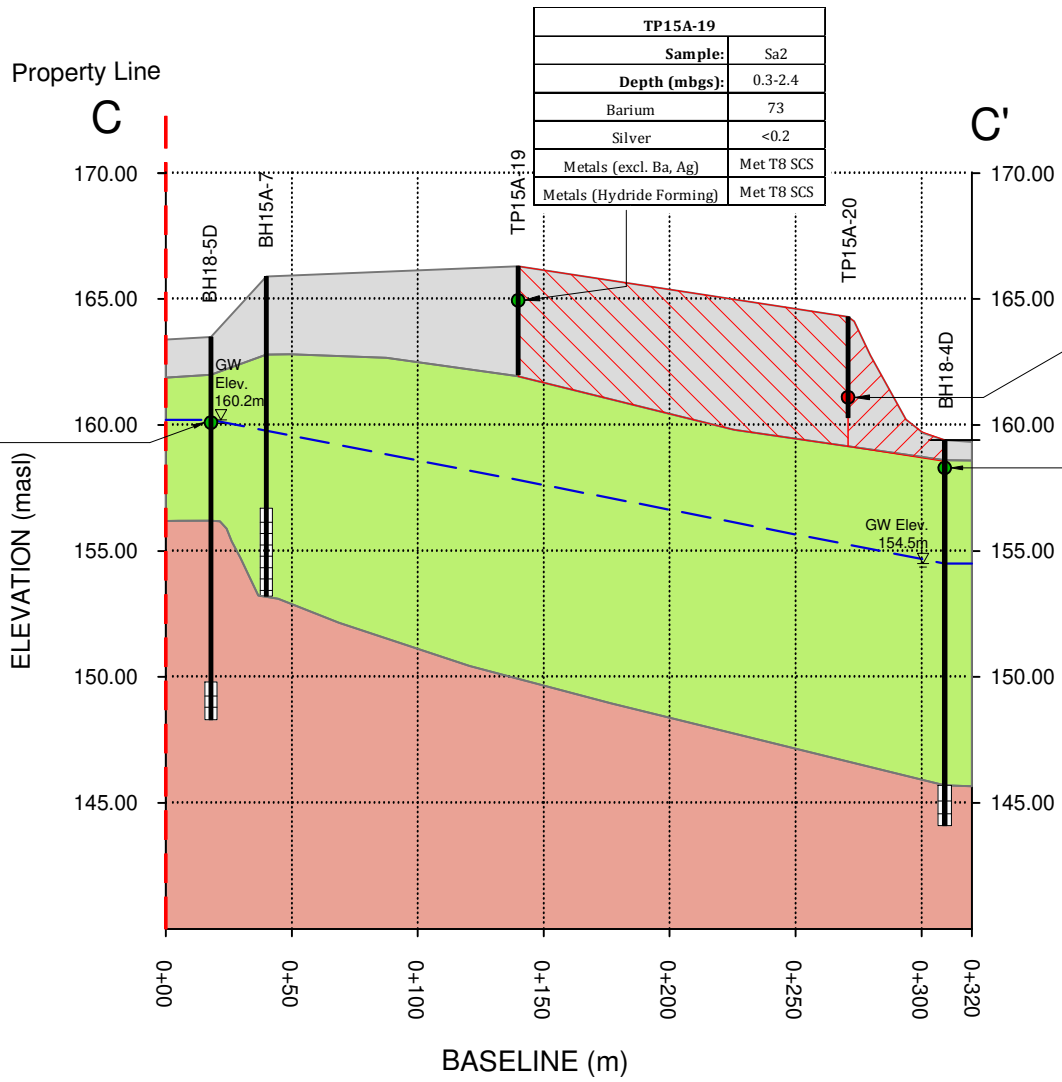
**DS CONSULTANTS LTD.**  
 6221 Highway 7, UNIT 16  
 Vaughan, Ontario L4H 0K8  
 Telephone: (905) 264-9393  
 www.dsconsultants.ca

Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION C-C'**

Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8C</b>



BH18-5	
Sample:	SS5
Depth (mbgs):	3.1-3.7
Barium	77.4
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-19	
Sample:	Sa2
Depth (mbgs):	0.3-2.4
Barium	73
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-20	
Sample:	Sa3
Depth (mbgs):	2.4-4.0
Barium	101
Silver	1.4
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

BH18-4	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Barium	92.3
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

- Fill
- Halton Till
- Bedrock- Queenston Formation

- Potentiometric Surface (June 25, 2018)
  - Estimated Extent of Metals and Hydride Impact in Soil
  - Met Table 8 Standards
  - Exceeds Table 8 Standards
- Well

Screen



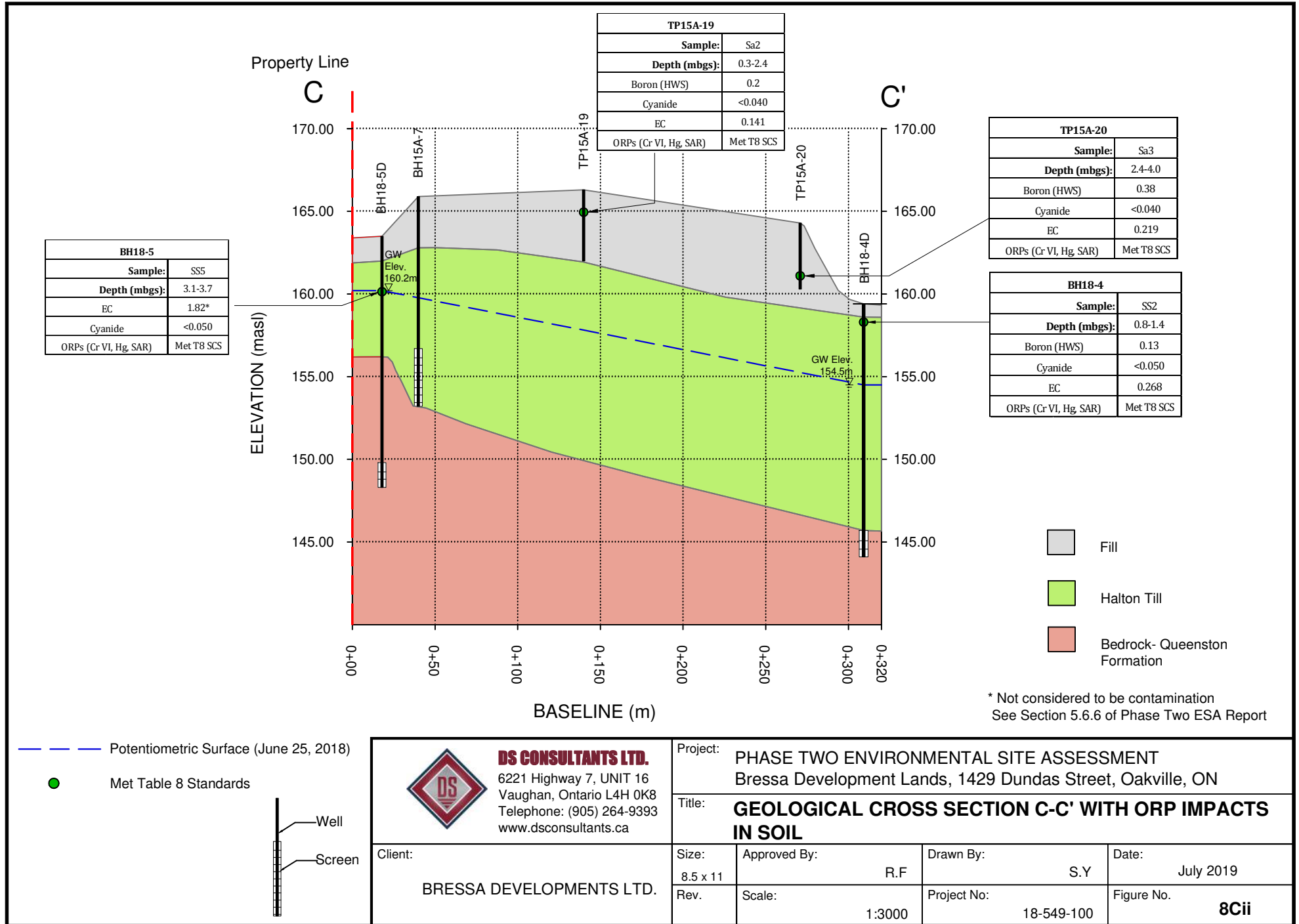
**DS CONSULTANTS LTD.**  
 6221 Highway 7, UNIT 16  
 Vaughan, Ontario L4H 0K8  
 Telephone: (905) 264-9393  
 www.dsconsultants.ca

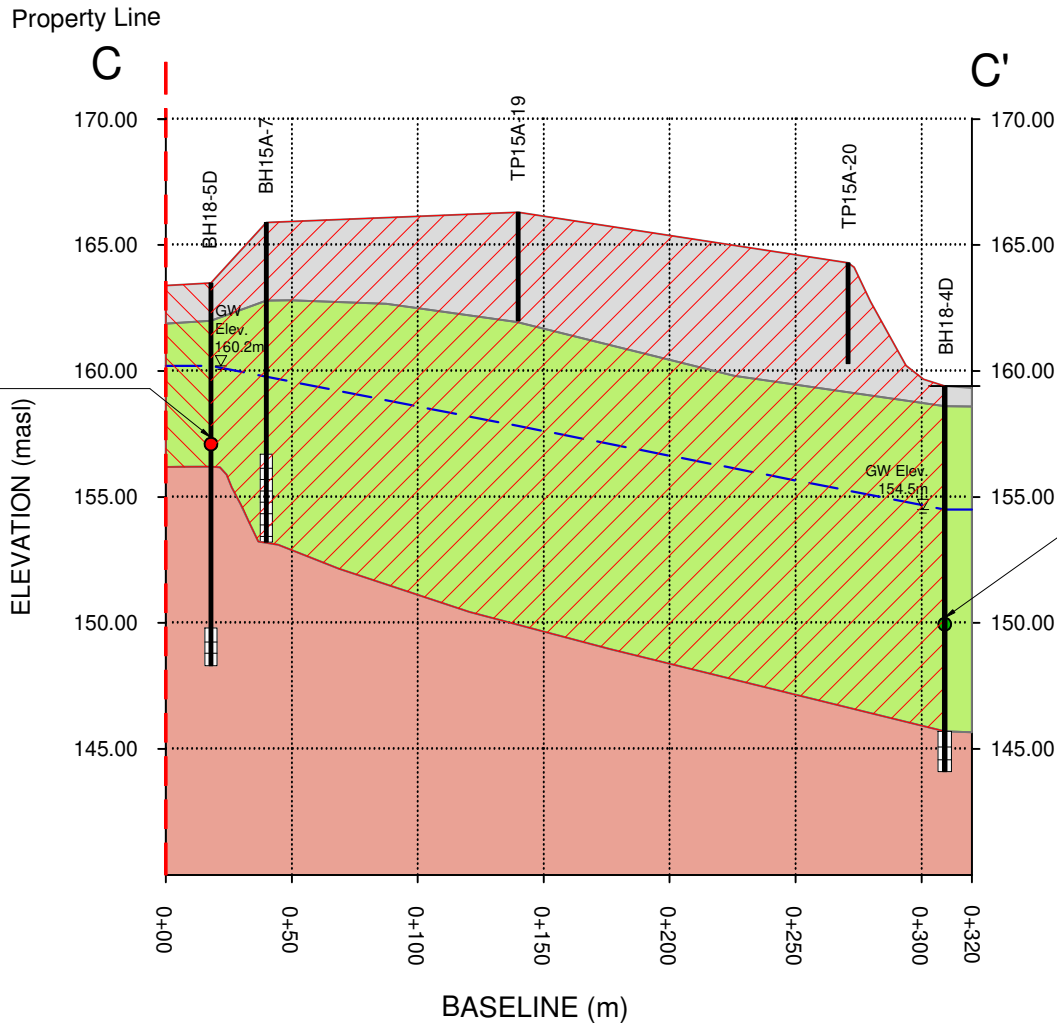
Client:  
**BRESSA DEVELOPMENTS LTD.**

Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION C-C' WITH METALS AND HYDRIDE IMPACTS IN SOIL**




Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8Ci</b>







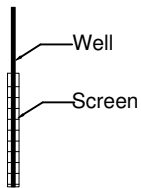


BH18-5	
Sample:	SS7
Depth (mbgs):	6.1-6.7
F2 (C10-C16)	18.00
PHCs (excl. F2)	Met T8 SCS

BH18-4	
Sample:	SS9
Depth (mbgs):	9.1-9.8
F2 (C10-C16)	<10
PHCs (excl. F2)	Met T8 SCS

-  Fill
-  Halton Till
-  Bedrock- Queenston Formation

-  Potentiometric Surface (June 25, 2018)
-  Estimated Extent of PHC Impact in Soil
-  Met Table 8 Standards
-  Exceeds Table 8 Standards



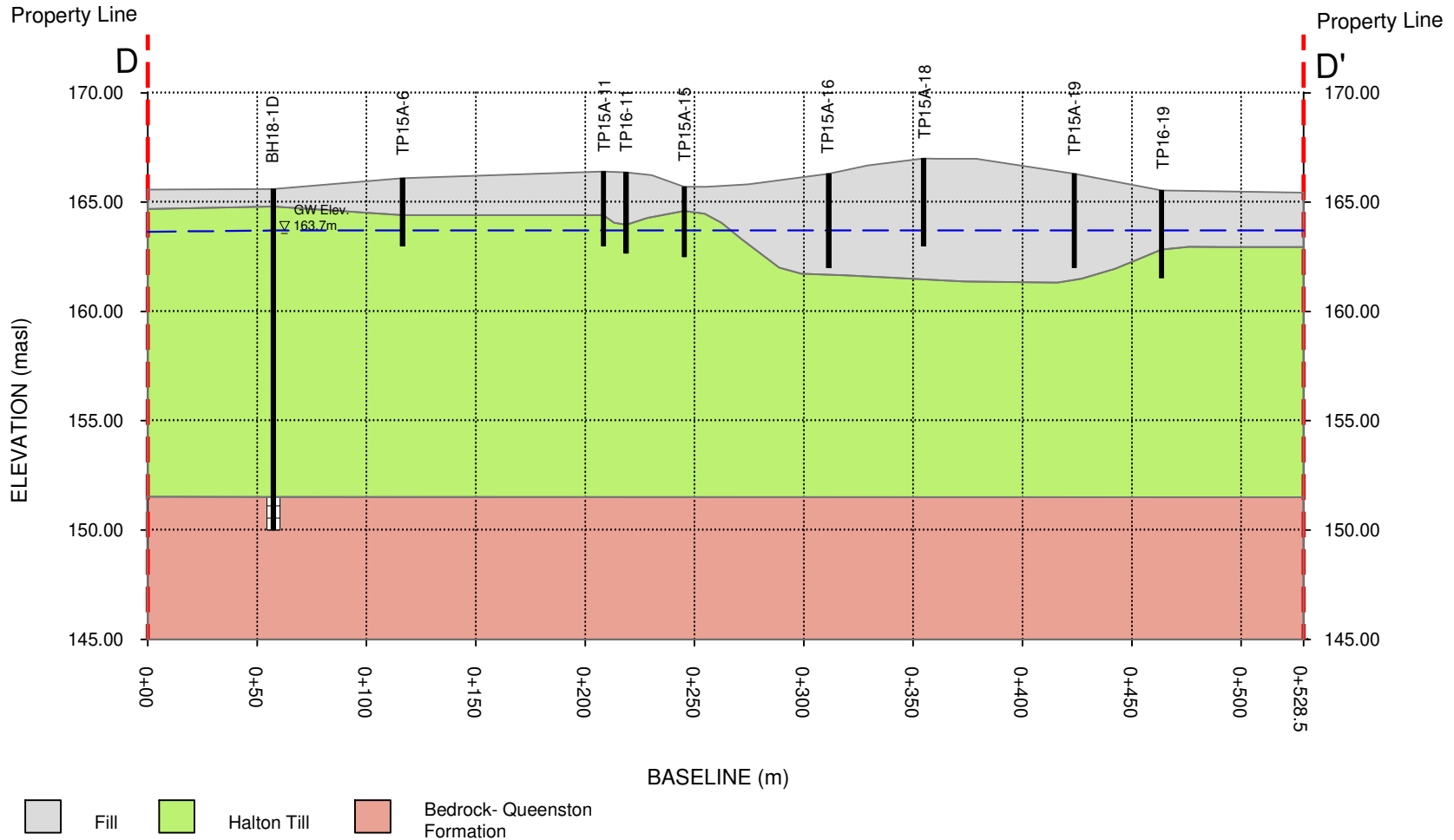
**DS CONSULTANTS LTD.**  
 6221 Highway 7, UNIT 16  
 Vaughan, Ontario L4H 0K8  
 Telephone: (905) 264-9393  
 www.dsconsultants.ca

Client:  
**BRESSA DEVELOPMENTS LTD.**

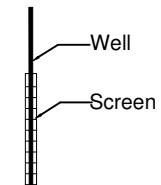
Project: **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION C-C' WITH PHC IMPACTS IN SOIL**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8Ciii</b>



— Potentiometric Surface (June 25, 2018)



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 Telephone: (905) 264-9393  
 www.dsconsultants.ca

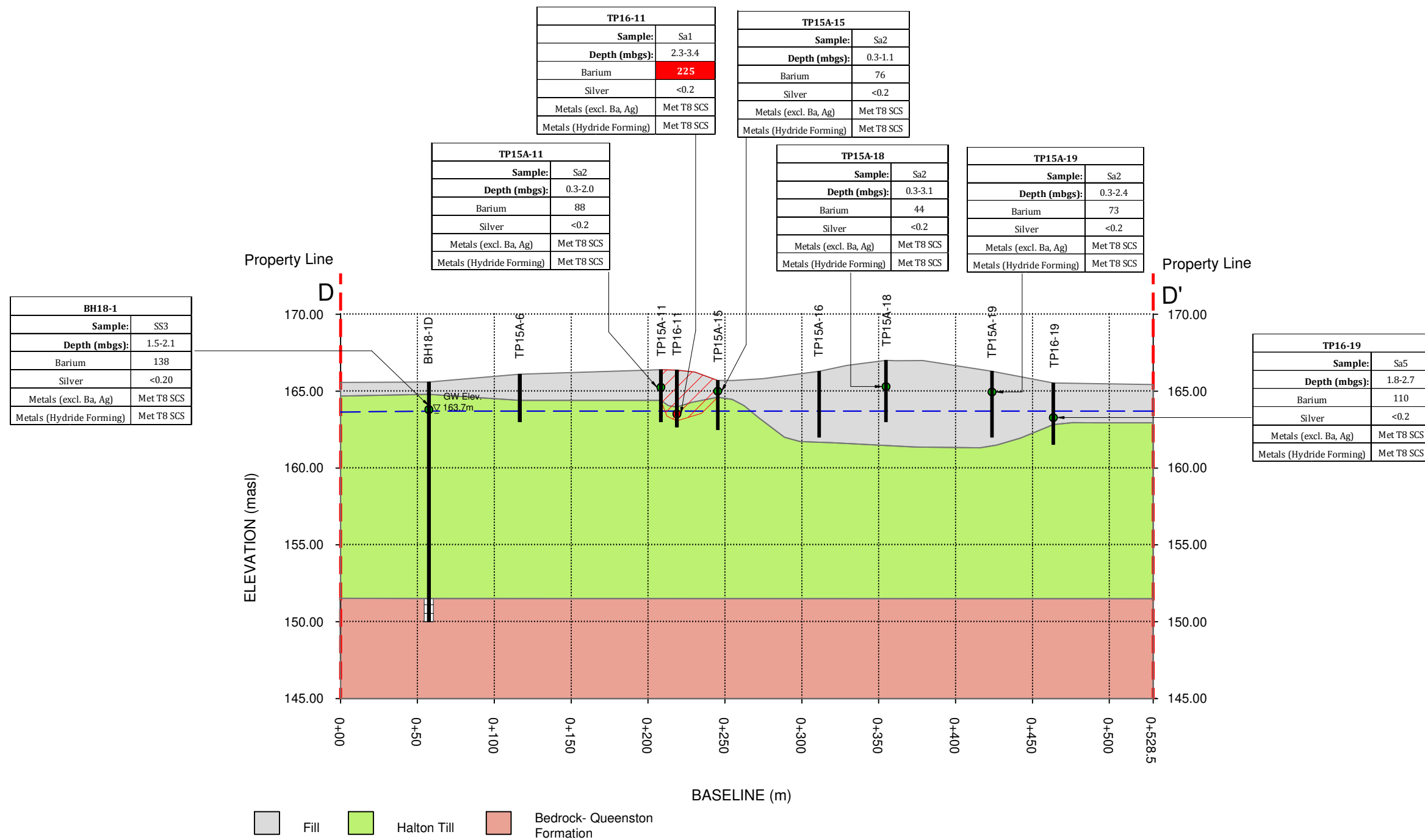
Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON





Title: **GEOLOGICAL CROSS SECTION D-D'**

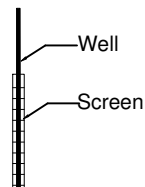
Client: **BRESSA DEVELOPMENTS LTD.**


Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8D</b>

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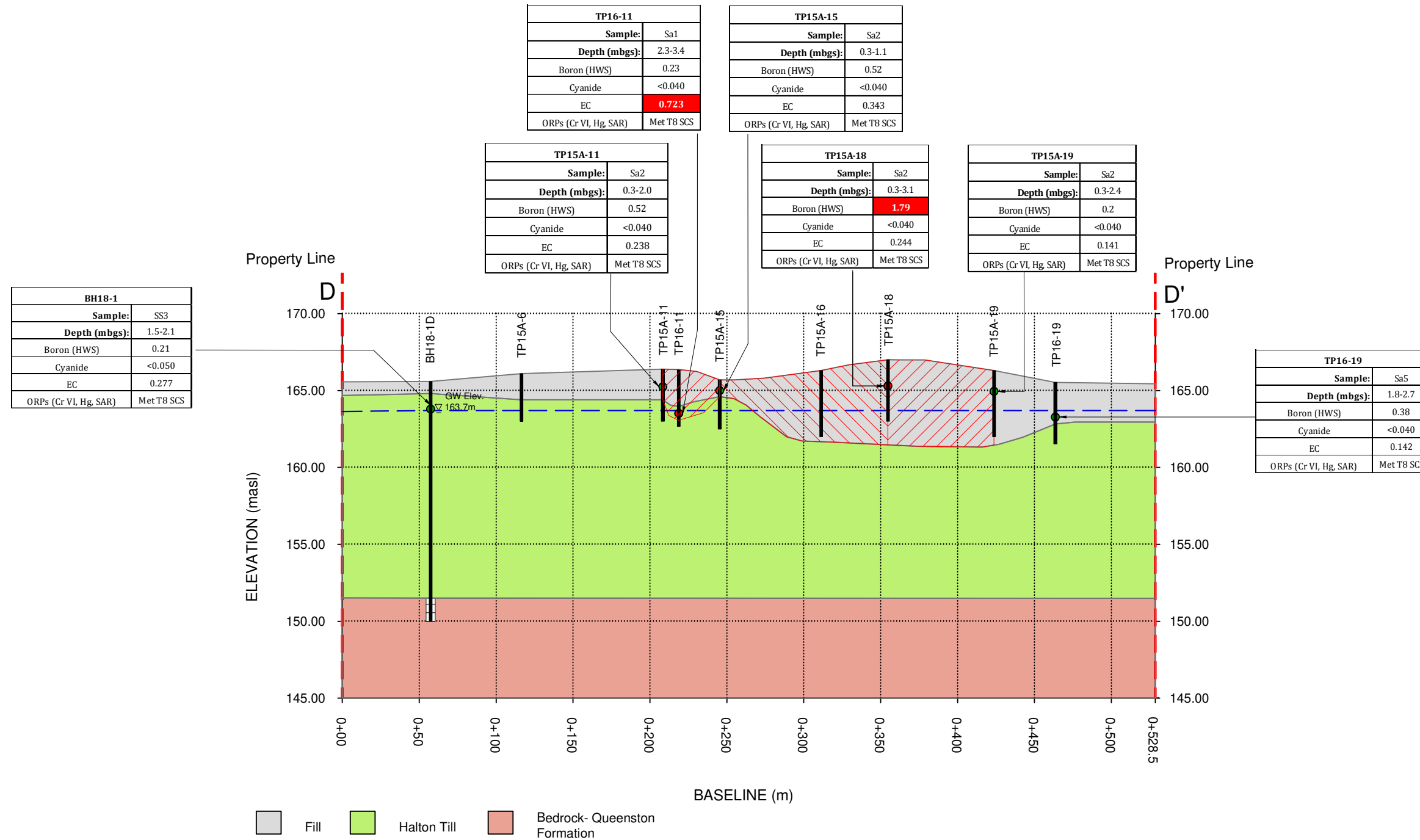


-  Potentiometric Surface (June 25, 2018)
-  Estimated Extent of Metals and Hydride Impact in Soil
-  Met Table 8 Standards
-  Exceeds Table 8 Standards



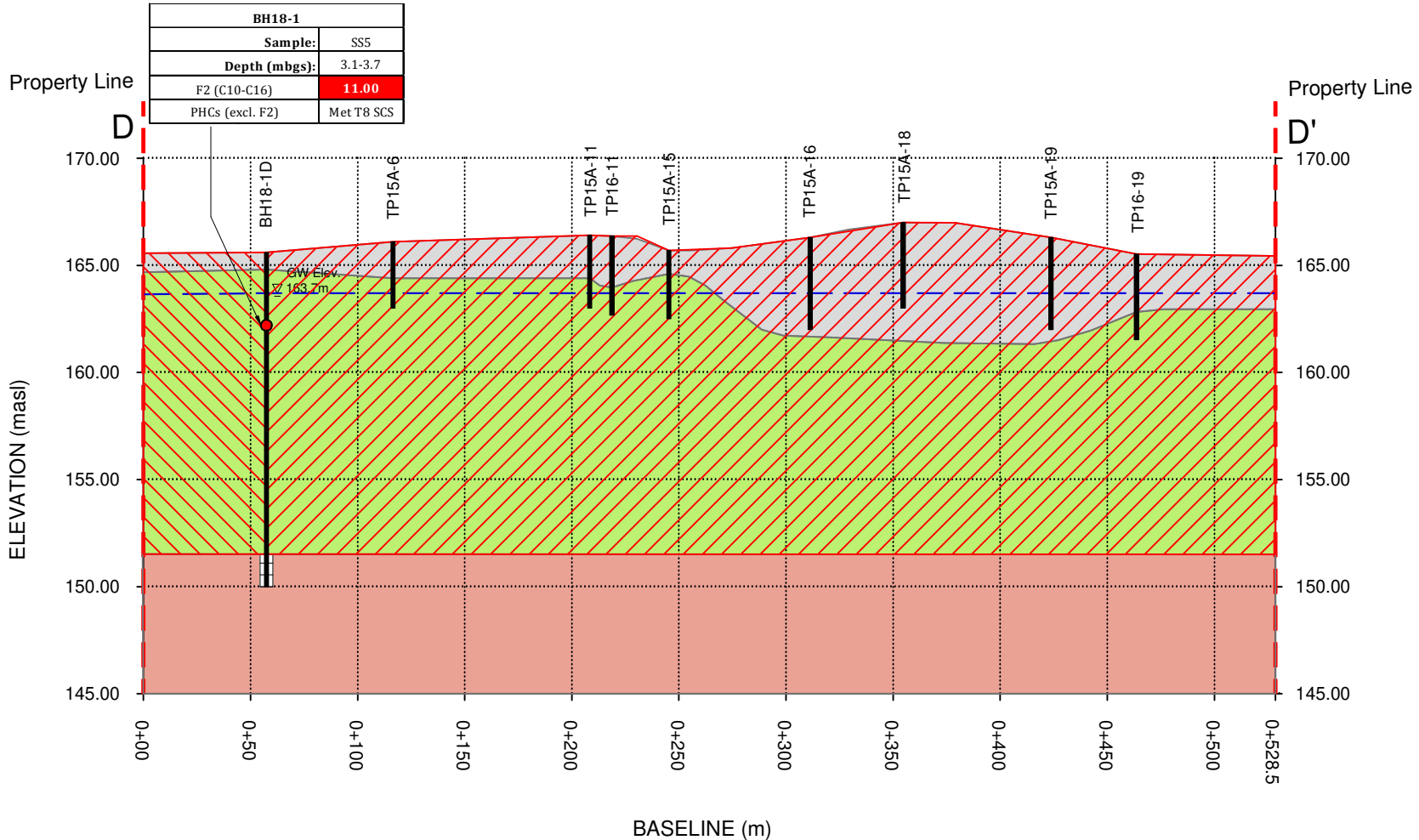
 <b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca	Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
	Title: <b>GEOLOGICAL CROSS SECTION D-D' WITH METALS AND HYDRIDE IMPACTS IN SOIL</b>			
Client: BRESSA DEVELOPMENTS LTD.	Size: 11 X 17	Approved By: R.F.	Drawn By: S.Y.	Date: July 2019
	Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8Di</b>

Path:j:\gis\18-549-40 mattamy bressa, oakville\7-misc\cad\geological cross sections-bressa.dwg



\* Not considered to be contamination.  
See Section 5.6.6 of Phase Two ESA Report

 <b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca	Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
	Title: <b>GEOLOGICAL CROSS SECTION D-D' WITH ORP IMPACTS IN SOIL</b>			
Client: <b>BRESSA DEVELOPMENTS LTD.</b>	Size: 11 X 17	Approved By: R.F.	Drawn By: S.Y.	Date: July 2019
	Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8Dii</b>



BH18-1	
Sample:	SS5
Depth (mbgs):	3.1-3.7
F2 (C10-C16)	11.00
PHCs (excl. F2)	Met T8 SCS

Fill
  Halton Till
  Bedrock- Queenston Formation

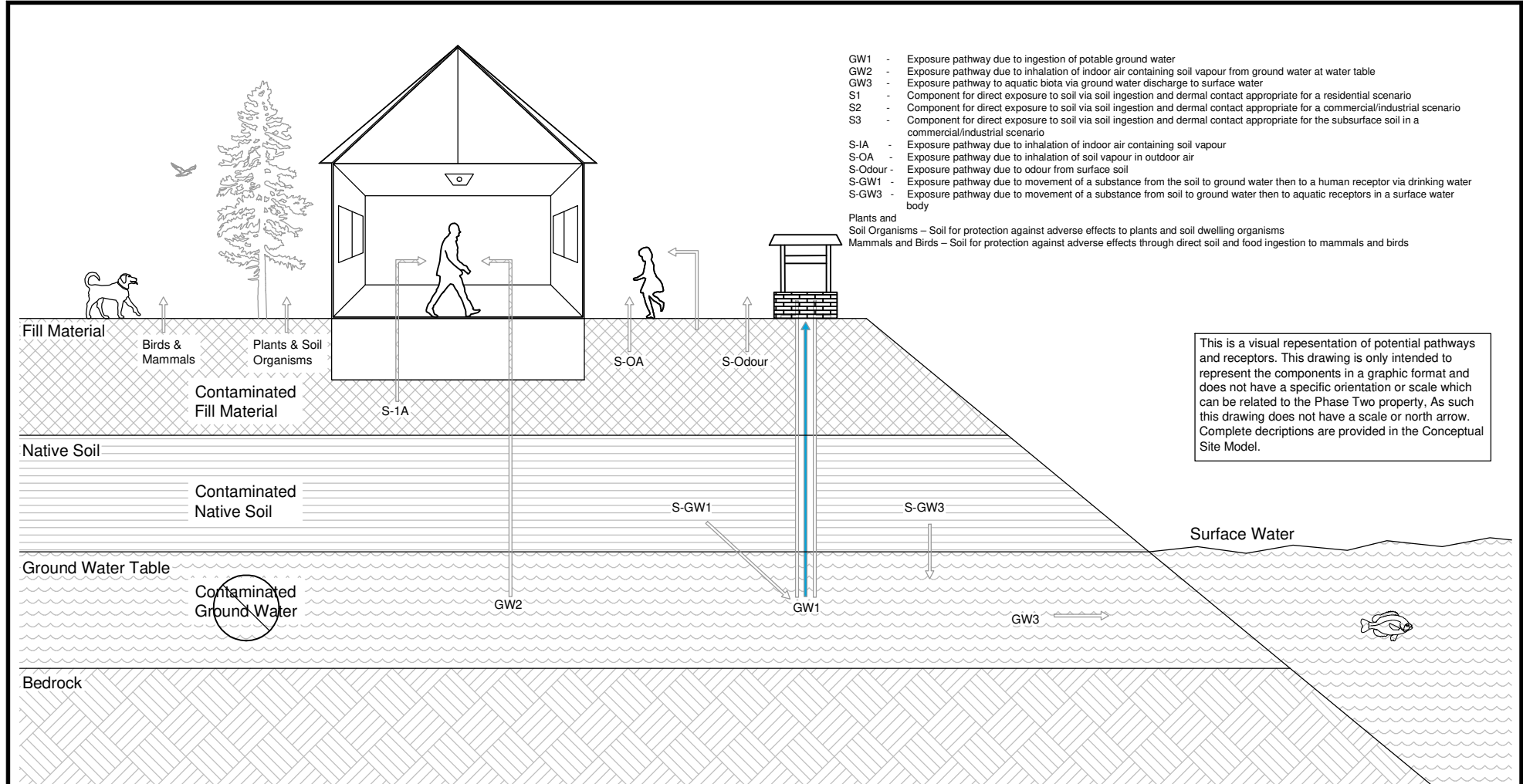
- Potentiometric Surface (June 25, 2018)
  - Estimated Extent of PHC Impact in Soil
  - Exceeds Table 8 Standards
- Well  
Screen





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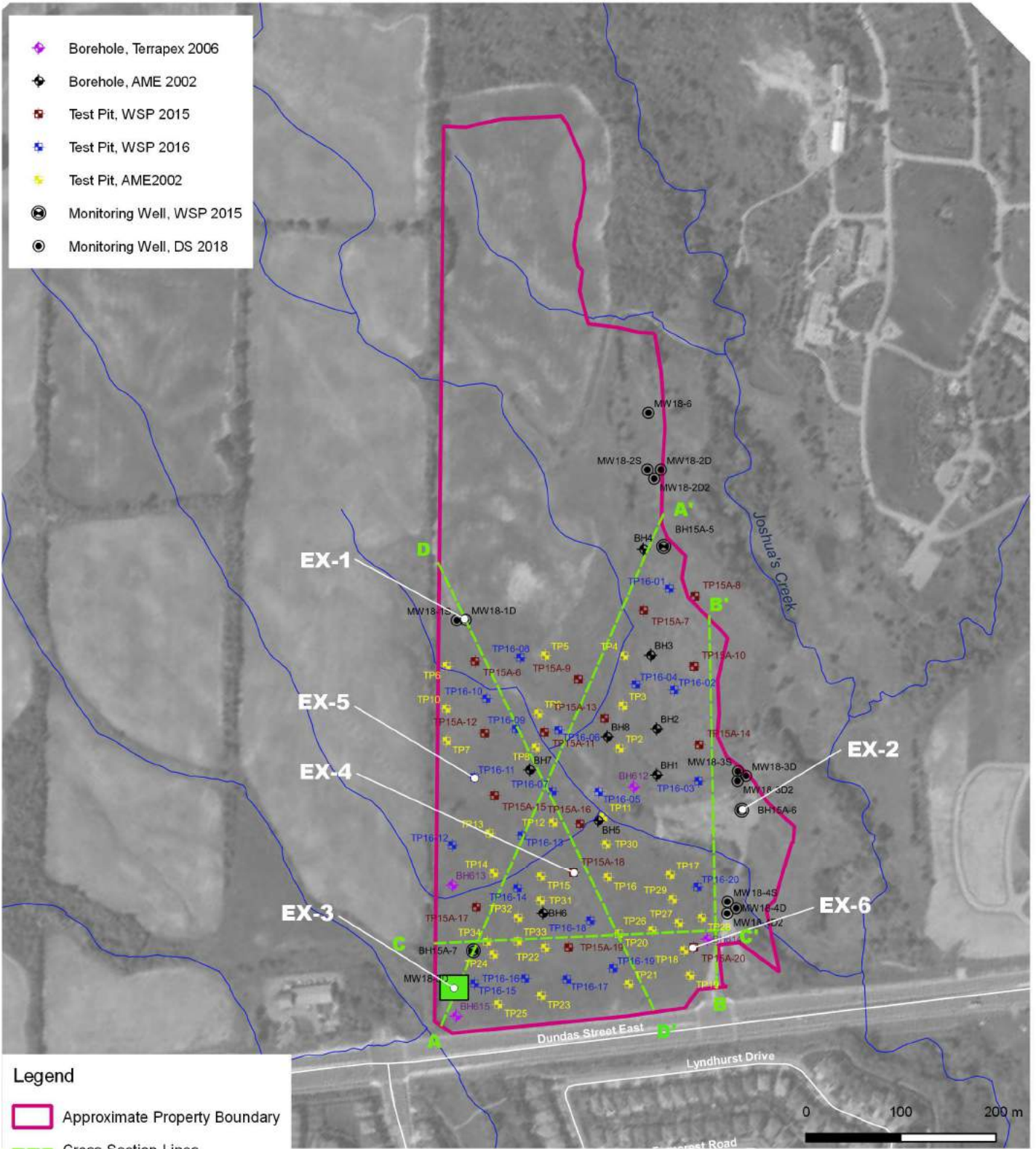
Client: **BRESSA DEVELOPMENTS LTD.**

Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
Title: <b>GEOLOGICAL CROSS SECTION D-D' WITH PHC IMPACTS IN SOIL</b>			
Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: July 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>8Diii</b>



 Not Identified

 <b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca	Project: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT Bressa Development Lands, 1429 Dundas Street, Oakville, ON		
	Title: <b>CONTAMINANT TRANSPORT DIAGRAM (PRE-REMEDATION)</b>		
Client:  BRESSA DEVELOPMENTS LTD.	Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y
	Rev.	Scale: N.T.S	Date: July 2019
		Project No: 18-549-100	Figure No. <b>9</b>



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Project: SOIL REMEDIATION  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **REMEDIAL EXCAVATION LOCATION PLAN**

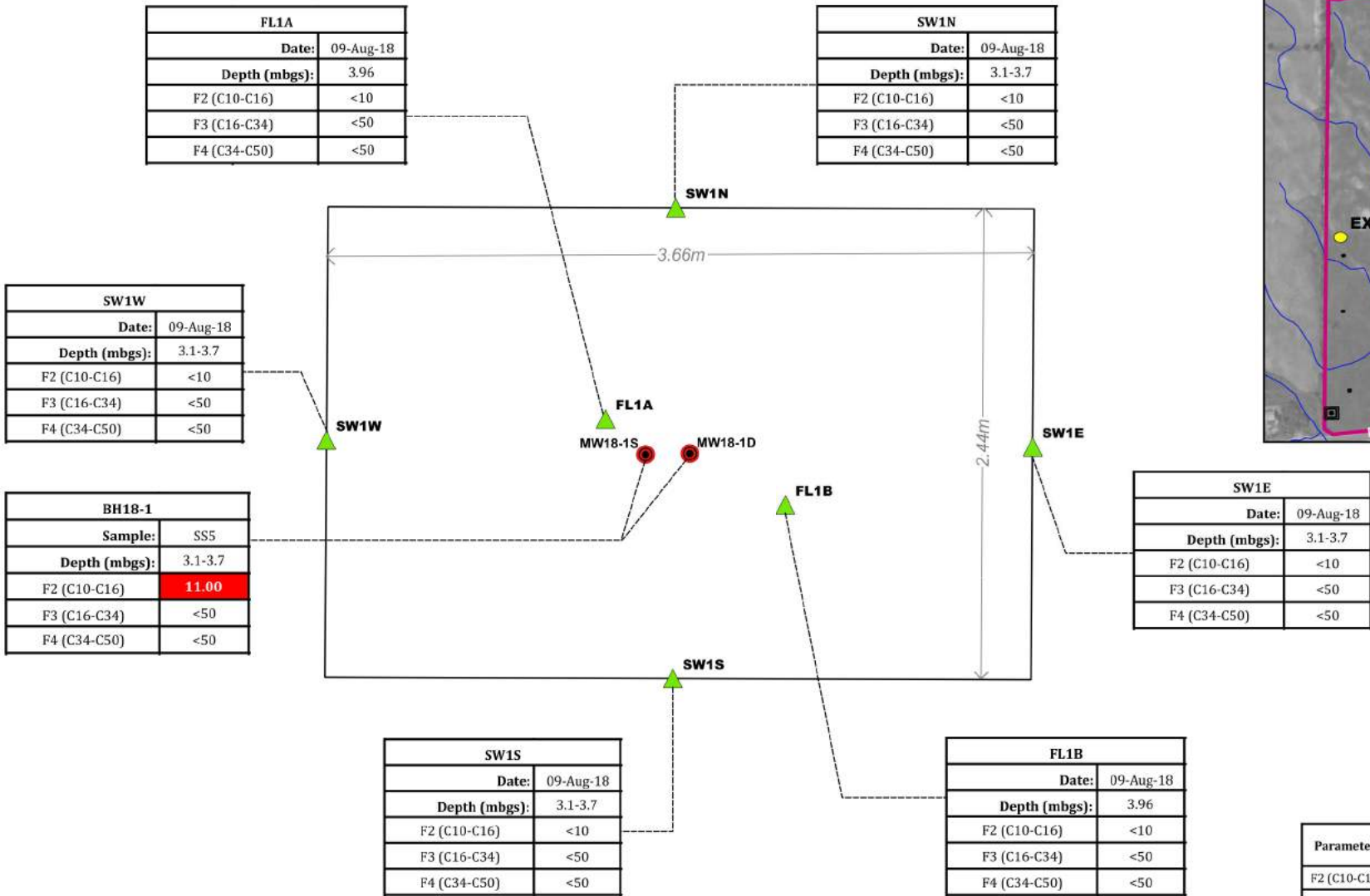
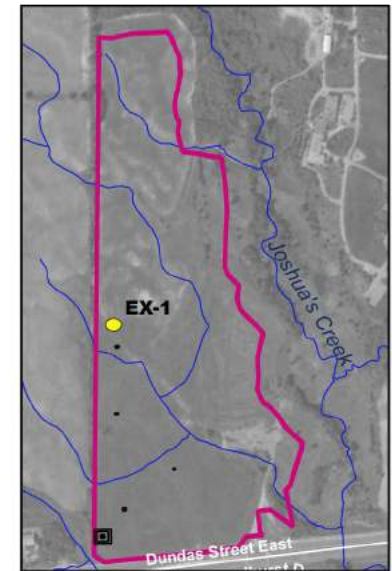


Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11 | Approved By: R.F | Drawn By: S.Y | Date: August 2019

Rev. | Scale: As Shown | Project No.: 18-549-100 | Figure No.: **R1**

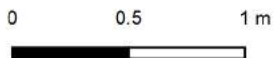
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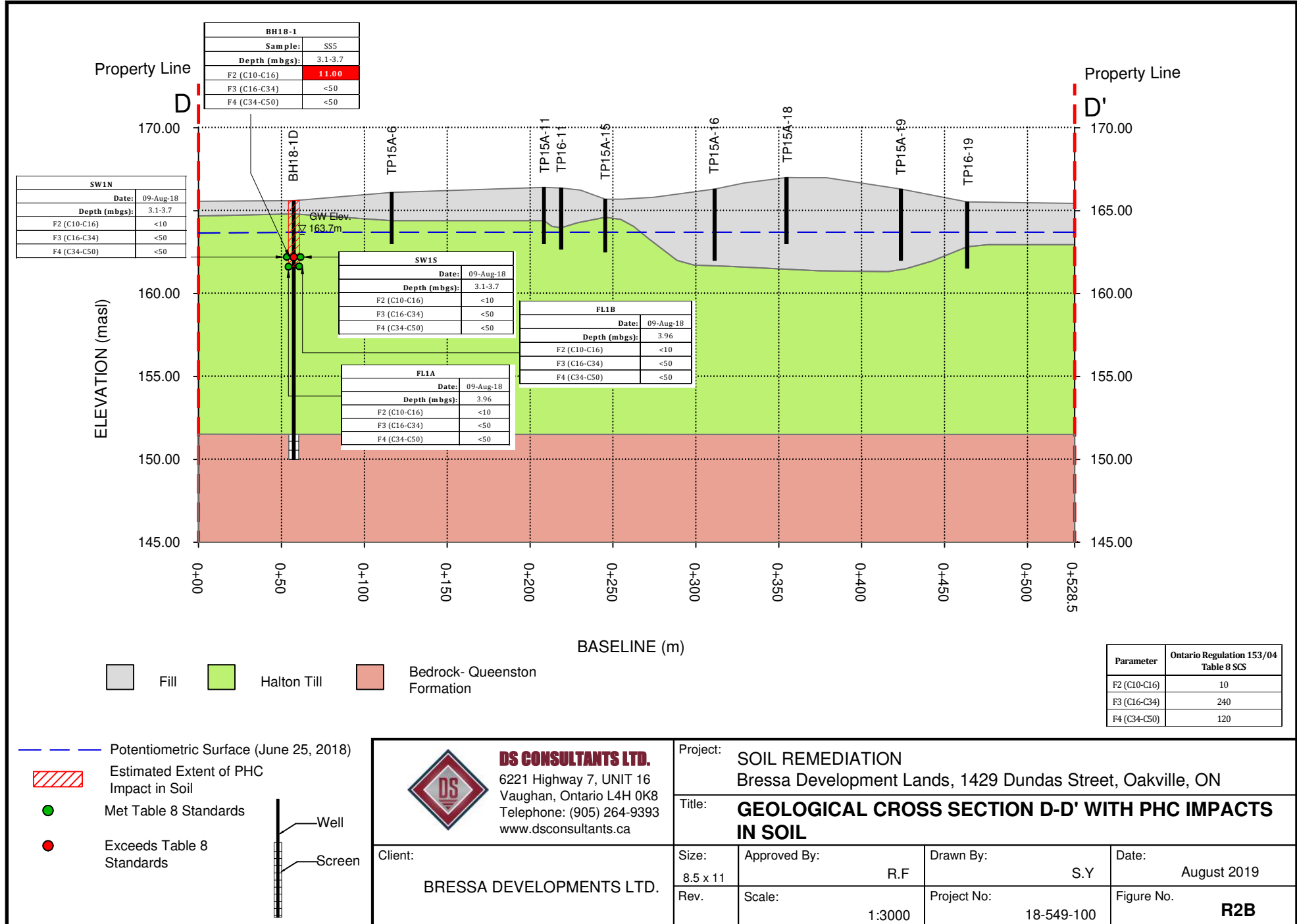
Parameter	Ontario Regulation 153/04 Table 8 SCS
F2 (C10-C16)	10
F3 (C16-C34)	240
F4 (C34-C50)	120

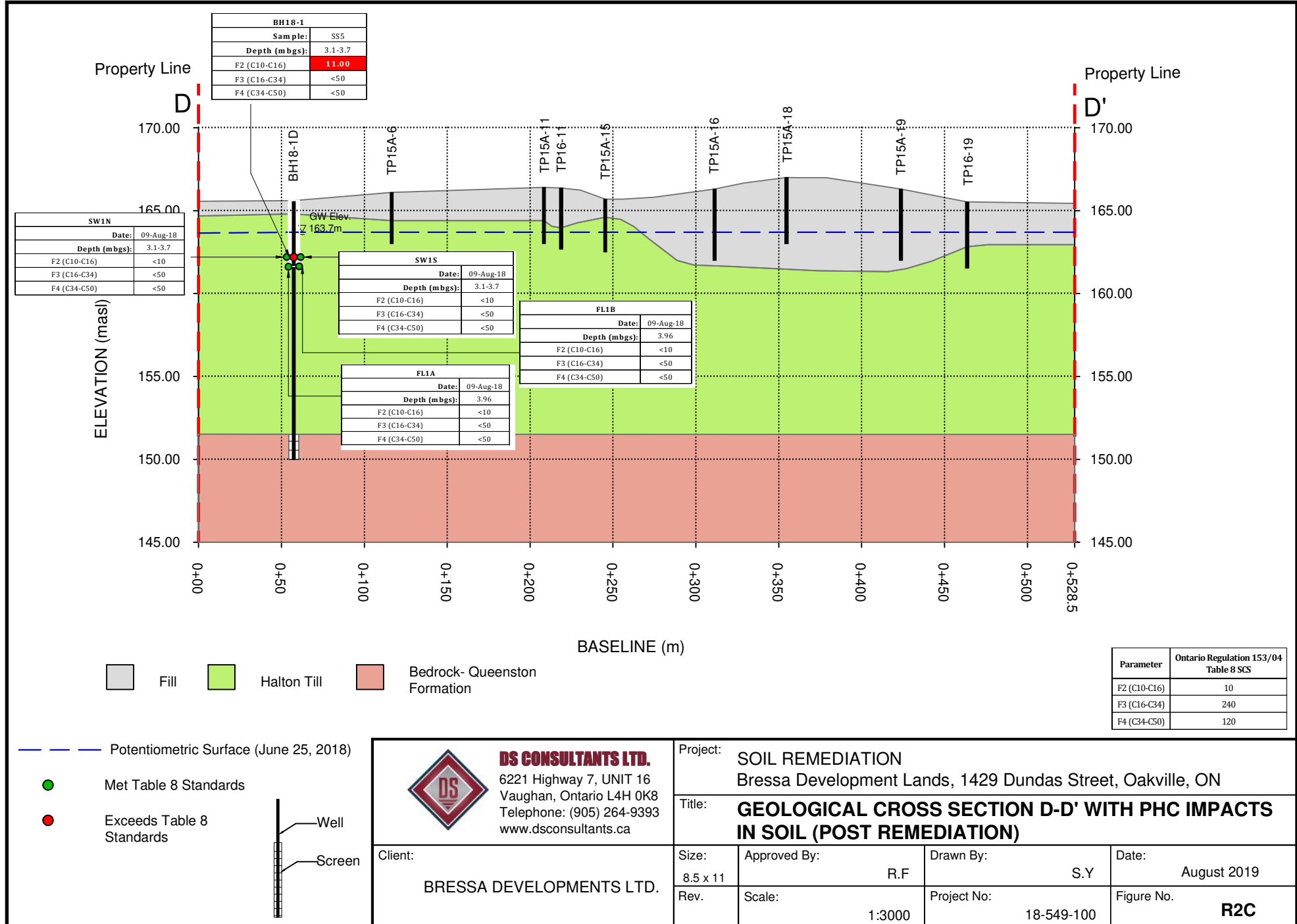
Legend

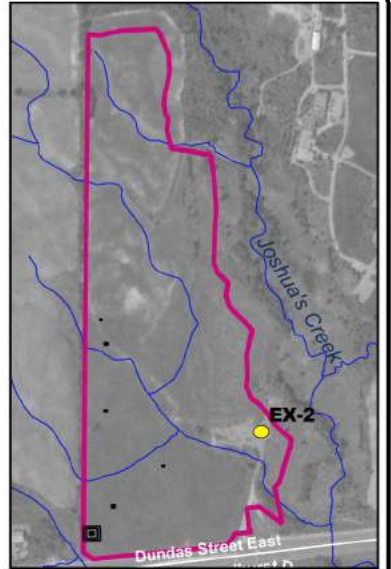
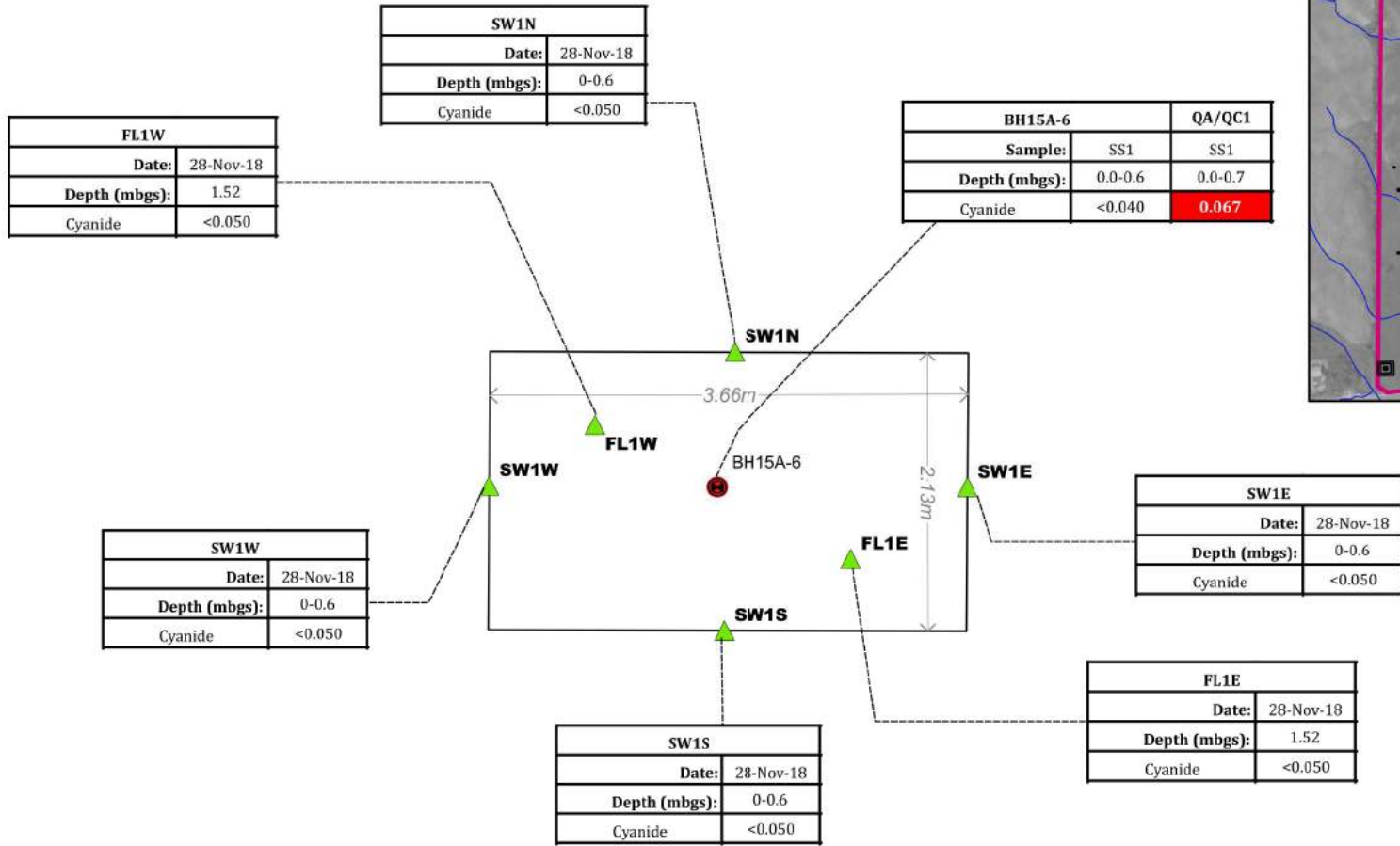
- ▲ Confirmatory Sample Met Table 8 Standards
- Borehole -DS (2018)
- Sample Exceeds Table 8 Standards



 <p><b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca</p>	Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
	Title: <b>CONFIRMATORY SOIL CHARACTERIZATION FOR EX-1 - PHCs</b>			
Client:	Size:	Approved By:	Drawn By:	Date:
BRESSA DEVELOPMENTS LTD.	8.5 x 11	R.F	S.Y	August 2019
	Rev:	Scale:	Project No.:	Figure No.:
	0	As Shown	18-549-100	<b>R2A</b>
Image/Map Source: Google Satellite Image				









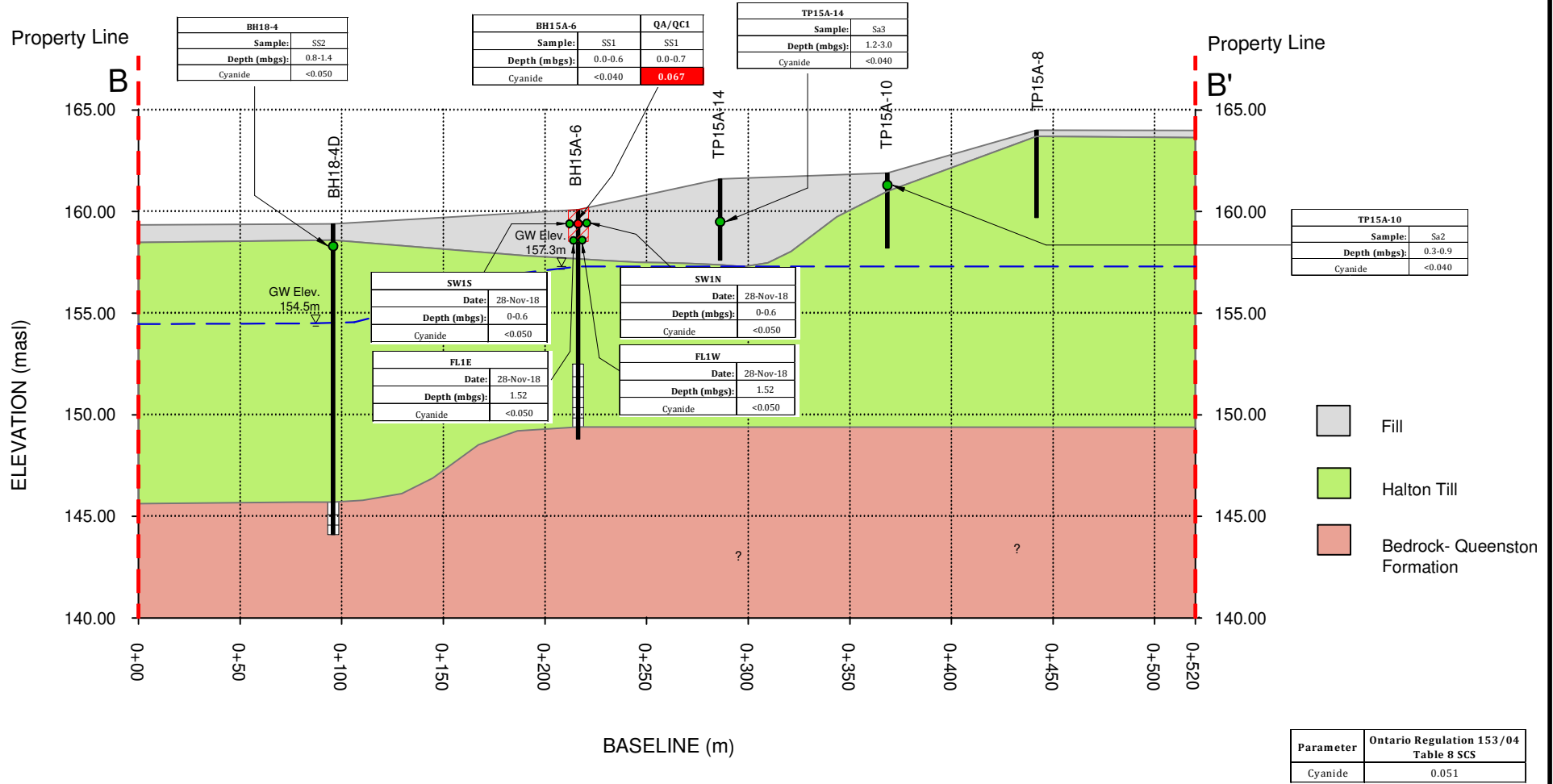
Parameter	Ontario Regulation 153/04 Table 8 SCS
Cyanide	0.051

Legend

- ▲ Confirmatory Sample Met Table 8 Standards
- ⊙ Monitoring Well -WSP (2015)
- Sample Exceeds Table 8 Standards



 <p><b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca</p>	Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
	Title: <b>CONFIRMATORY SOIL CHARACTERIZATION FOR EX-2 – ORPs</b>			
Client: <b>BRESSA DEVELOPMENTS LTD.</b>	Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: August 2019
	Rev: 0	Scale: As Shown	Project No.: 18-549-100	Figure No.: <b>R3A</b>
Image/Map Source: Google Satellite Image				



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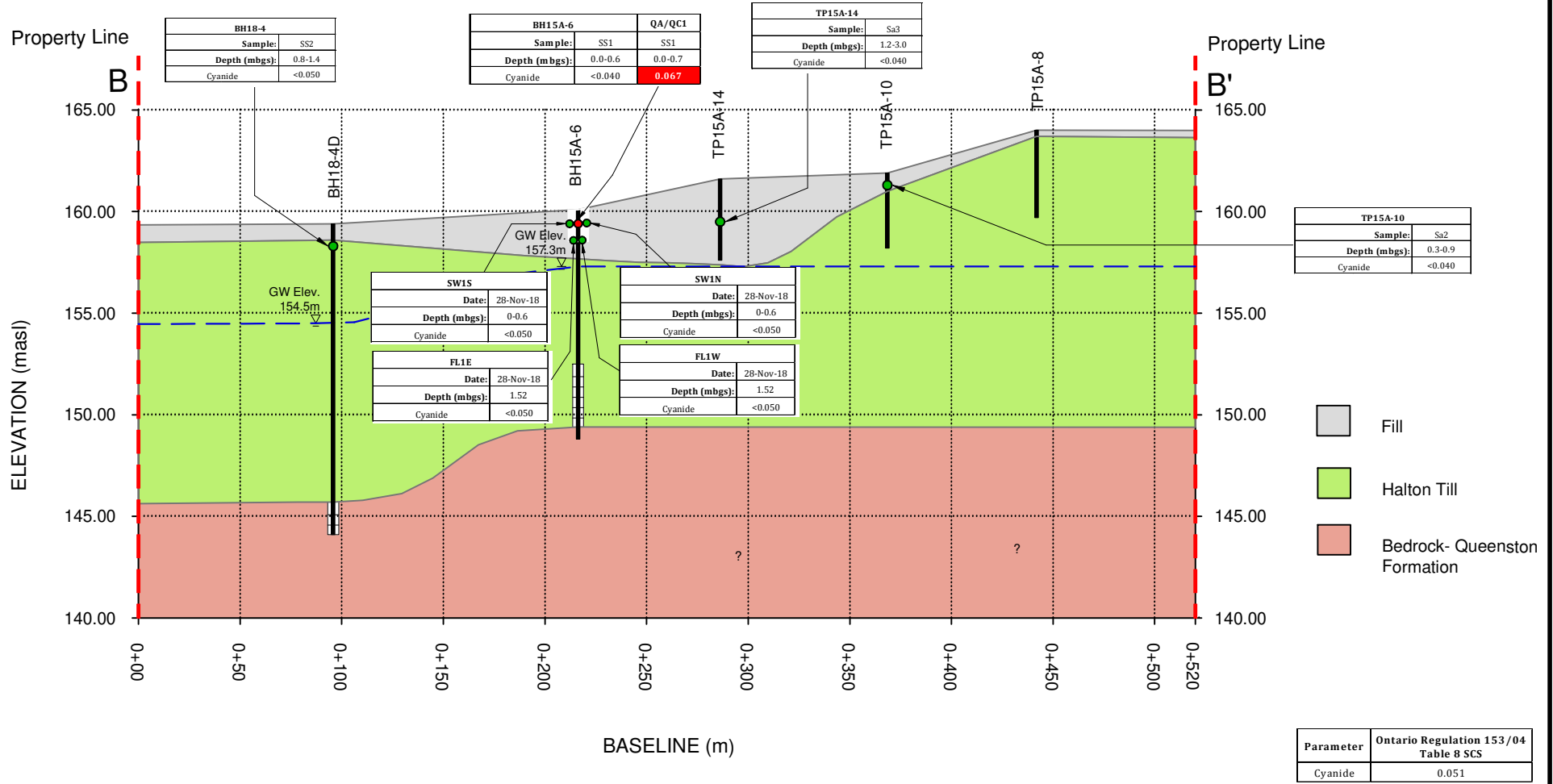
Project: **SOIL REMEDIATION**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION B-B' ORP IMPACTS IN SOIL**

Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11  
 Approved By: R.F  
 Drawn By: S.Y  
 Date: August 2019

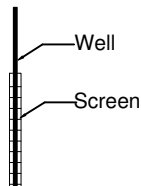
Rev. Scale: 1:3000  
 Project No: 18-549-100  
 Figure No: **R3B**



— Potentiometric Surface (June 25, 2018)

● Met Table 8 Standards

● Exceeds Table 8 Standards



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Client:

**BRESSA DEVELOPMENTS LTD.**

Project: **SOIL REMEDIATION**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION B-B' ORP IMPACTS IN SOIL (POST REMEDIATION)**

Size:  
8.5 x 11

Approved By:  
R.F

Drawn By:  
S.Y

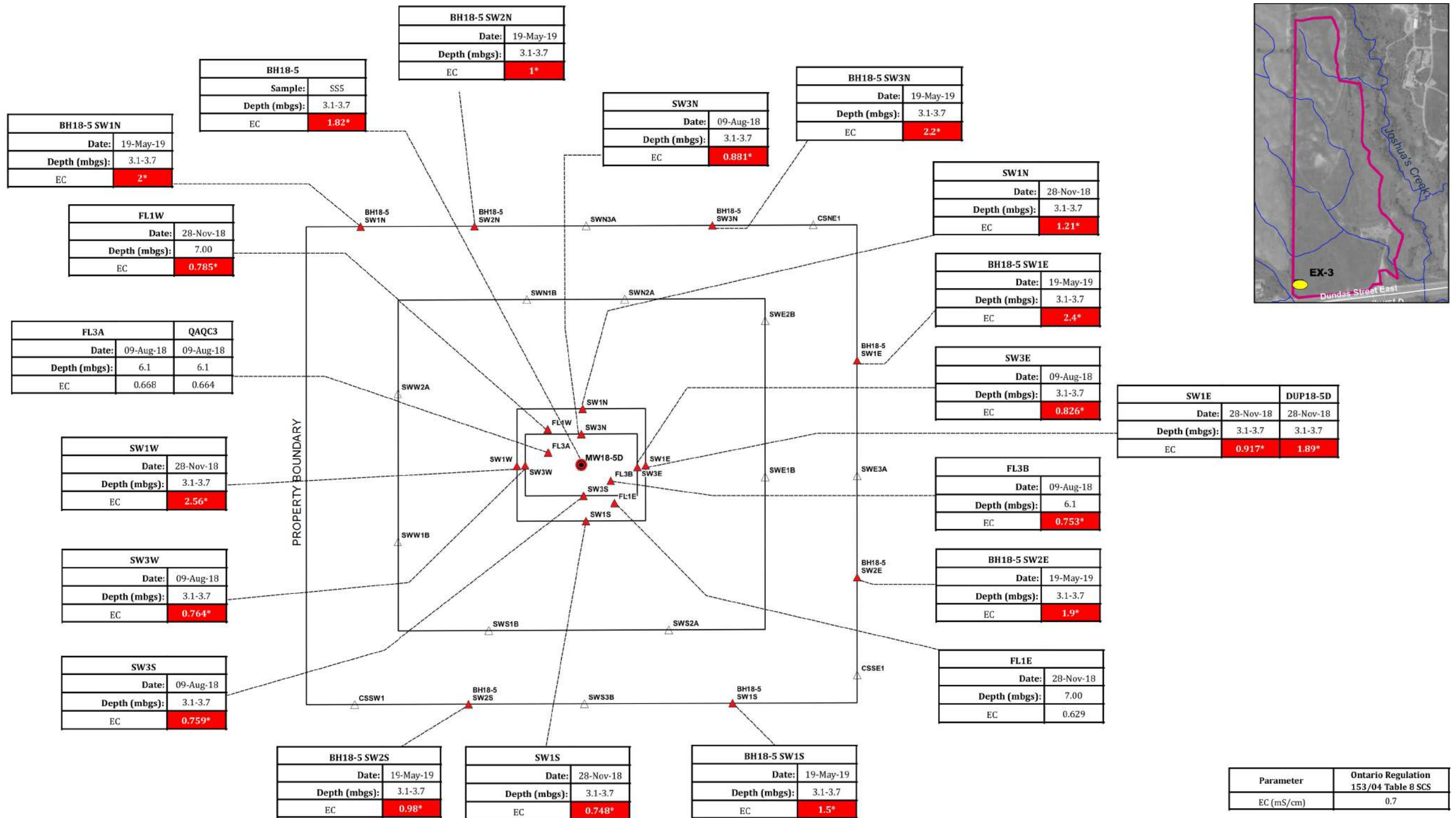
Date:  
August 2019

Rev.

Scale:  
1:3000

Project No:  
18-549-100

Figure No.  
**R3C**

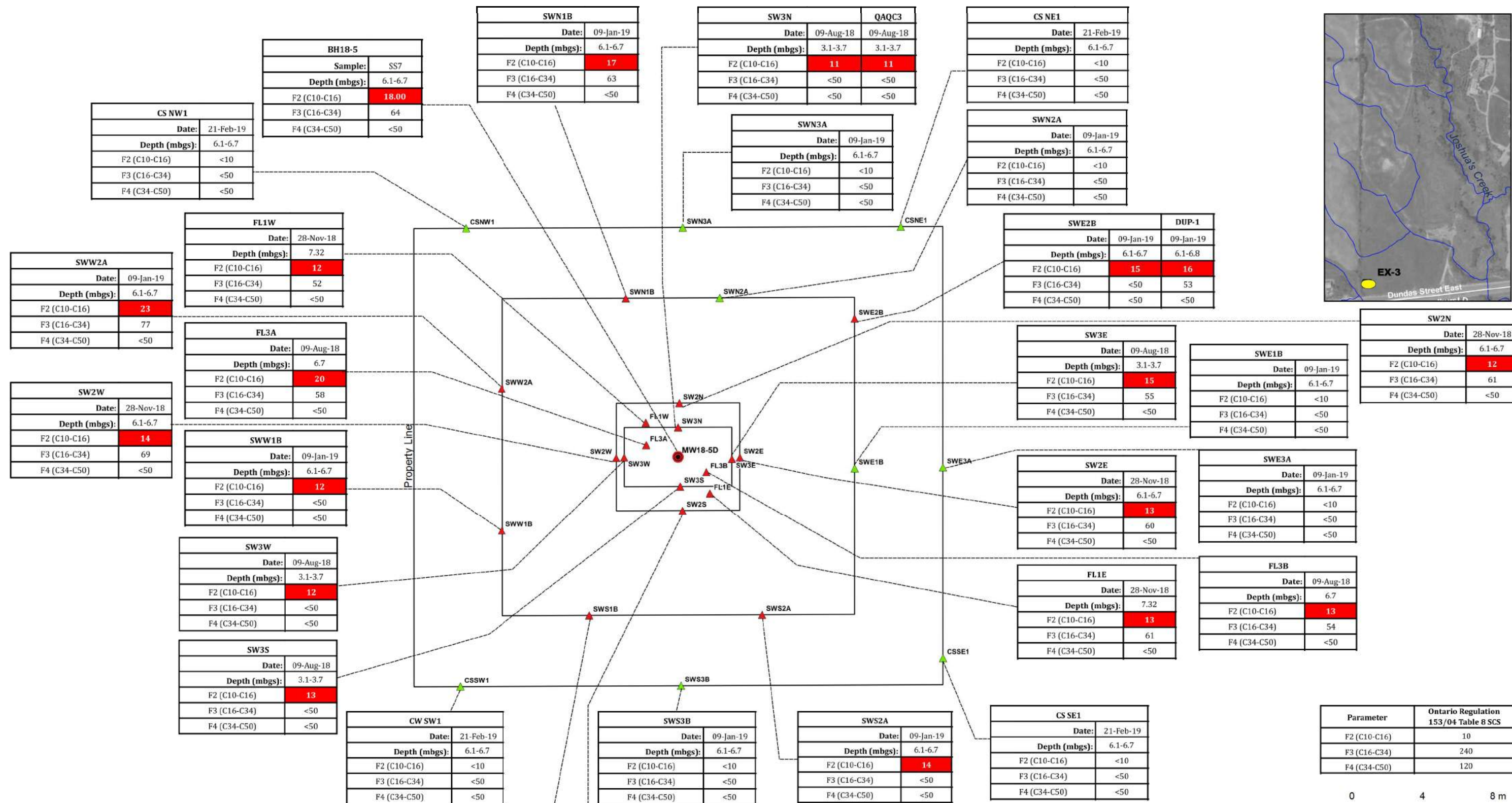
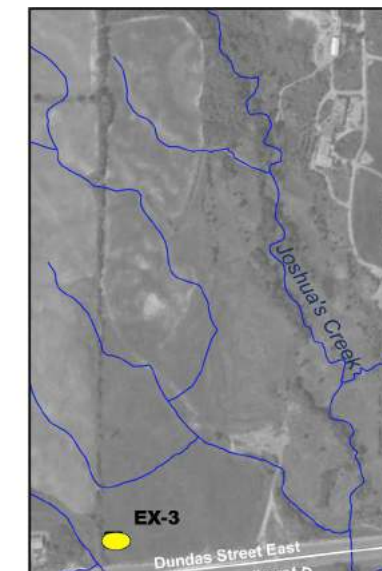


\* Not considered to be contamination. Refer to Section 5.6.6 of Phase Two ESA Report

- Legend**
- ▲ Confirmatory Sample Exceeds Table 8 Standards
  - Boreholes - DS (2018)
  - Sample Exceeds Table 8 Standards



<p><b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca</p>	<p>Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON</p>			
	<p>Title: <b>CONFIRMATORY SOIL CHARACTERIZATION FOR EX-3 – METALS AND ORPs</b></p>			
Client: BRESSA DEVELOPMENTS LTD.	Size: 11x17	Approved By: R.F	Drawn By: S.Y	Date: August 2019
	Rev: 0	Scale: As Shown	Project No.: 18-549-100	Figure No.: <b>R4</b>
Image/Map Source:				



- Legend**
- ▲ Confirmatory Sample Met Table 8 Standards
  - ▲ Confirmatory Sample Exceeds Table 8 Standards
  - Borehole - DS (2018)
  - Sample Exceeds Table 8 Standards

**DS CONSULTANTS LTD.**  
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 Telephone: (905) 264-9393  
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**Project:** SOIL REMEDIATION  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

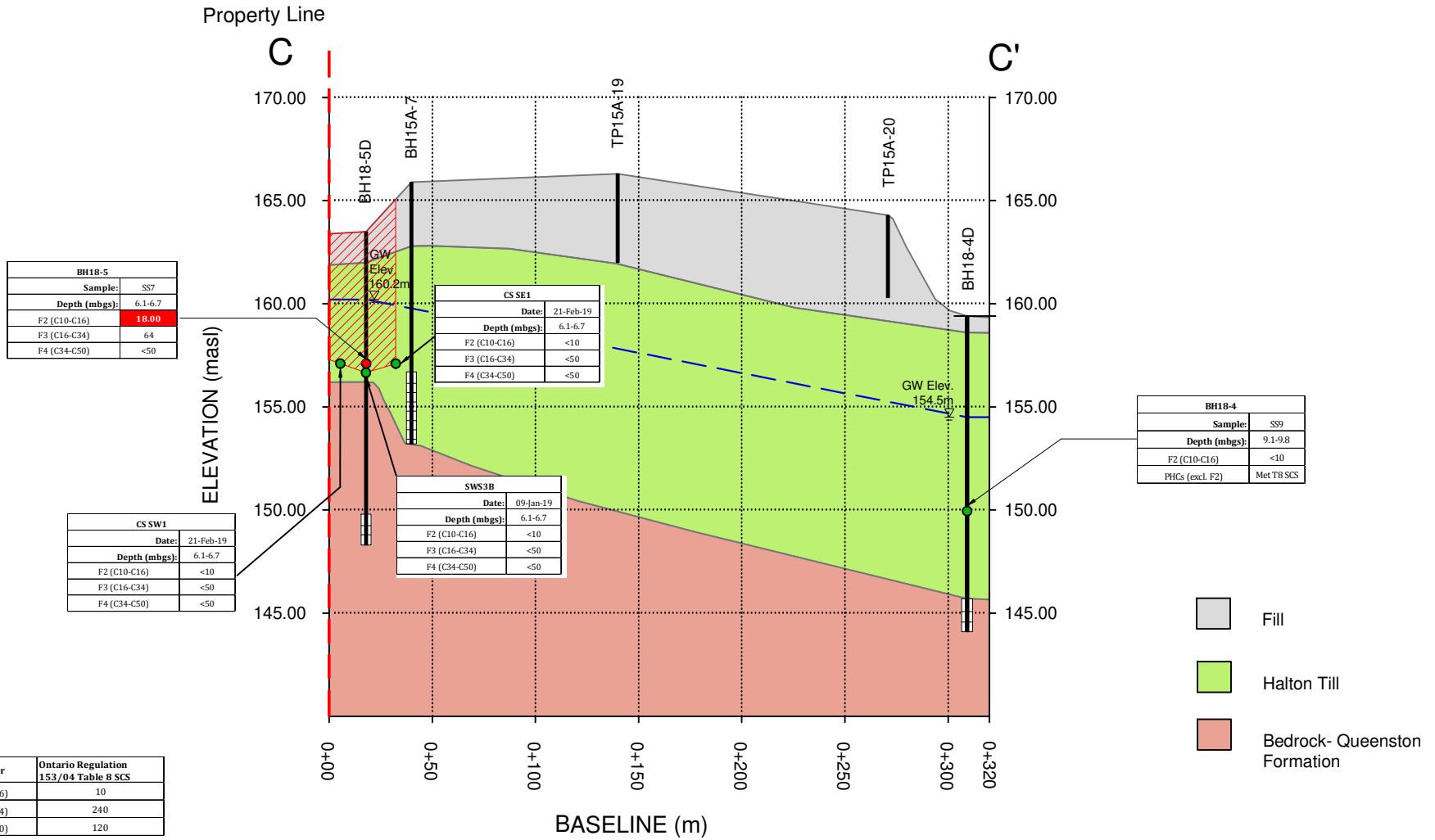
**Title:** CONFIRMATORY SOIL CHARACTERIZATION FOR EX-3 - PHCs

**Client:** BRESSA DEVELOPMENTS LTD.

**Size:** 11x17  
**Rev:** 0

Approved By: R.F	Drawn By: S.Y	Date: August 2019
Scale: As Shown	Project No.: 18-549-100	Figure No.: R5A
Image/Map Source:		





- Potentiometric Surface (June 25, 2018)
- ▨ Estimated Extent of PHC Impact in Soil
- Met Table 8 Standards
- Exceeds Table 8 Standards
- Well
- Screen



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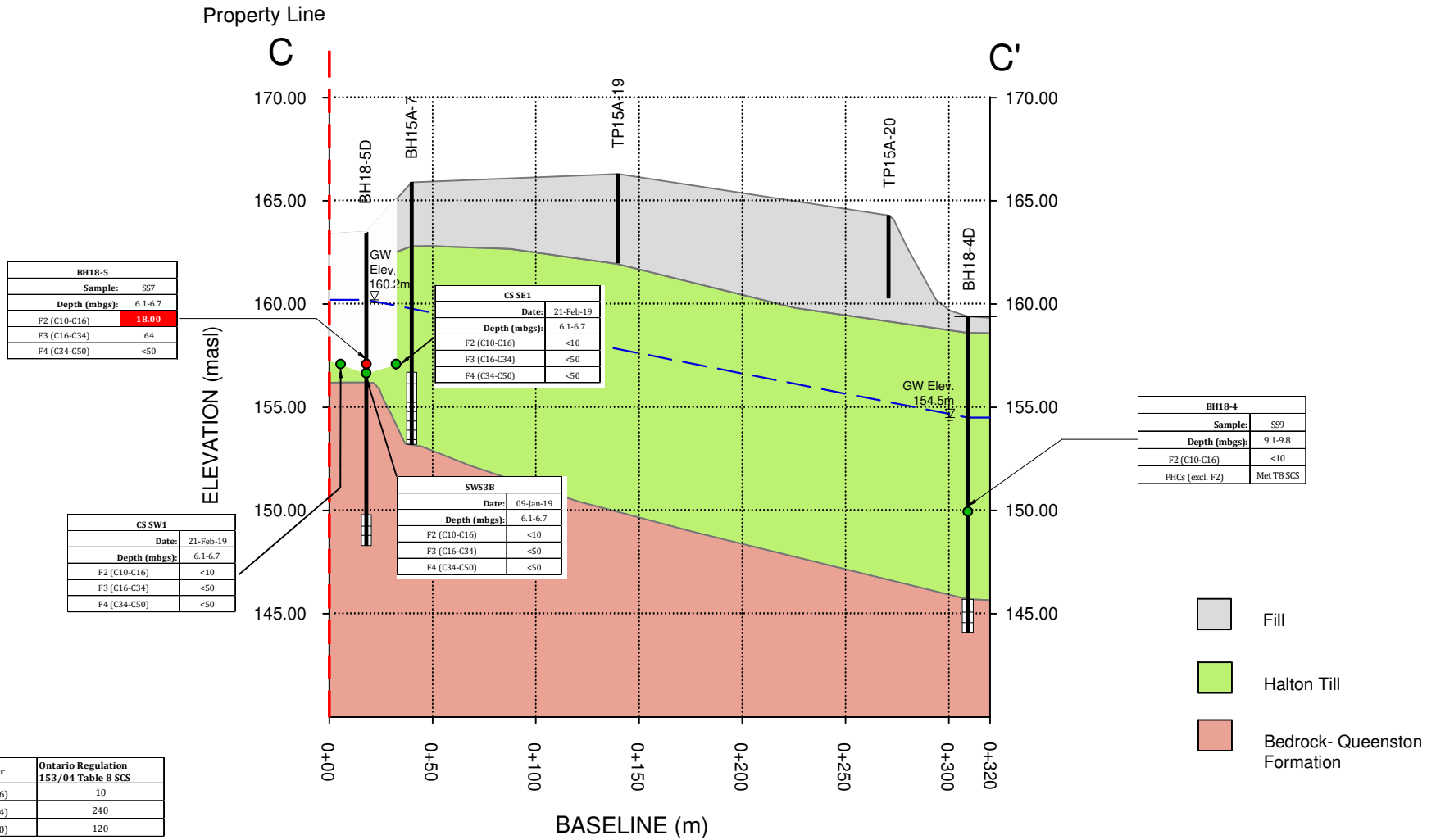
Client:  
**BRESSA DEVELOPMENTS LTD.**

Project: **SOIL REMEDIATION**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION C-C' WITH PHC IMPACTS IN SOIL**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: August 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>R5B</b>

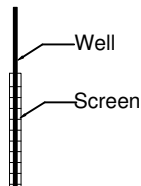
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--- Potentiometric Surface (June 25, 2018)

● Met Table 8 Standards

● Exceeds Table 8 Standards



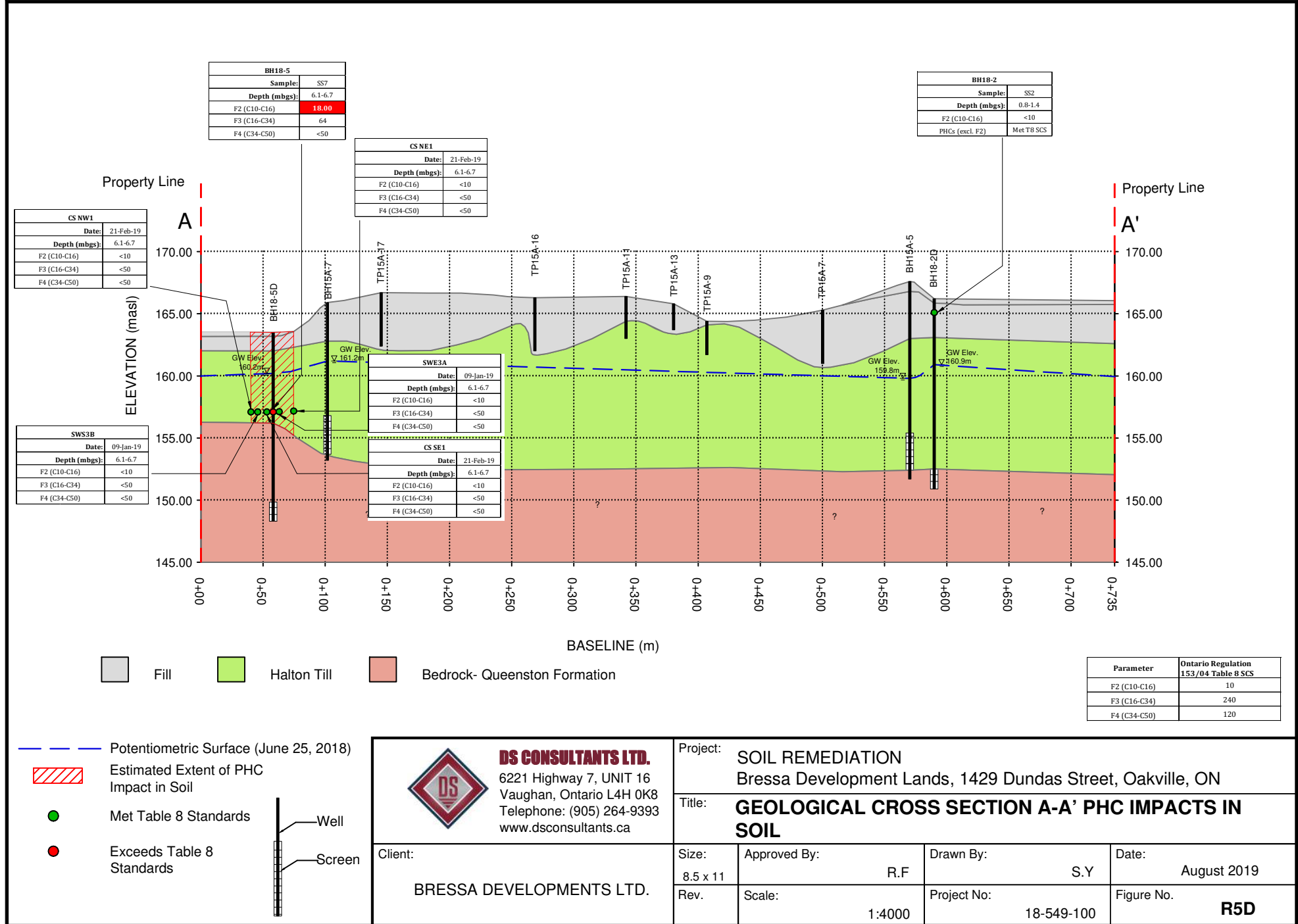
**DS CONSULTANTS LTD.**  
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 Vaughan, Ontario L4H 0K8  
 Telephone: (905) 264-9393  
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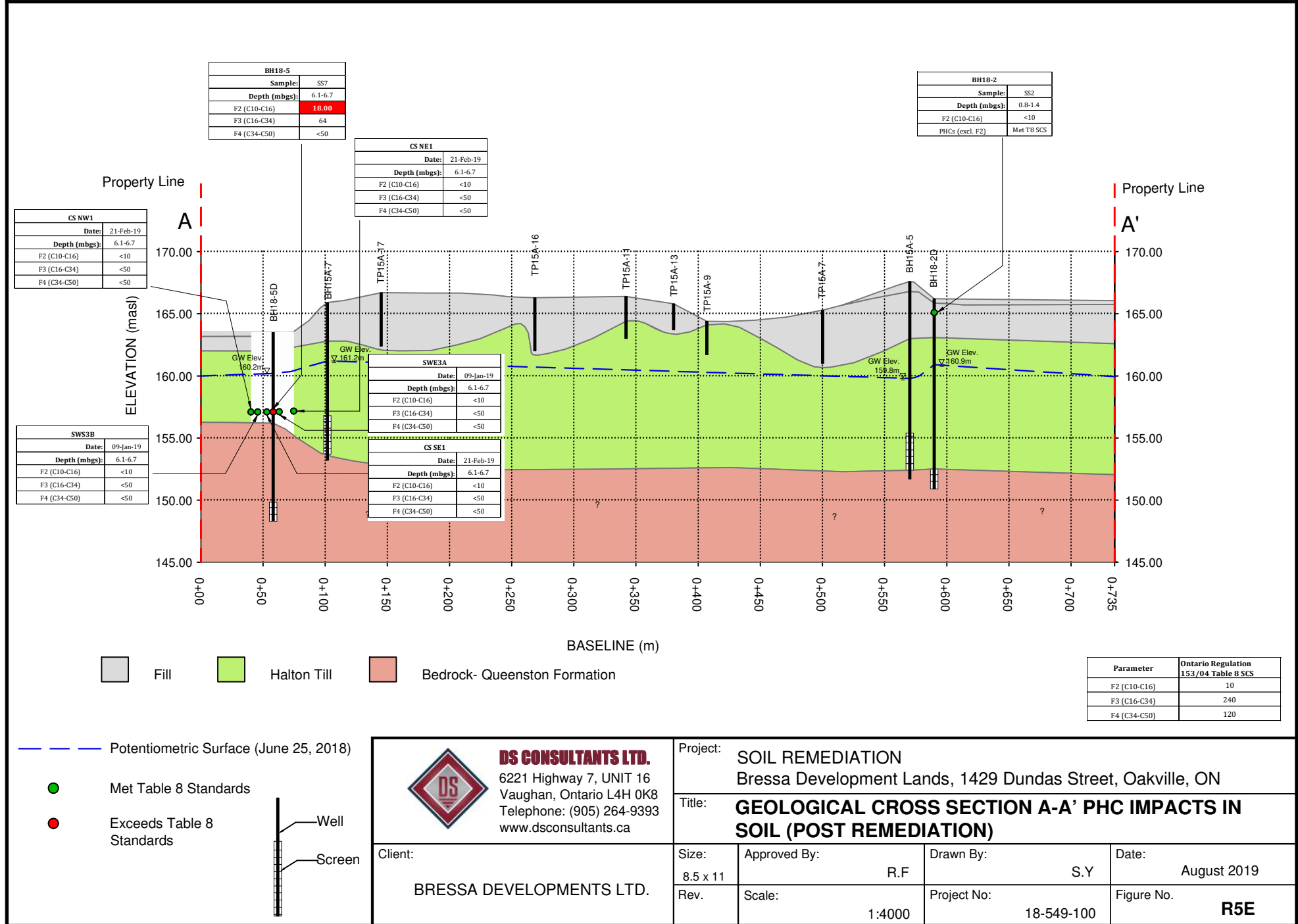
Project: **SOIL REMEDIATION**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION C-C' WITH PHC IMPACTS IN SOIL (POST REMEDIATION)**

Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: August 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>R5C</b>





**DS CONSULTANTS LTD.**  
 6221 Highway 7, UNIT 16  
 Vaughan, Ontario L4H 0K8  
 Telephone: (905) 264-9393  
 www.dsconsultants.ca

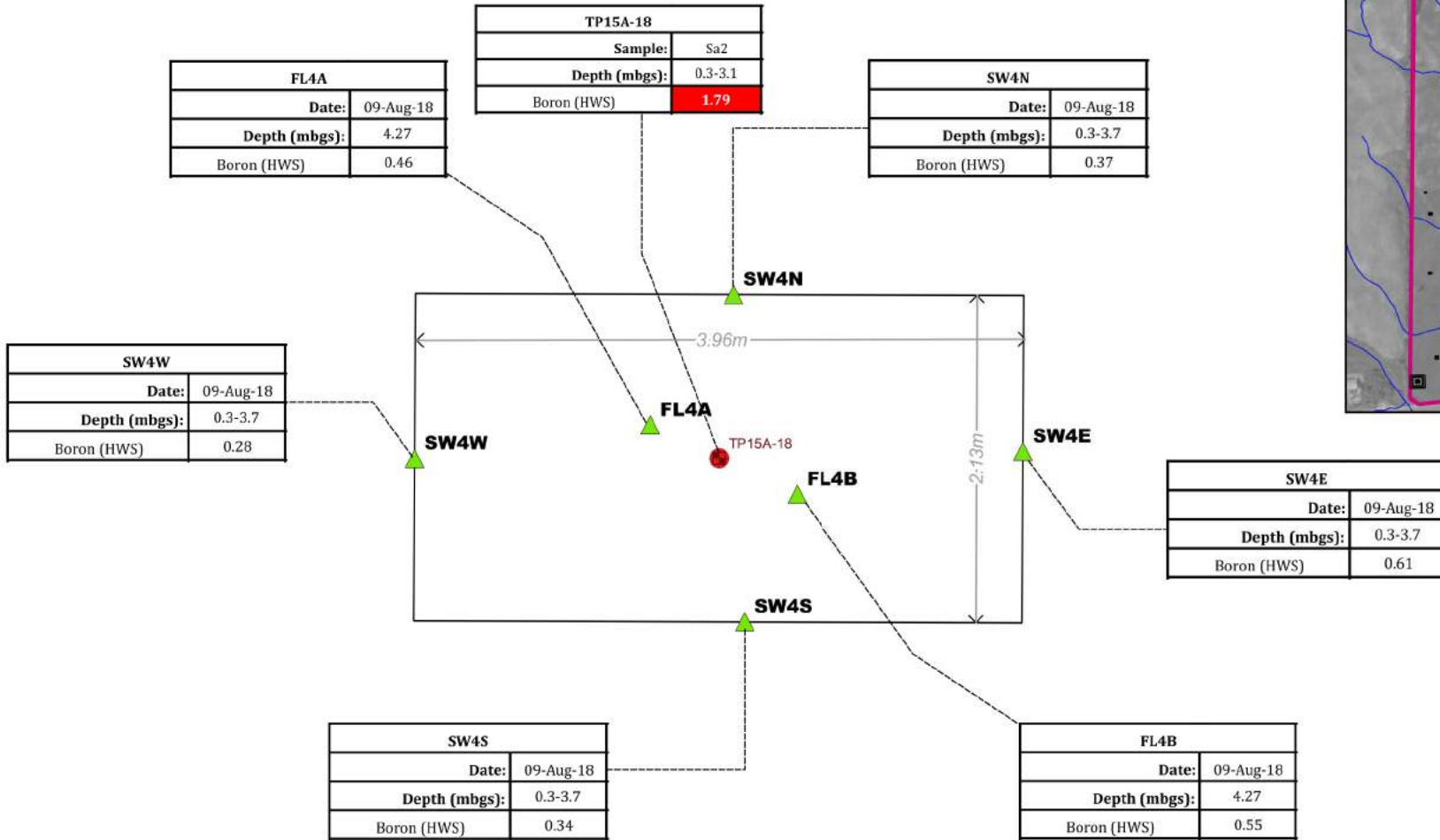
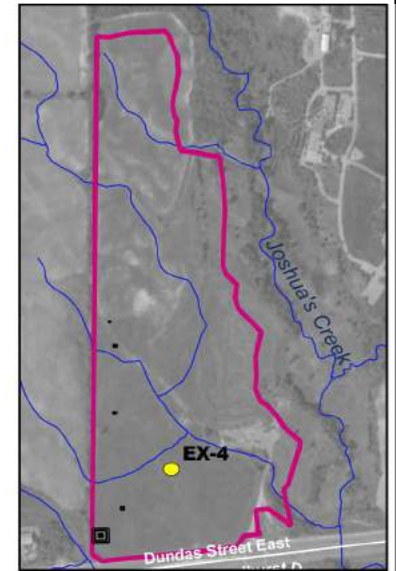
Project: **SOIL REMEDIATION**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION A-A' PHC IMPACTS IN SOIL (POST REMEDIATION)**

Client: **BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11  
 Approved By: R.F  
 Drawn By: S.Y  
 Date: August 2019

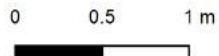
Rev. Scale: 1:4000  
 Project No: 18-549-100  
 Figure No: **R5E**





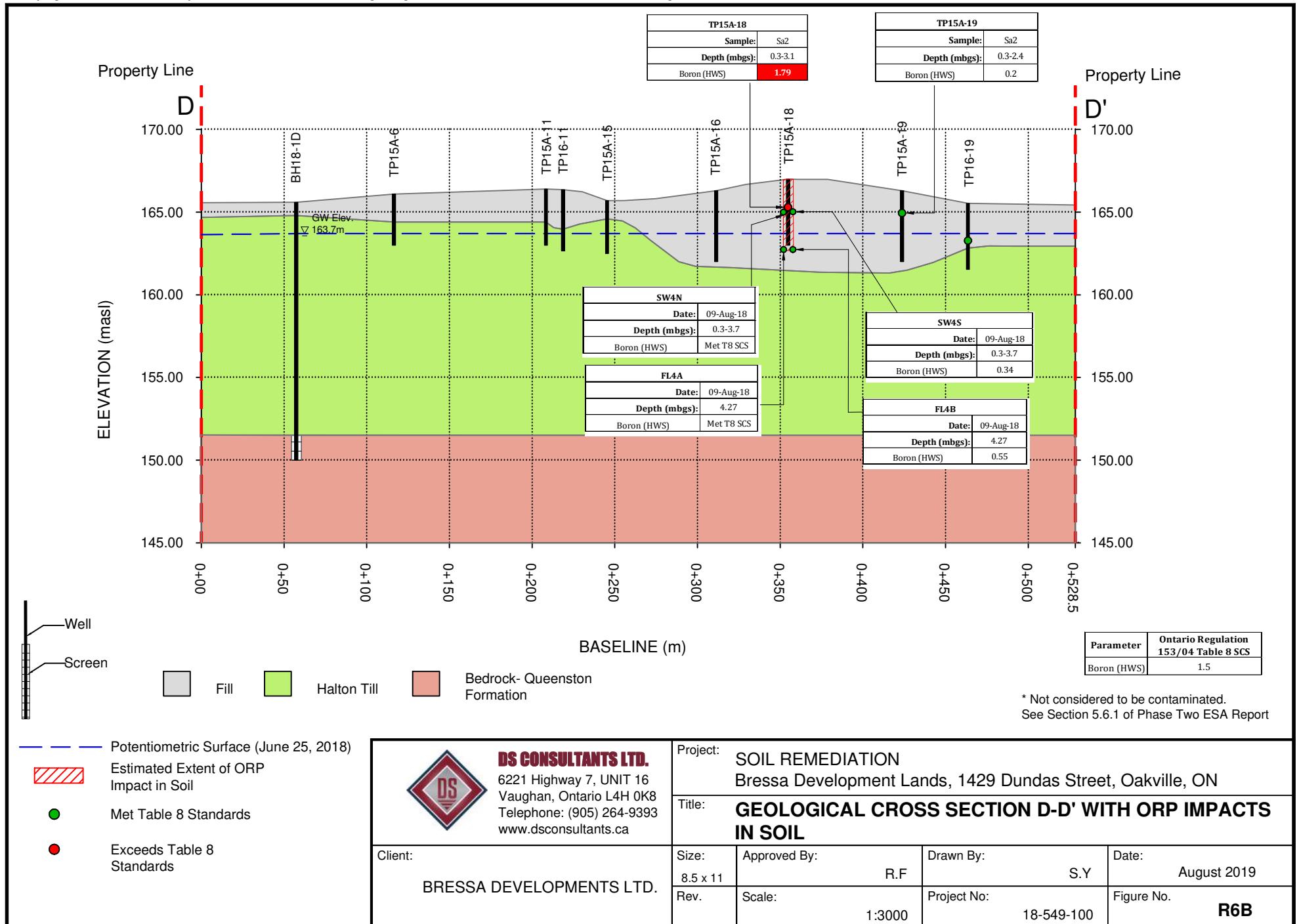
Parameter	Ontario Regulation 153/04 Table 8 SCS
Boron (HWS)	1.5

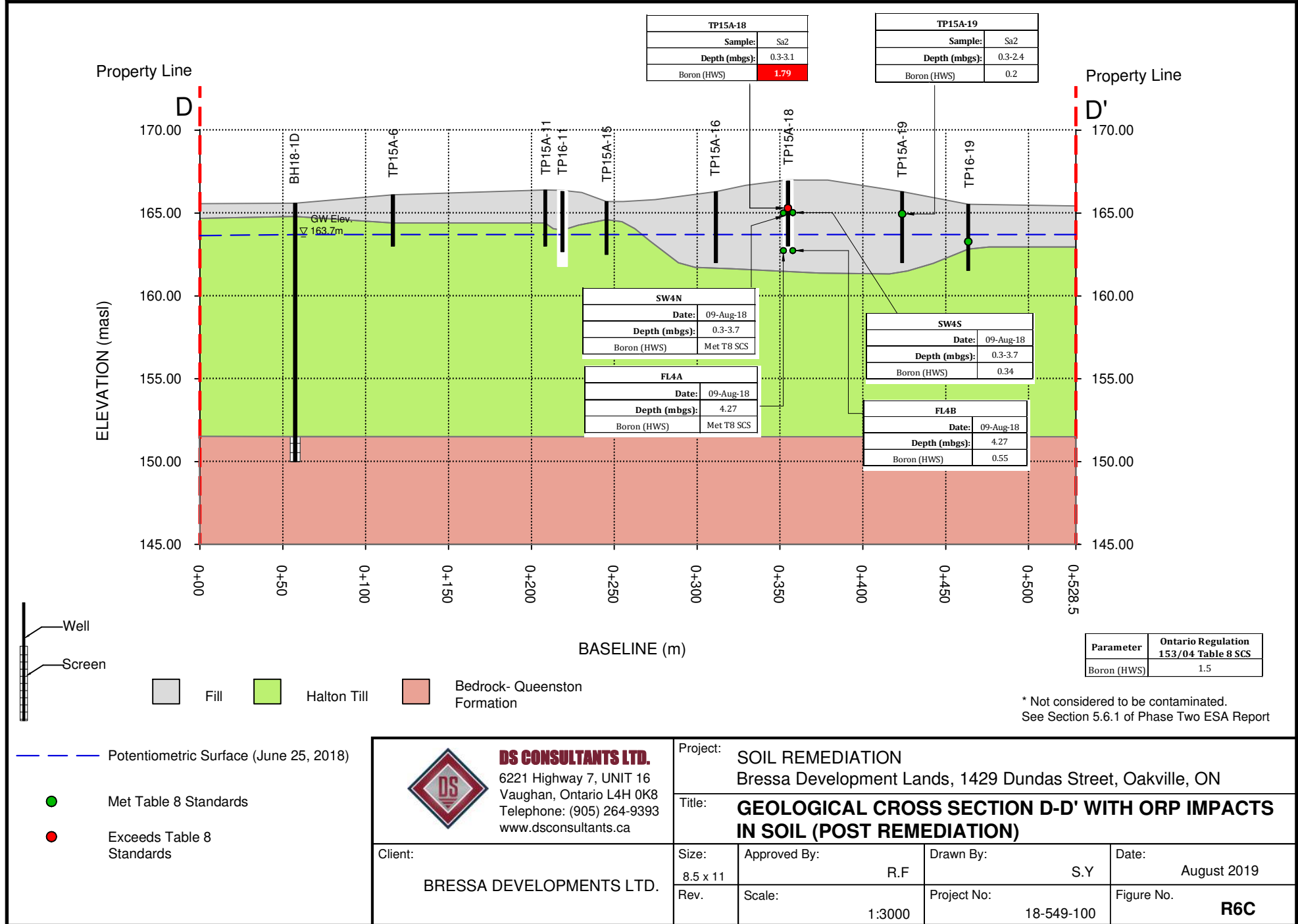
Legend

- Confirmatory Sample Met Table 8 Standards
- Sample Exceeds Table 8 Standards
- Test Pit - WSP (2015)



 <p><b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca</p>	Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
	Title: <b>CONFIRMATORY SOIL CHARACTERIZATION FOR EX-4 – METALS AND ORPs</b>			
Client:	Size:	Approved By:	Drawn By:	Date:
BRESSA DEVELOPMENTS LTD.	8.5 x 11	R.F	S.Y	August 2019
	Rev:	Scale:	Project No.:	Figure No.:
	0	As Shown	18-549-100	<b>R6A</b>
		Image/Map Source:		





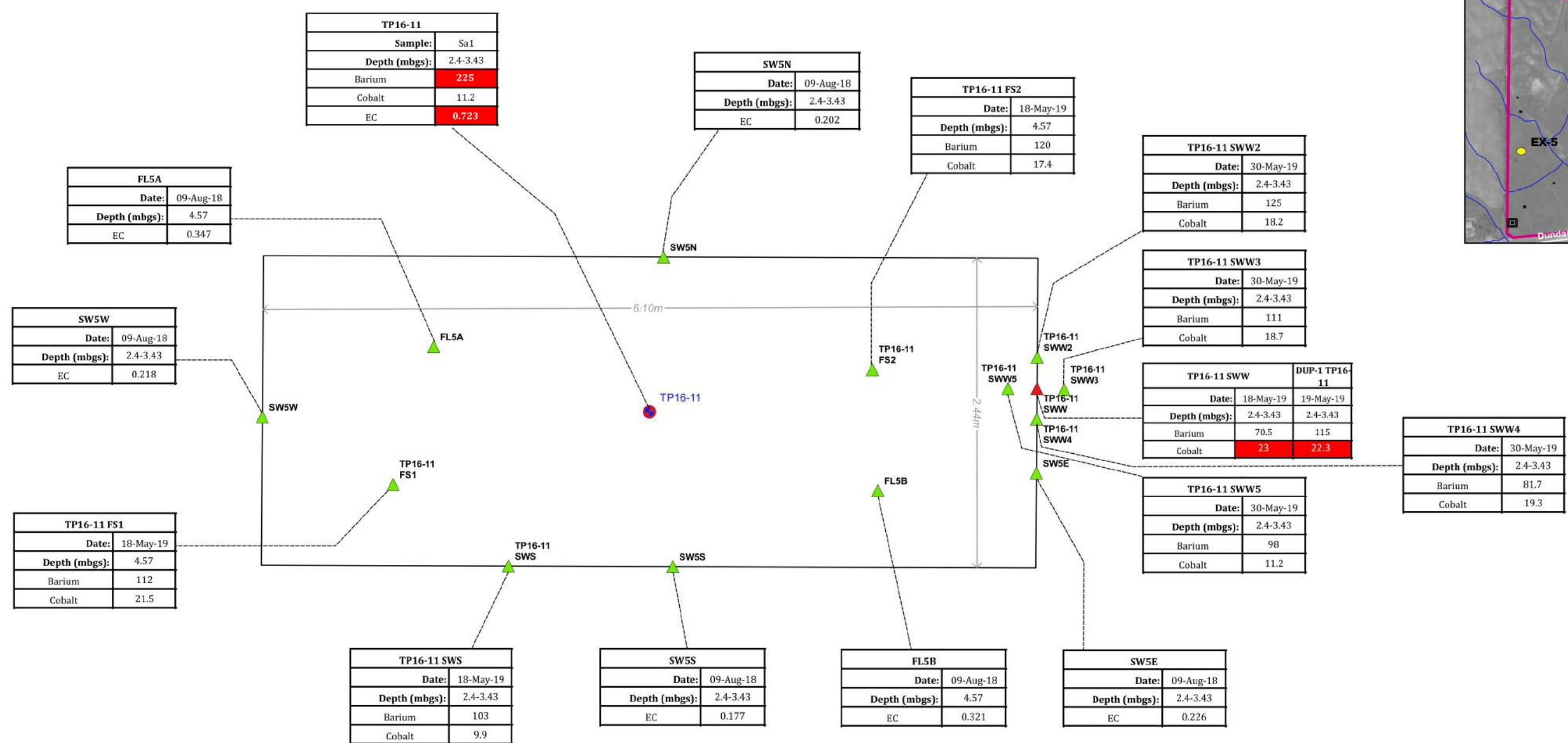
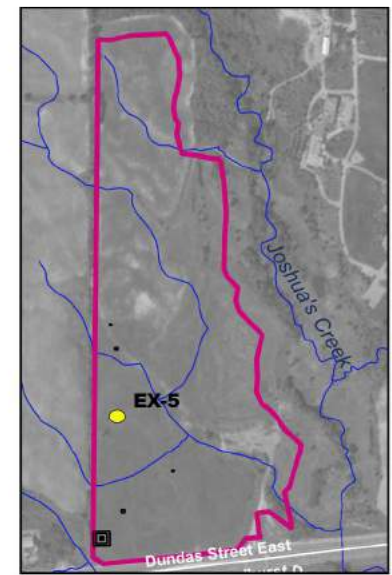
**DS CONSULTANTS LTD.**  
 6221 Highway 7, UNIT 16  
 Vaughan, Ontario L4H 0K8  
 Telephone: (905) 264-9393  
 www.dsconsultants.ca

Project: **SOIL REMEDIATION**  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION D-D' WITH ORP IMPACTS IN SOIL (POST REMEDIATION)**

Client:  
**BRESSA DEVELOPMENTS LTD.**

Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: August 2019
Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>R6C</b>



TP16-11	
Sample:	Sa1
Depth (mbgs):	2.4-3.43
Barium	225
Cobalt	11.2
EC	0.723

SW5N	
Date:	09-Aug-18
Depth (mbgs):	2.4-3.43
EC	0.202

TP16-11 FS2	
Date:	18-May-19
Depth (mbgs):	4.57
Barium	120
Cobalt	17.4

TP16-11 SWW2	
Date:	30-May-19
Depth (mbgs):	2.4-3.43
Barium	125
Cobalt	18.2

FL5A	
Date:	09-Aug-18
Depth (mbgs):	4.57
EC	0.347

TP16-11 SWW3	
Date:	30-May-19
Depth (mbgs):	2.4-3.43
Barium	111
Cobalt	18.7

SW5W	
Date:	09-Aug-18
Depth (mbgs):	2.4-3.43
EC	0.218

TP16-11 SWW		DUP-1 TP16-11	
Date:	18-May-19	Date:	19-May-19
Depth (mbgs):	2.4-3.43	Depth (mbgs):	2.4-3.43
Barium	70.5	Barium	115
Cobalt	23	Cobalt	22.3

TP16-11 FS1	
Date:	18-May-19
Depth (mbgs):	4.57
Barium	112
Cobalt	21.5

TP16-11 SWW4	
Date:	30-May-19
Depth (mbgs):	2.4-3.43
Barium	81.7
Cobalt	19.3

TP16-11 SWS	
Date:	18-May-19
Depth (mbgs):	2.4-3.43
Barium	103
Cobalt	9.9

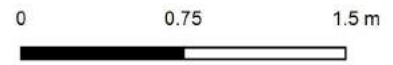
SW5S	
Date:	09-Aug-18
Depth (mbgs):	2.4-3.43
EC	0.177

FL5B	
Date:	09-Aug-18
Depth (mbgs):	4.57
EC	0.321

SW5E	
Date:	09-Aug-18
Depth (mbgs):	2.4-3.43
EC	0.226

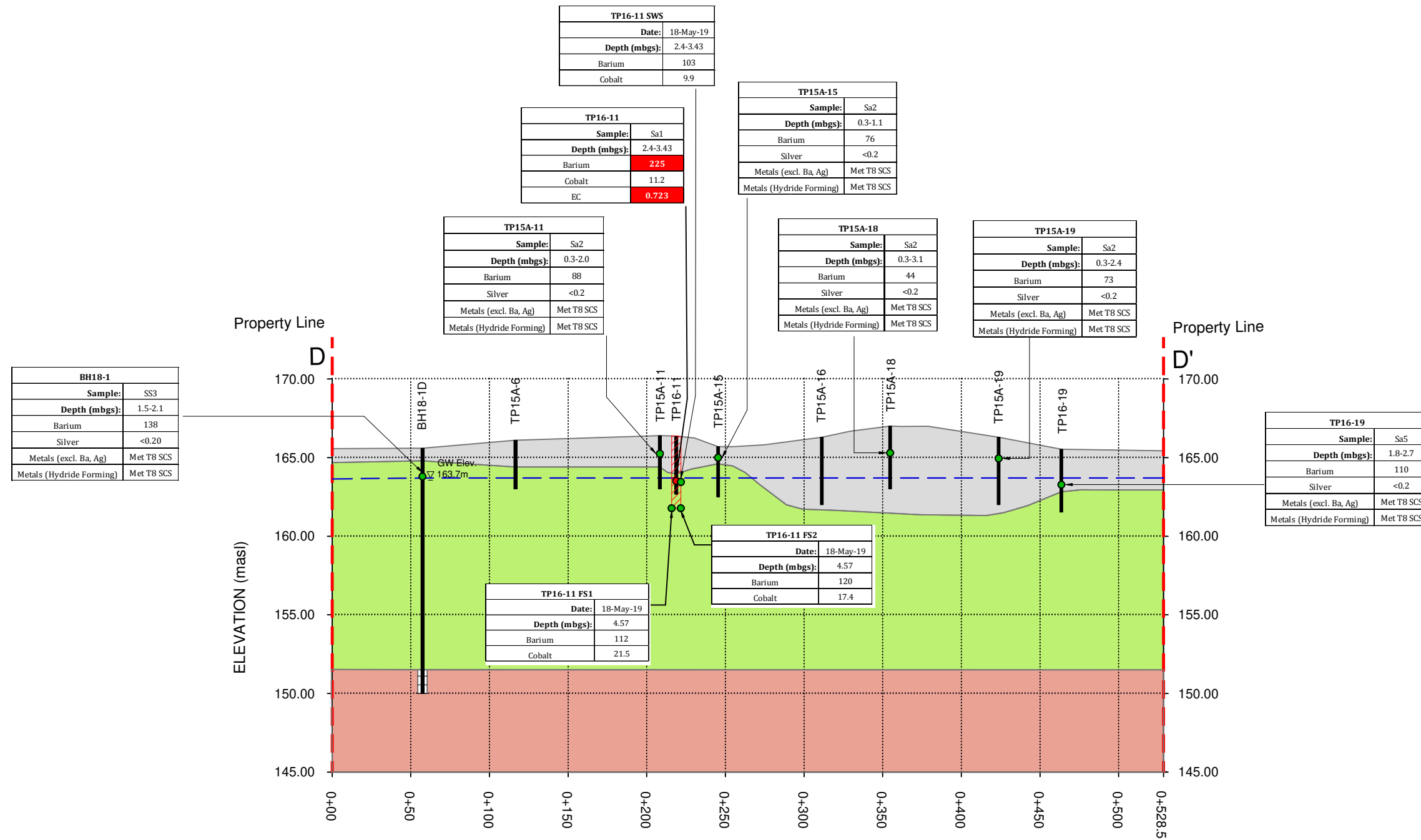
Parameter	Ontario Regulation 153/04 Table 8 SCS
Barium	220
Cobalt	22
EC	0.7

- Legend**
- + Test Pit - WSP (2016)
  - ▲ Confirmatory Sample Met Table 8 Standards
  - ▲ Confirmatory Sample Exceeds Table 8 Standards
  - Sample Exceeds Table 8 Standards



<p><b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca</p>	Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON		
	Title: <b>CONFIRMATORY SOIL CHARACTERIZATION FOR EX-5 – METALS AND ORPs</b>		
Client: BRESSA DEVELOPMENTS LTD.	Size: 11x17	Approved By: R.F	Drawn By: S.Y
Rev: 0	Scale: As Shown	Project No.: 18-549-100	Date: August 2019
Image/Map Source:		Figure No.: <b>R7A</b>	

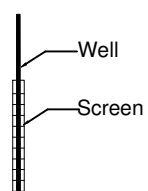
Path:c:\0sharon\18-549-40 mattamy bressa, oakville\7-misc\cad\geological cross sections-bressa remediation.dwg



Fill
  Halton Till
  Bedrock- Queenston Formation

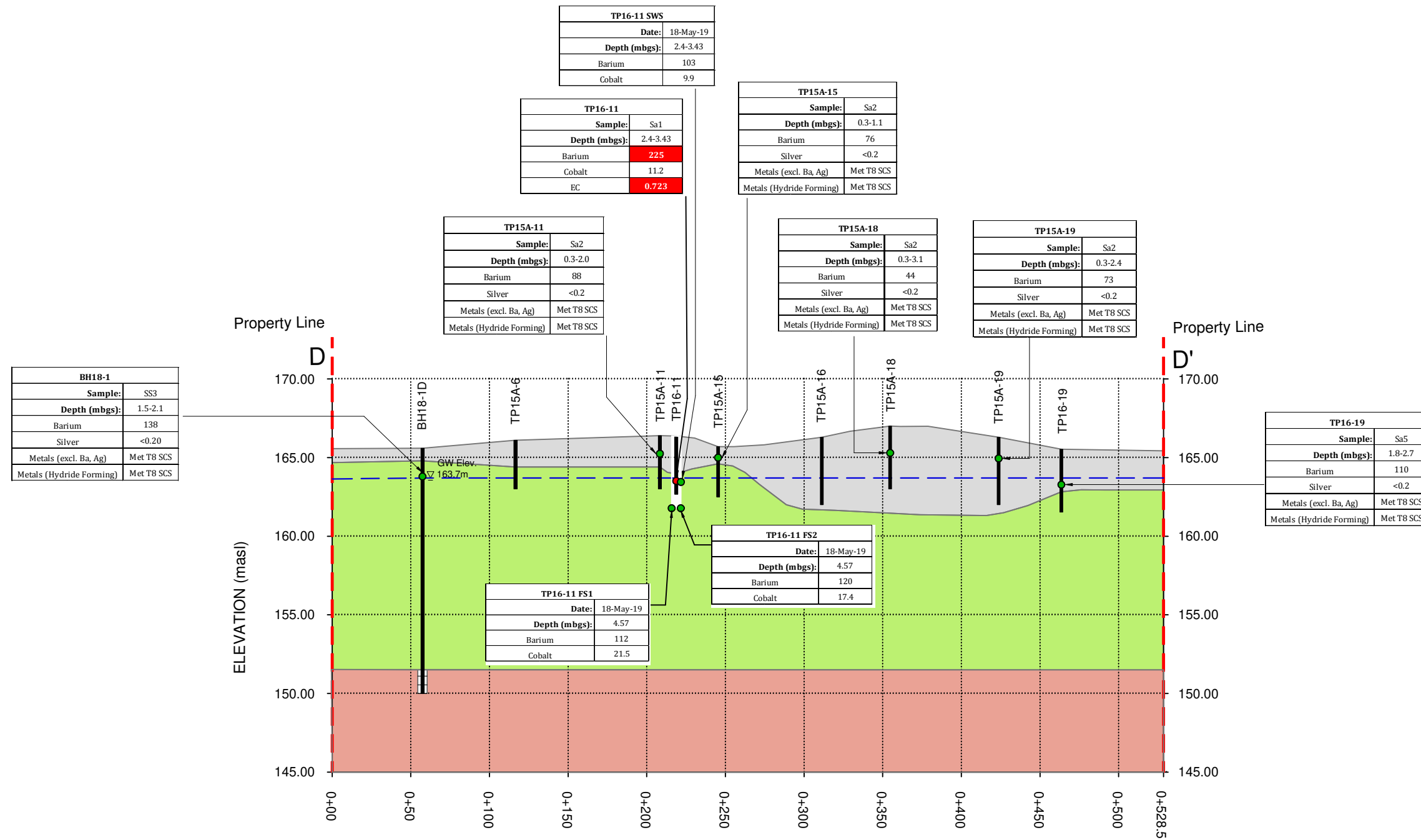
Parameter	Ontario Regulation 153/04 Table 8 SCS
Barium	220
Cobalt	22
EC	0.7

- Potentiometric Surface (June 25, 2018)
- Estimated Extent of Metals and Hydride Impact in Soil
- Met Table 8 Standards
- Exceeds Table 8 Standards



<p><b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca</p>	Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON	
	Title: <b>GEOLOGICAL CROSS SECTION D-D' WITH METALS AND HYDRIDE IMPACTS IN SOIL</b>	
Client: <b>BRESSA DEVELOPMENTS LTD.</b>	Size: 11 X 17	Approved By: R.F.
	Rev.	Scale: 1:3000
	Drawn By: S.Y.	Date: August 2019
	Project No: 18-549-100	Figure No: <b>R7B</b>

Path:c:\0sharon\18-549-40 mattamy bressa, oakville\7-misc\cad\geological cross sections-bressa remediation.dwg



BH18-1	
Sample:	SS3
Depth (mbgs):	1.5-2.1
Barium	138
Silver	<0.20
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-11	
Sample:	Sa2
Depth (mbgs):	0.3-2.0
Barium	88
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-11	
Sample:	Sa1
Depth (mbgs):	2.4-3.43
Barium	225
Cobalt	11.2
EC	0.723

TP16-11 SWS	
Date:	18-May-19
Depth (mbgs):	2.4-3.43
Barium	103
Cobalt	9.9

TP15A-15	
Sample:	Sa2
Depth (mbgs):	0.3-1.1
Barium	76
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-18	
Sample:	Sa2
Depth (mbgs):	0.3-3.1
Barium	44
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP15A-19	
Sample:	Sa2
Depth (mbgs):	0.3-2.4
Barium	73
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

TP16-19	
Sample:	Sa5
Depth (mbgs):	1.8-2.7
Barium	110
Silver	<0.2
Metals (excl. Ba, Ag)	Met T8 SCS
Metals (Hydride Forming)	Met T8 SCS

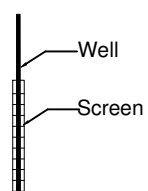
TP16-11 FS1	
Date:	18-May-19
Depth (mbgs):	4.57
Barium	112
Cobalt	21.5

TP16-11 FS2	
Date:	18-May-19
Depth (mbgs):	4.57
Barium	120
Cobalt	17.4

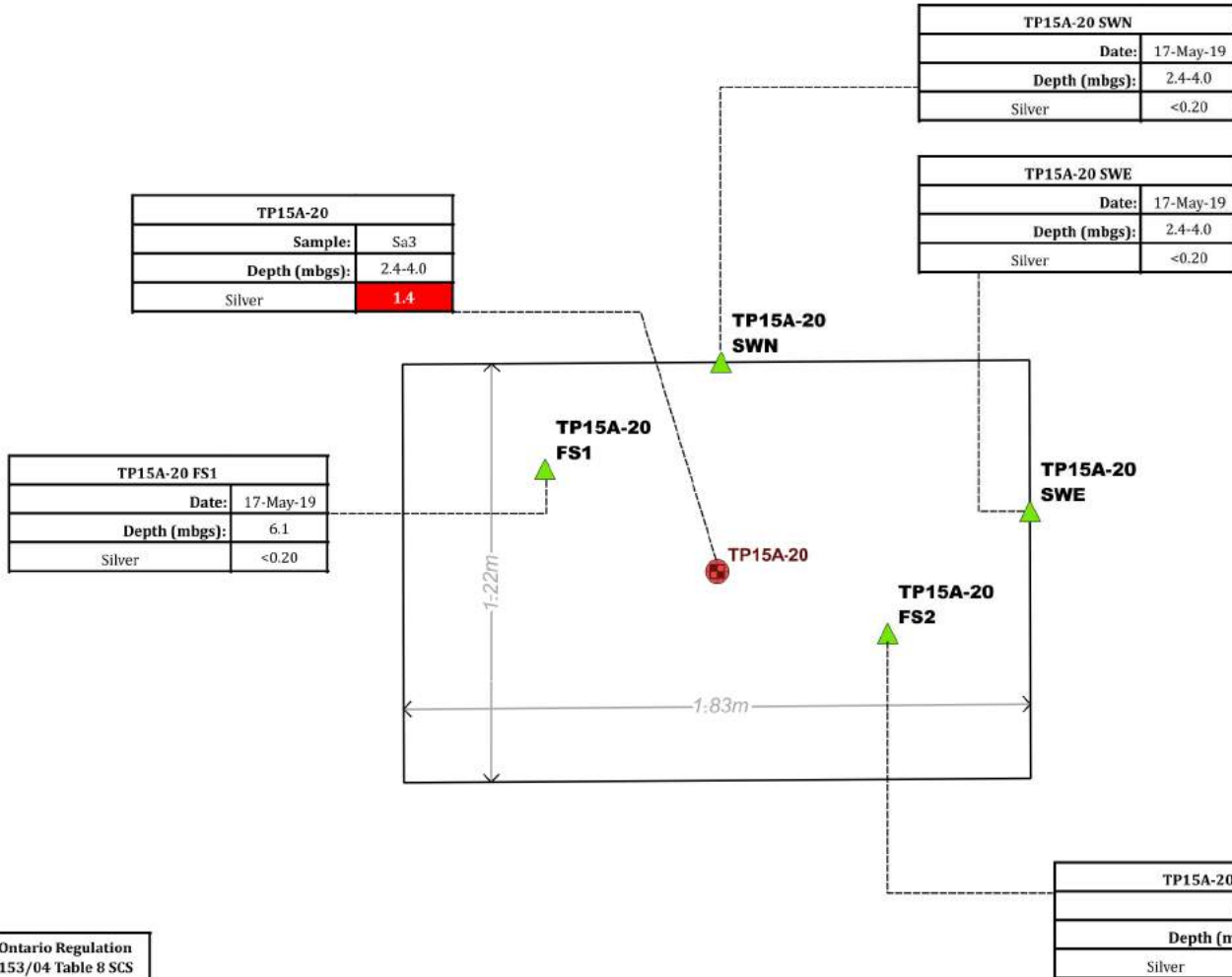
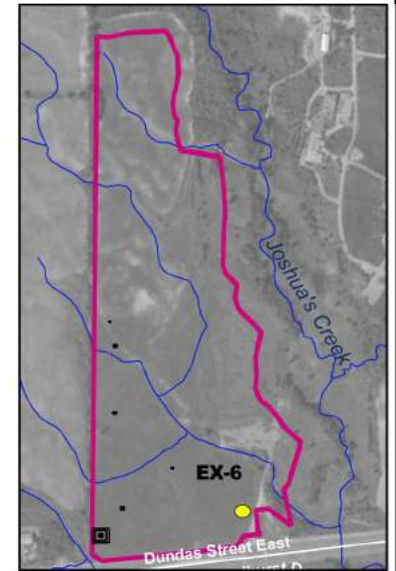
Fill   
  Halton Till   
  Bedrock- Queenston Formation

Parameter	Ontario Regulation 153/04 Table 8 SCS
Barium	220
Cobalt	22
EC	0.7

- Potentiometric Surface (June 25, 2018)
- Met Table 8 Standards
- Exceeds Table 8 Standards



 <b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca	Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON		
	Title: <b>GEOLOGICAL CROSS SECTION D-D' WITH METALS AND HYDRIDE IMPACTS IN SOIL (POST REMEDIATION)</b>		
Client: <b>BRESSA DEVELOPMENTS LTD.</b>	Size: 11 X 17	Approved By: R.F.	Drawn By: S.Y.
	Rev.	Scale: 1:3000	Date: August 2019
		Project No: 18-549-100	Figure No. <b>R7C</b>



TP15A-20	
Sample:	Sa3
Depth (mbgs):	2.4-4.0
Silver	1.4

TP15A-20 SWN	
Date:	17-May-19
Depth (mbgs):	2.4-4.0
Silver	<0.20

TP15A-20 SWE	
Date:	17-May-19
Depth (mbgs):	2.4-4.0
Silver	<0.20

TP15A-20 FS1	
Date:	17-May-19
Depth (mbgs):	6.1
Silver	<0.20

TP15A-20 FS2	
Date:	17-May-19
Depth (mbgs):	6.1
Silver	<0.20

Parameter	Ontario Regulation 153/04 Table 8 SCS
Silver (µg/g)	0.5



**Legend**

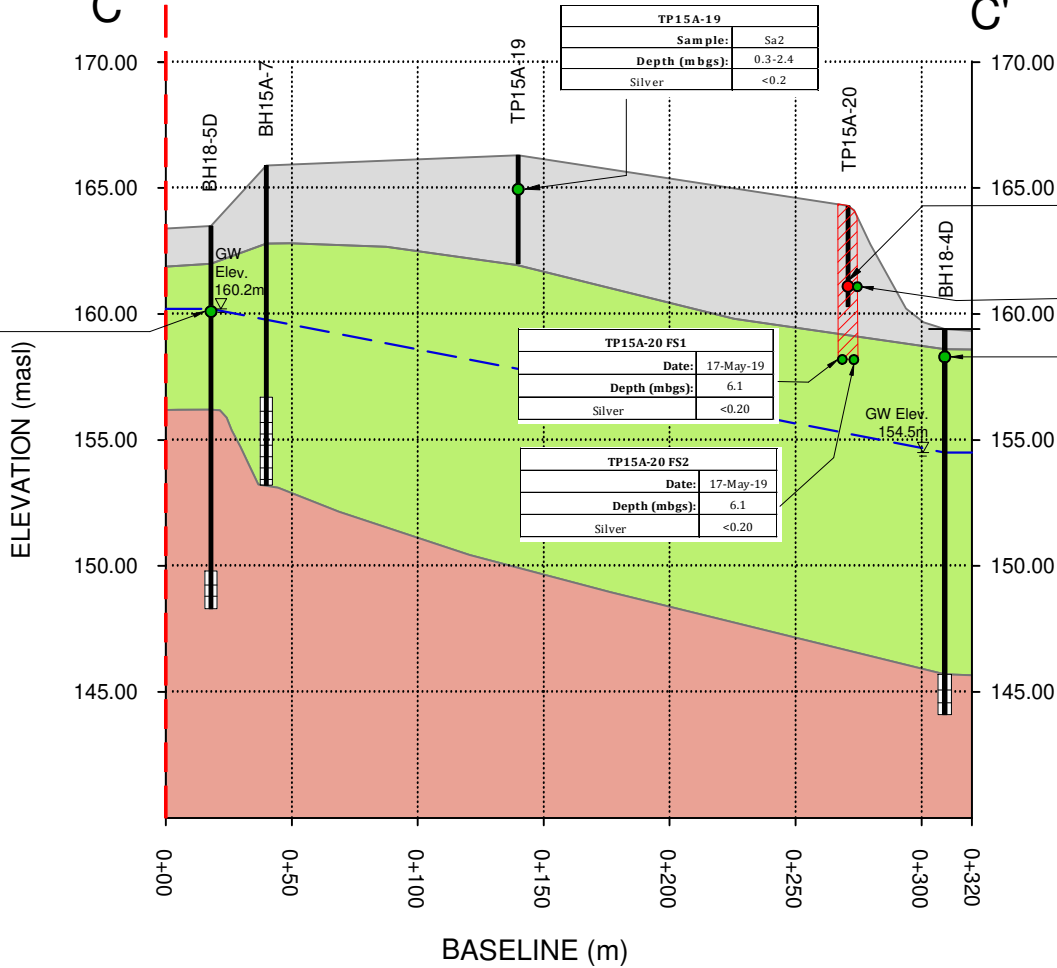
- Test Pit - WSP (2016)
- Confirmatory Sample  
Met Table 8 Standards
- Confirmatory Sample  
Exceeds Table 8 Standards

<p><b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca</p>	Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON			
	Title: <b>CONFIRMATORY SOIL CHARACTERIZATION FOR EX-6 – METALS AND ORPs</b>			
Client: <b>BRESSA DEVELOPMENTS LTD.</b>	Size: 3.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: August 2019
	Rev: 0	Scale: As Shown	Project No.: 18-549-100	Figure No.: <b>R8A</b>
Image/Map Source:				

Property Line

C

C'



BH18-5	
Sample:	SS5
Depth (mbgs):	3.1-3.7
Silver	<0.20

TP15A-19	
Sample:	Sa2
Depth (mbgs):	0.3-2.4
Silver	<0.2

TP15A-20	
Sample:	Sa3
Depth (mbgs):	2.4-4.0
Silver	1.4

TP15A-20 SWE	
Date:	17-May-19
Depth (mbgs):	2.4-4.0
Silver	<0.20

TP15A-20 FS1	
Date:	17-May-19
Depth (mbgs):	6.1
Silver	<0.20

TP15A-20 FS2	
Date:	17-May-19
Depth (mbgs):	6.1
Silver	<0.20

BH18-4	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Silver	<0.20

Parameter	Ontario Regulation 153/04 Table 8 SCS
Silver (µg/g)	0.5

- Fill
- Halton Till
- Bedrock- Queenston Formation

- Potentiometric Surface (June 25, 2018)
- Estimated Extent of Metals and Hydride Impact in Soil
- Met Table 8 Standards
- Exceeds Table 8 Standards
- Well
- Screen



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 Vaughan, Ontario L4H 0K8  
 Telephone: (905) 264-9393  
 www.dsconsultants.ca

Project: SOIL REMEDIATION  
 Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION C-C' WITH METALS AND HYDRIDE IMPACTS IN SOIL**

Client: **BRESSA DEVELOPMENTS LTD.**

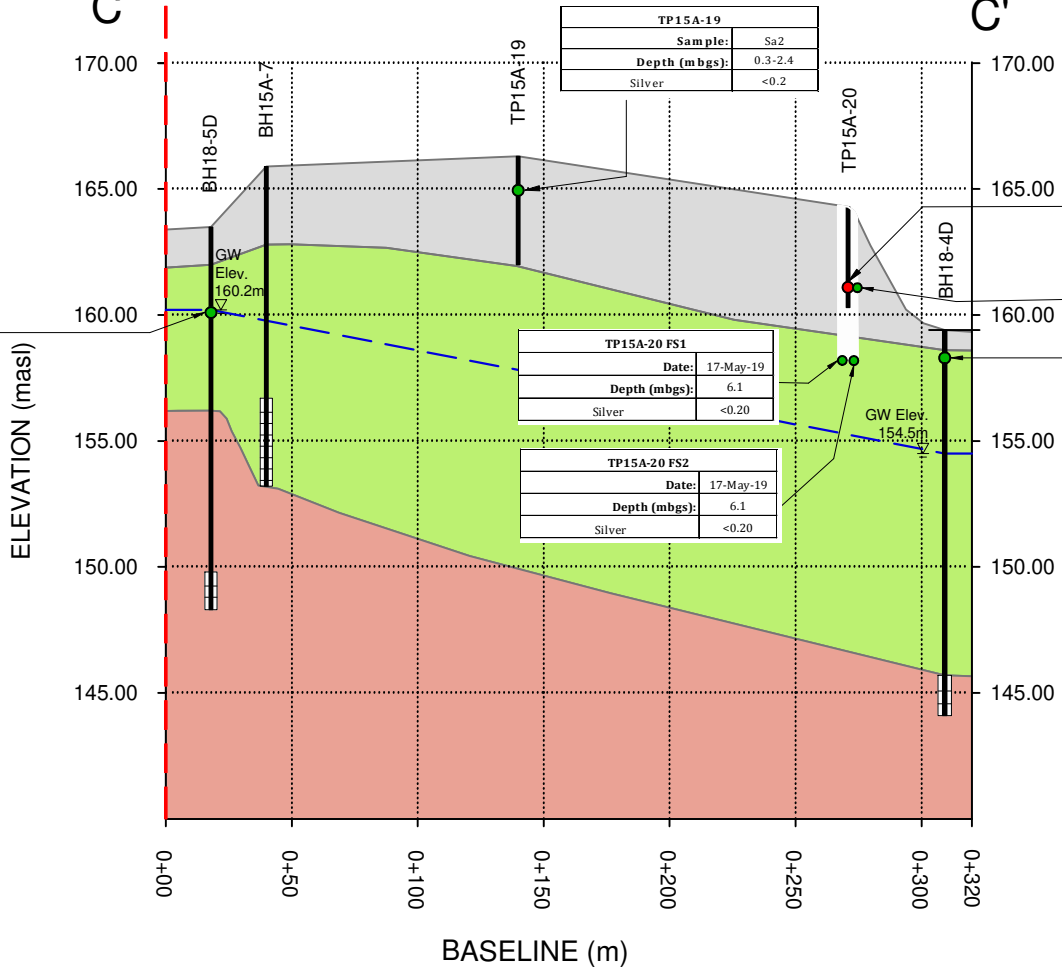
Size: 8.5 x 11  
 Approved By: R.F  
 Drawn By: S.Y  
 Date: August 2019

Rev. Scale: 1:3000  
 Project No: 18-549-100  
 Figure No: **R8B**

Property Line

C

C'



BH18-5	
Sample:	SS5
Depth (mbgs):	3.1-3.7
Silver	<0.20

TP15A-19	
Sample:	Sa2
Depth (mbgs):	0.3-2.4
Silver	<0.2

TP15A-20	
Sample:	Sa3
Depth (mbgs):	2.4-4.0
Silver	1.4

TP15A-20 SWE	
Date:	17-May-19
Depth (mbgs):	2.4-4.0
Silver	<0.20

TP15A-20 FS1	
Date:	17-May-19
Depth (mbgs):	6.1
Silver	<0.20

TP15A-20 FS2	
Date:	17-May-19
Depth (mbgs):	6.1
Silver	<0.20

BH18-4	
Sample:	SS2
Depth (mbgs):	0.8-1.4
Silver	<0.20

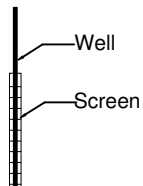
Parameter	Ontario Regulation 153/04 Table 8 SCS
Silver (µg/g)	0.5

- Fill
- Halton Till
- Bedrock- Queenston Formation

--- Potentiometric Surface (June 25, 2018)

● Met Table 8 Standards

● Exceeds Table 8 Standards



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Vaughan, Ontario L4H 0K8  
Telephone: (905) 264-9393  
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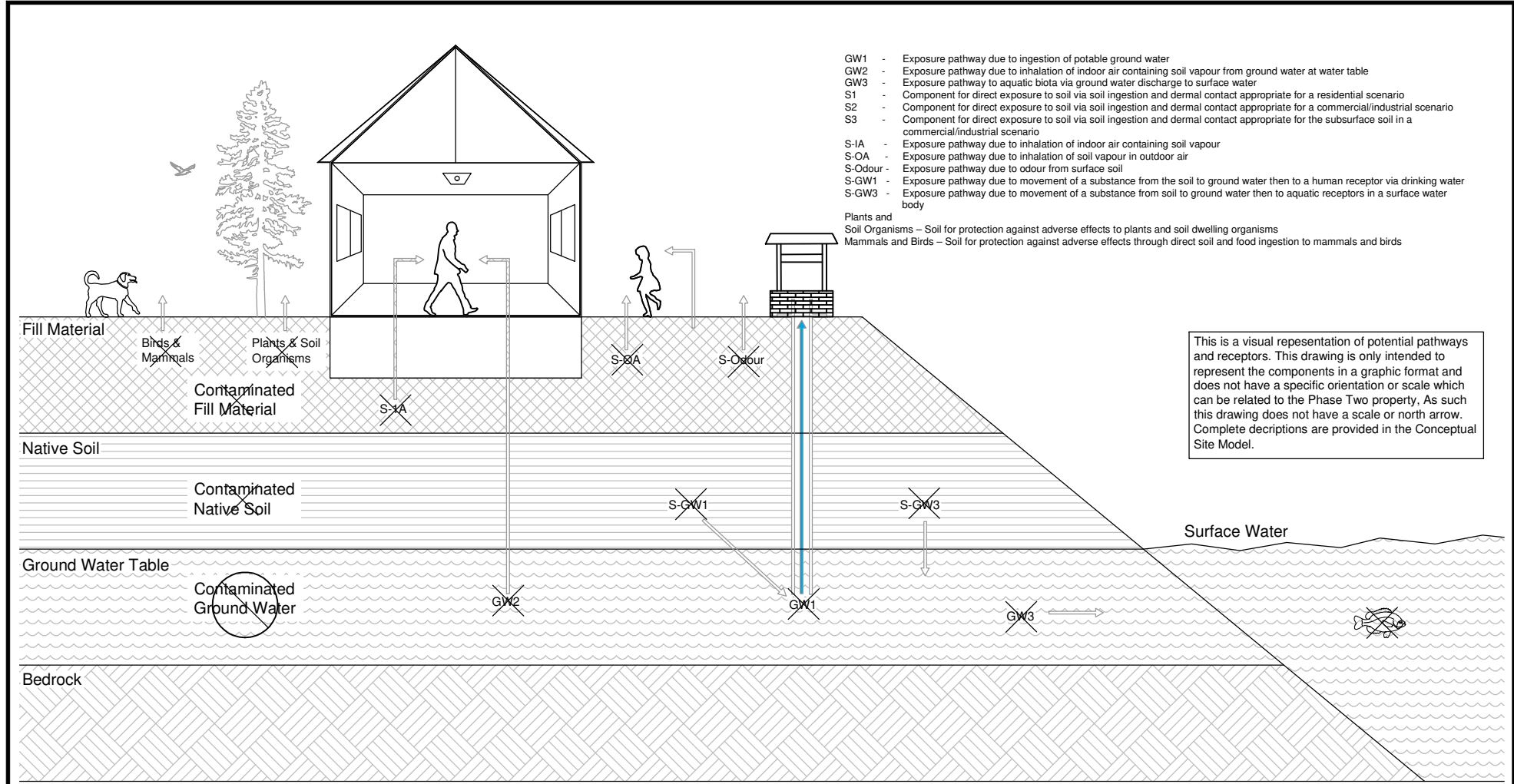
Project: SOIL REMEDIATION  
Bressa Development Lands, 1429 Dundas Street, Oakville, ON

Title: **GEOLOGICAL CROSS SECTION C-C' WITH METALS AND HYDRIDE IMPACTS IN SOIL (POST REMEDIATION)**

Client: BRESSA DEVELOPMENTS LTD.



Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y	Date: August 2019
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Rev.	Scale: 1:3000	Project No: 18-549-100	Figure No. <b>R8C</b>
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- GW1 - Exposure pathway due to ingestion of potable ground water
- GW2 - Exposure pathway due to inhalation of indoor air containing soil vapour from ground water at water table
- GW3 - Exposure pathway to aquatic biota via ground water discharge to surface water
- S1 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a residential scenario
- S2 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a commercial/industrial scenario
- S3 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for the subsurface soil in a commercial/industrial scenario
- S-IA - Exposure pathway due to inhalation of indoor air containing soil vapour
- S-OA - Exposure pathway due to inhalation of soil vapour in outdoor air
- S-Odour - Exposure pathway due to odour from surface soil
- S-GW1 - Exposure pathway due to movement of a substance from the soil to ground water then to a human receptor via drinking water
- S-GW3 - Exposure pathway due to movement of a substance from soil to ground water then to aquatic receptors in a surface water body
- Plants and Soil Organisms - Soil for protection against adverse effects to plants and soil dwelling organisms
- Mammals and Birds - Soil for protection against adverse effects through direct soil and food ingestion to mammals and birds

This is a visual representation of potential pathways and receptors. This drawing is only intended to represent the components in a graphic format and does not have a specific orientation or scale which can be related to the Phase Two property, As such this drawing does not have a scale or north arrow. Complete descriptions are provided in the Conceptual Site Model.

-  Not Identified
-  Pathway Not Present

 <b>DS CONSULTANTS LTD.</b> 6221 Highway 7, UNIT 16 Vaughan, Ontario L4H 0K8 Telephone: (905) 264-9393 www.dsconsultants.ca	Project: SOIL REMEDIATION Bressa Development Lands, 1429 Dundas Street, Oakville, ON		
	Title: <b>EXPOSURE PATHWAYS AND RECEPTORS – POST REMEDIATION</b>		
Client: BRESSA DEVELOPMENTS LTD.	Size: 8.5 x 11	Approved By: R.F	Drawn By: S.Y
	Rev.	Scale: N.T.S	Date: August 2019
		Project No: 18-549-100	Figure No. <b>R9</b>



---

# Appendix A

PLAN OF SURVEY OF  
PART OF LOT 7  
CONCESSION 1  
(GEOGRAPHIC TOWNSHIP OF TRAFALGAR)  
TOWN OF OAKVILLE  
REGIONAL MUNICIPALITY OF HALTON

SCALE 1:1000

R-PE SURVEYING LTD., O.L.S.  
METRIC  
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND  
CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

NOTES

- DENOTES MONUMENT SET
- DENOTES MONUMENT FOUND
- SB DENOTES SHORT STANDARD IRON BAR
- SB DENOTES STANDARD IRON BAR
- IR DENOTES IRON ROD
- PL1 DENOTES PLAN 20R-20557
- PL2 DENOTES PLAN 20R-20356
- PL3 DENOTES PLAN HR-61
- PL4 DENOTES PLAN EX-HR892160
- P.I.N. DENOTES PROPERTY IDENTIFIER NUMBER
- (RPS) DENOTES R-PE SURVEYING LTD., O.L.S.
- (955) DENOTES CUNNINGHAM MCCONNELL LIMITED, O.L.S.
- (171) DENOTES J.R. DUNNING O.L.S.
- SCP DENOTES SPECIFIED CONTROL POINT

ALL SET MONUMENTS ARE IRON BARS UNLESS NOTED OTHERWISE.

BEARINGS ARE GRID, UTM ZONE 17, NAD83 (ORIGINAL), DERIVED FROM:  
SCP 1071890027 NORTH 481957.108 EAST 600863.022  
SCP 00119633660 NORTH 481845.739 EAST 600361.085

COORDINATES ARE UTM ZONE 17, NAD83 (ORIGINAL), TO URBAN ACCURACY PER  
SEC. 14 (2) OF OREG. 216/70, AND CANNOT, IN THEMSELVES, BE USED TO  
RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY  
THE COMBINED SCALE FACTOR OF 0.999707.

SURVEYOR'S CERTIFICATE

1. I CERTIFY THAT:  
THE SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE  
SURVEY ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE  
UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 7<sup>TH</sup> DAY OF AUGUST 2019.

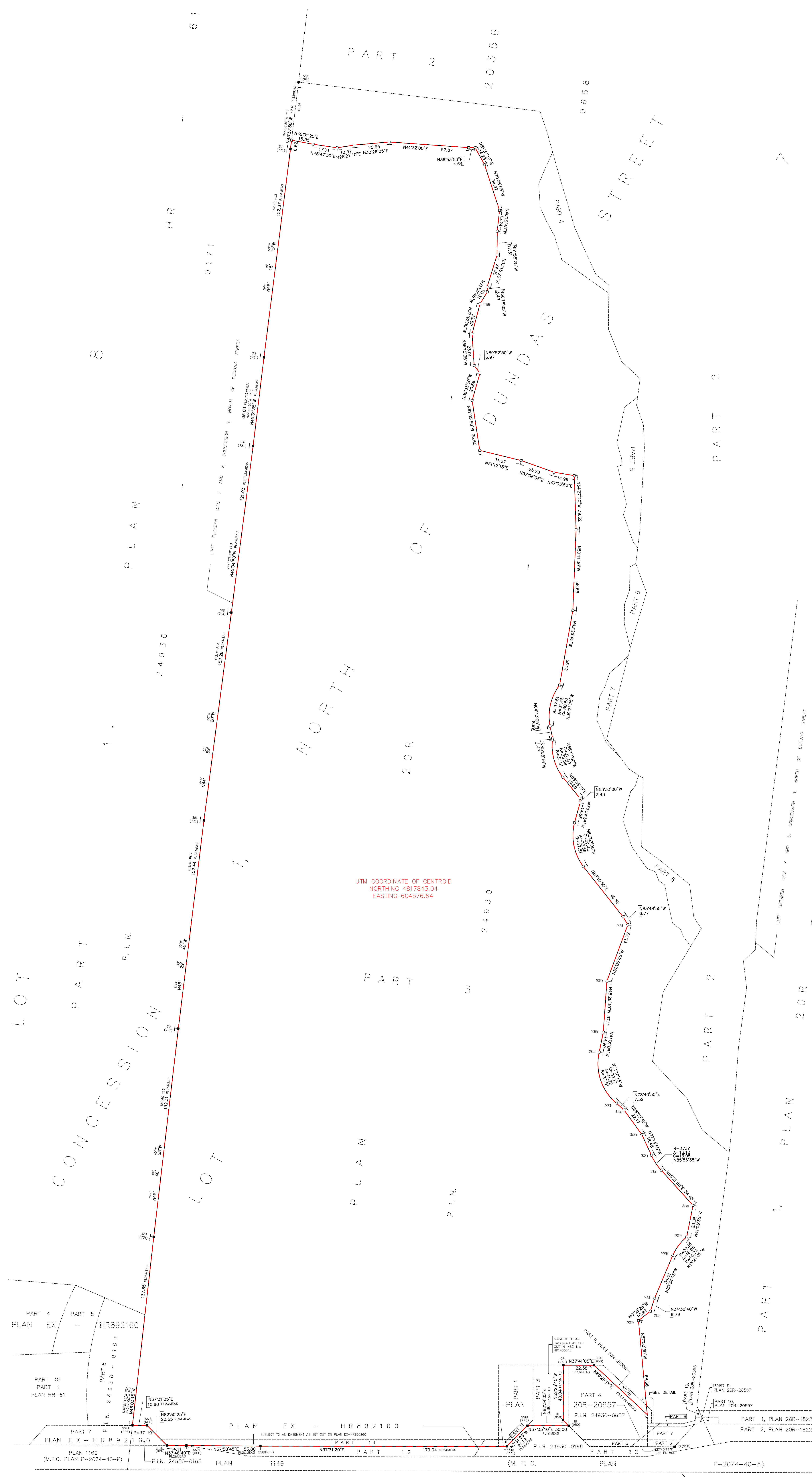
DATE AUGUST 9 2019

*R. DeBord*  
R. DEBORDEUR  
ONTARIO LAND SURVEYOR

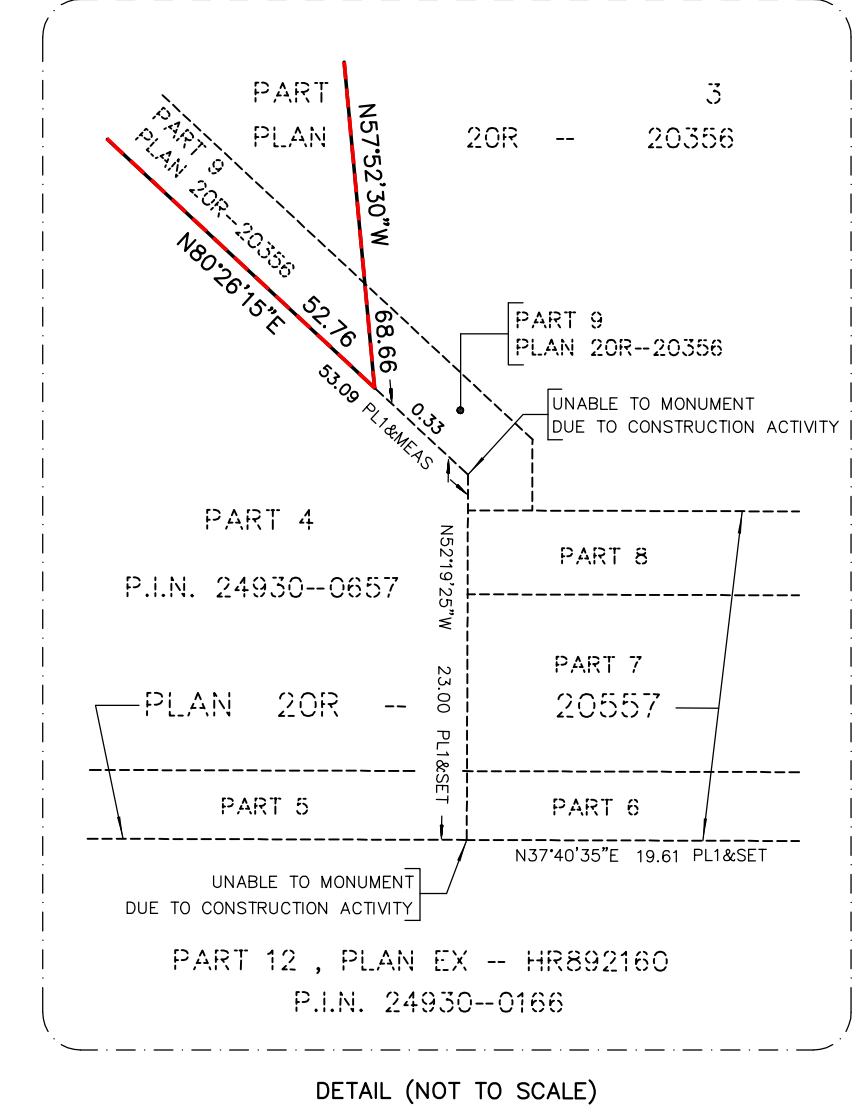


ASSOCIATION OF ONTARIO  
LAND SURVEYORS  
REGISTRATION NO.  
2095039

THIS PLAN IS NOT VALID  
UNLESS IT IS AN EMBOSSED  
ORIGINAL COPY  
ISSUED BY THE SURVEYOR  
REGISTERED THEREON.



UTM COORDINATE OF CENTROID  
NORTHING 4817843.04  
EASTING 604576.64



DUNDAS STREET (REGIONAL ROAD No. 5)  
(DESIGNATED A REGIONAL ROAD BY BY-LAW 34-03, UNREGISTERED)  
(FORMERLY THE KING'S HIGHWAY No. 5, TRANSFERRED TO THE REGIONAL MUNICIPALITY OF  
HALTON BY ORDER-IN-COUNCIL CO-255/97, INST. No. 17718598, AMENDED BY ORDER-IN-COUNCIL  
CO-2418/99, INST. No. HR120129) (PART 1, M.T.O. PLAN P-2074-173A)  
(ROAD ALLOWANCE BETWEEN CONCESSION 1, NORTH OF DUNDAS STREET AND CONCESSION 1, SOUTH OF DUNDAS STREET)  
P.I.N. 24930 - 0033

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# Appendix B

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Project Number: 18-549-100

2018-08-24

Bressa Developments  
433 Steeles Avenue East, Suite 110  
Milton, Ontario  
L9T 8Z4

Attention: Ryan Oosterhoff  
Sent via email: Ryan.Oosterhoff@mattamycorp.com

**RE: Sampling and Analysis Plan  
Phase Two Environmental Site Assessment  
1429 Dundas Street East, Oakville, Ontario**

Dear: Ryan Oosterhoff

## **1.0 Introduction**

DS Consultants Limited (DS) is pleased to present the Sampling and Analysis Plan (SAP) for the proposed Phase Two Environmental Site Assessment of 1429 Dundas Street East, Oakville, Ontario, (the Site). The purpose of the proposed Phase Two ESA program is to assess the current subsurface environmental conditions in support of the proposed redevelopment of the Site.

The Phase Two ESA will involve intrusive investigation in the areas determined in the Site visit to be Areas of Potential Environmental Concern (APECs), and will be completed in general accordance with O.Reg 153/04. Based on the findings of the field and laboratory analyses, a Phase Two ESA report will be prepared.

## **2.0 Background**

Based on the Phase One Environmental Site Assessment completed by DS in November 2018, it is DS's understanding that the Site is a 30.29 hectare (74.84 acres) parcel of land which is currently used for Commercial purposes. The first developed use of the Site is interpreted to be Agricultural based on the findings of the Phase One ESA. A total of four (4) potentially contaminating activities were identified on the Phase One Property or on neighbouring properties within the Phase One Study Area which are considered to be contributing to Areas of Potential Environmental Concern (APECs) on the Phase Two Property. A summary of the APECs identified, the potential contaminants of concern, and the media potentially impacted is presented in Table 1 below:

**Table 2-1: Summary of APECs**

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground water, soil and/or sediment)
APEC-1	Southwestern portion of Site	PCA-30: Importation of Fill Material of Unknown Quality -Historical Importation of fill material with confirmed soil impacts	On-Site	PHCs, VOCs, BTEX, Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, low or high pH, SAR, PAHs	Soil
				Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, sodium, chloride	Groundwater
APEC-2	Southeastern portion of Site	PCA-28: Gasoline and associated products storage in fixed tanks -Historical presence of two ASTs servicing the former golf club.	On-Site	PHCs, BTEX, PAHs	Soil

Notes:

PHC (F1-F4) = Petroleum Hydrocarbons in the F1-F4 fraction ranges

VOCs = Volatile Organic Compounds

PAHs = Polycyclic Aromatic Hydrocarbons

### 3.0 Site Investigation Program

The Site Investigation Program will be completed as follows:

- ♦ Public and private underground utilities and services will be cleared prior to commencement of intrusive investigation activities;
- ♦ A Health and Safety Plan will be prepared, and all work will be executed safely;
- ♦ Thirteen boreholes will be advanced on the Phase Two Property, to an approximate maximum depth of 25 mbgs, or until sample refusal depth, or until groundwater is encountered, using a truck-mounted drill rig. The soil profile from each borehole will be logged in the field and samples will be screened for total organic vapours (TOV) with a photoionization detector (PID) and combustible gas detector (CGD). The location of the boreholes will be selected to investigate any APECs identified during the Phase One ESA,

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as well as to delineate the horizontal and vertical extents of relevant parameters of concern;

- ◆ Groundwater monitoring wells will be installed within all boreholes advanced in order to facilitate the collection of groundwater samples to assess the groundwater quality below the Site and to establish the direction of groundwater flow;
- ◆ Based on field screening and visual/olfactory observations, worst-case/representative soil samples from the boreholes will be submitted for laboratory testing of relevant parameters of concern;
- ◆ The groundwater levels in the wells will be measured at least 24 hours after well development has been completed, to determine the groundwater elevation. The wells will be surveyed to a geodetic benchmark to determine groundwater flow direction;
- ◆ The groundwater wells will be purged to remove stagnant water and sampled for laboratory testing of relevant parameters of concern;
- ◆ Both soil and groundwater samples will be submitted for chemical analysis by a CALA laboratory in accordance with the Ontario MOECC standards and requirements of O.Reg. 153/04 under the Environmental Protection Act.

All field equipment is to be calibrated at the start of each field day, in accordance with DS's Standard Operating Procedures (SOPs). Clean, disposable Nitrile™ gloves will be used at each sampling interval to reduce the risk of cross contamination. All non-dedicated equipment (e.g. split spoon sampler, interface probe, etc.) will be decontaminated between each borehole. The equipment will be brushed free of debris, washed with phosphate-free detergent, and then rinsed with analyte free water.

The proposed monitoring wells will be installed using 50 mm inner diameter Schedule 40 polyvinyl chloride (PVC), equipped with 50 mm inner diameter Schedule 40 PVC with #10 slot well screens. A silica sand filter pack will be placed around the well screen and up to 0.61 metres above the top of the well screen. The well annulus will be sealed with hydrated bentonite. All wells will be protected with either a flush mount well casing, or a locked monument style casing.

The proposed analytical program is outlined below (proposed program subject to change as a result of site observations/findings). All soil and groundwater sampling will be carried out in accordance with DS's SOPs.

#### Soils:

- 
- ◆ Six (6) soil samples for analysis of Metals and other regulated parameters (ORPs);
  - ◆ Sixteen (16) soil samples for analysis of Petroleum Hydrocarbons in the F1 to F4 fraction ranges (F1-F4), including benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX);
  - ◆ Six (6) soil samples for analysis of Volatile Organic Compounds (VOCs);
  - ◆ Five (5) soil samples for analysis of Polycyclic Aromatic Hydrocarbons (PAHs); and
  - ◆ Six (6) soil samples for analysis of Organochlorine Pesticides (OCPs);

One quality control/quality assurance (QAQC) sample will be submitted for analysis per ten (10) samples analyzed in accordance with O.Reg. 153/04.

Groundwater:

- ◆ Forty-seven (47) groundwater samples for analysis of Metals and ORPs
- ◆ Six (6) groundwater samples for analysis of PHCs (F1 to F4 and BTEX);
- ◆ Six (6) groundwater samples for analysis of VOCs;
- ◆ Five (5) groundwater samples for analysis of OCPs;

One quality control/quality assurance (QAQC) sample will be submitted for analysis per ten (10) samples analyzed in accordance with O.Reg. 153/04. One laboratory supplied trip blank will be submitted as part of each sample submission event for analysis of volatile parameters (i.e. VOCs, BTEX, PHCs F1-BTEX).

Following receipt of all of the results, a report in accordance with O.Reg. 153/04 will be prepared.

It is noted that if the Phase Two ESA reveals parameter concentrations greater than the applicable standards set out in *Ontario Regulation 153/04*, then additional work (i.e., supplemental delineation, additional drilling, sampling, analysis, and/or site remediation activities) will be deemed necessary prior to RSC filing, should an RSC be required. The costs for any additional work, if necessary, are beyond the current scope of work.

The SAP was created based on the request to complete a Phase Two ESA in support of the proposed redevelopment of the Site. The SAP was compiled to collect data to provide information on soil and/or groundwater quality in each APEC.

Additional delineation may be required following the implementation of this SAP to meet the requirements of O.Reg. 153/04 which requires delineation of all areas where concentrations are above the applicable SCS such as in the following conditions:

- ♦ Unexpected contamination not previously discovered, or not related to identified APECs, is discovered which will require further delineation to identify source(s); and
- ♦ If the sampling results indicate that the soil and/or groundwater impacts are deeper than initially expected.

We trust that this Sampling and Analysis Plan meets the objectives of the Client. If further assistance is required on this matter, please do not hesitate to contact the undersigned.

Yours Very Truly,

**DS Consultants Ltd.**



Patrick Fioravanti, B.Sc., P.Geo., QP<sub>ESA</sub>  
Environmental Project Manager



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# Appendix C

<b>PROJECT:</b> Phase Two ESA <b>CLIENT:</b> Mattamy <b>PROJECT LOCATION:</b> 1449 Dundas Street, Oakville, ON <b>DATUM:</b> Geodetic <b>BOREHOLE LOCATION:</b> N 4817782 E 604482	<b>DRILLING DATA</b> Method: Hollow Stem Auger Diameter: 200 mm Date: Jun-14-2018 REF. NO.: 18-549-40 ENCL NO.: 2
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SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40						
165.6	<b>TOPSOIL:</b> 350mm														
165.3	<b>FILL:</b> clayey silt, brown, moist, stiff (weathered)		1	SS	10										
164.8	<b>CLAYEY SILT TILL:</b> some sand, trace gravel, occasional cobble/boulder, brown, moist, very stiff		2	SS	18										
164.8	reddish brown below 1.5 m		3	SS	28										
164.8	greyish brown below 3.1 m		4	SS	25										
164.8			5	SS	97										
164.8			6	SS	62										
164.8	wet sand seams at 6.1 m		7	SS	17										
164.8			8	SS	34										
164.8			9	SS	29										
164.8			10	SS	71										
154.9	<b>CLAYEY SILT TILL:</b> weathered shale, trace gravel, reddish brown, moist, hard														
154.3	<b>SHALE:</b> highly weathered shale, reddish brown, moist														
151.0															
150.0	<b>END OF BOREHOLE</b> Notes: 1) Monitoring well installed upon completion of borehole.														

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - RF JAN 2019 GP J. DS.GDT. 19-1-11

**GROUNDWATER ELEVATIONS**  
 Measurement 1st 2nd 3rd 4th  
 Measurement

**GRAPH NOTES**  
 + 3, × 3: Numbers refer to Sensitivity  
 ○ ● = 3% Strain at Failure

PROJECT: Phase Two ESA CLIENT: Mattamy PROJECT LOCATION: 1449 Dundas Street, Oakville, ON DATUM: Geodetic BOREHOLE LOCATION: N 4817782 E 604482	<b>DRILLING DATA</b> Method: Hollow Stem Auger Diameter: 200 mm Date: Jun-14-2018 REF. NO.: 18-549-40 ENCL NO.: 3
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SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)									
165.6	<b>TOPSOIL:</b> 350mm																
165.9	<b>FILL:</b> clayey silt, brown, moist, stiff (weathered)																
164.8	<b>CLAYEY SILT TILL:</b> some sand, trace gravel, occasional cobble/boulder, brown, moist, very stiff reddish brown below 1.5 m																
163	greyish brown below 3.1 m																
162																	
161																	
160																	
159																	

7.6 **END OF BOREHOLE**  
 Notes:  
 1) Monitoring well installed upon completion of borehole.

DS SOIL LOG - 18-549-40 1449 DUNDAS ST, OAKVILLE - RF - JAN 2019.GPJ DS.GDT 19-1-11

**GROUNDWATER ELEVATIONS**  
 Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ ●=3% Strain at Failure

<b>PROJECT:</b> Phase Two ESA	<b>DRILLING DATA</b>
<b>CLIENT:</b> Mattamy	Method: Solid Stem Auger
<b>PROJECT LOCATION:</b> 1449 Dundas Street, Oakville, ON	Diameter: 150mm
<b>DATUM:</b> Geodetic	Date: Jun-13-2018
<b>BOREHOLE LOCATION:</b> N 4818002 E 604581	REF. NO.: 18-549-40
	ENCL NO.: 5

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40						
166.2	<b>TOPSOIL:</b> 350mm													
165.8	<b>FILL:</b> clayey silt, trace topsoil, brown, moist, stiff	1	SS	12										
165.4	<b>FILL:</b> clayey silt, trace brick fragments, trace rootlets, brown, moist, stiff to firm	2	SS	10										
163.1	grey, trace debris and very moist below 2.3 m	3	SS	6										
163.1	<b>CLAYEY SILT TILL:</b> some sand, trace gravel, occasional cobble/boulder, grey, moist, very stiff	4	SS	7										
162		5	SS	17										
160		6	SS	21										
160		7	SS	49										
159		8	SS	22										
158		9	SS	21										
157		10	SS	50										
156		11	SS	79										
155.5	<b>SILTY SAND TILL:</b> trace clay, trace gravel, occasional cobble/boulder, greyish brown, moist, dense	12	SS	50/50mm										
154.0	<b>SANDY SILT TILL:</b> trace gravel, occasional cobble/boulder, reddish brown, wet, very dense	13	SS	50/50mm										
152.5	<b>SHALE:</b> highly weathered shale, reddish brown, moist	14	SS	50/50mm										
150.9	<b>END OF BOREHOLE</b> Notes: 1) Monitoring well installed upon completion of borehole.	15	SS	50/50mm										

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - RE JAN 2019 GP J. DS.GDT. 19-1-11

W. L. 161.2 m  
Jun 25, 2018  
Jul 26, 2018

Bentonite

Filter Pack

Well Screen

**GROUNDWATER ELEVATIONS**  
Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ ●=3% Strain at Failure

PROJECT: Phase Two ESA  
CLIENT: Mattamy  
PROJECT LOCATION: 1449 Dundas Street, Oakville, ON  
DATUM: Geodetic  
BOREHOLE LOCATION: N 4818002 E 604581

**DRILLING DATA**  
Method: Solid Stem Auger  
Diameter: 150mm  
Date: Aug-22-2018  
REF. NO.: 18-549-40  
ENCL NO.: 6

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH (kPa) ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE	PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m									
165.3	<b>TOPSOIL:</b> 350mm													
165.0	<b>FILL:</b> clayey silt, trace topsoil, brown, moist, stiff													
164.5	<b>FILL:</b> clayey silt, trace brick fragments, trace rootlets, brown, moist, stiff to firm													
162.2	grey, trace debris and very moist below 2.3 m													
3.1	<b>CLAYEY SILT TILL:</b> some sand, trace gravel, occasional cobble/boulder, grey, moist, very stiff													
161.2							W. L. 161.2 m Aug 24, 2018							
154.6	<b>SILTY SAND TILL:</b> trace clay, trace gravel, occasional cobble/boulder, greyish brown, moist, dense						Bentonite							
153.1	<b>SANDY SILT TILL:</b> trace gravel, occasional cobble/boulder, reddish brown, wet, very dense													
151.6	<b>SHALE:</b> highly weathered shale, reddish brown, moist													

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - RE JAN 2019 GP J. DS.GDT 19-1-11

Continued Next Page

**GROUNDWATER ELEVATIONS**  
Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ ● = 3% Strain at Failure

PROJECT: Phase Two ESA CLIENT: Mattamy PROJECT LOCATION: 1449 Dundas Street, Oakville, ON DATUM: Geodetic BOREHOLE LOCATION: N 4818002 E 604581	<b>DRILLING DATA</b> Method: Solid Stem Auger Diameter: 150mm Date: Aug-22-2018 REF. NO.: 18-549-40 ENCL NO.: 6
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SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT				POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%)	
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40	60	80				100
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 142.4	<b>SHALE:</b> highly weathered shale, reddish brown, moist(Continued)					Filter Pack Well Screen	147 146 145 144 143								
22.9	<b>END OF BOREHOLE</b> Notes: 1) Monitoring well installed upon completion of borehole. 2) Lithology inferred from adjacent borehole BH18-2D.														

DS SOIL LOG - 18-549-40 1449 DUNDAS ST, OAKVILLE - RF - JAN 2019.GPJ DS.GDT 19-1-11

**GROUNDWATER ELEVATIONS**  
 Measurement

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity      ○ ●=3% Strain at Failure

<b>PROJECT:</b> Phase Two ESA	<b>DRILLING DATA</b>
<b>CLIENT:</b> Mattamy	Method: Solid Stem Auger
<b>PROJECT LOCATION:</b> 1449 Dundas Street, Oakville, ON	Diameter: 150mm
<b>DATUM:</b> Geodetic	Date: Jun-13-2018
<b>BOREHOLE LOCATION:</b> N 4817781 E 604481	REF. NO.: 18-549-40
	ENCL NO.: 4

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100						
165.7	<b>TOPSOIL:</b> 350mm														
165.3	<b>FILL:</b> clayey silt, trace topsoil, brown, moist, stiff														
164.9	<b>FILL:</b> clayey silt, trace brick fragments, trace rootlets, brown, moist, stiff to firm														
162.6	grey, trace debris and very moist below 2.3 m														
3.1	<b>CLAYEY SILT TILL:</b> some sand, trace gravel, occasional cobble/boulder, grey, moist, very stiff														
155.0	<b>SILTY SAND TILL:</b> trace clay, trace gravel, occasional cobble/boulder, greyish brown, moist, dense														
153.5	<b>SANDY SILT TILL:</b> trace gravel, occasional cobble/boulder, reddish brown, wet, very dense														
152.0	<b>END OF BOREHOLE</b> Notes: 1)Monitoring well installed upon completion of borehole.														

DS SOIL LOG - 18-549-40 1449 DUNDAS ST, OAKVILLE - RE JAN 2019 GP J, DS, GDT, 19-1-11

W. L. 160.5 m  
Jun 25, 2018  
Jul 26, 2018

Filter Pack

Well Screen

**GROUNDWATER ELEVATIONS**  
Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ = 3% Strain at Failure

PROJECT: Phase Two ESA  
 CLIENT: Mattamy  
 PROJECT LOCATION: 1449 Dundas Street, Oakville, ON  
 DATUM: Geodetic  
 BOREHOLE LOCATION: N 4817908 E 604817

**DRILLING DATA**  
 Method: Solid Stem Auger  
 Diameter: 150mm  
 Date: Jun-12-2018  
 REF. NO.: 18-549-40  
 ENCL NO.: 8

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40						
161.6	<b>TOPSOIL:</b> 350mm														
161.2	<b>FILL:</b> clayey silt, trace topsoil, brown, moist, stiff		1	SS	9										
160.5	<b>CLAYEY SILT TILL:</b> some sand, trace gravel, occasional cobble/boulder, greyish brown, moist, stiff to very stiff		2	SS	9										
			3	SS	19										
			4	SS	31										
			5	SS	38										
			6	SS	22										
	grey below 3.8 m		7	SS	37										
			8	SS	16										
			9	SS	57										
	hard and reddish brown below 7.6 m		10	SS	36										
			11	SS	91/ 200mm										
			12	SS	50/ 50mm										
150.9	<b>SHALE:</b> highly weathered shale, reddish brown, moist														
145.7	<b>END OF BOREHOLE</b> Notes: 1)Monitoring well installed upon completion of borehole.														

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - RF JAN 2019 GP J. DS.GDT. 19-1-11

W. L. 156.5 m  
 Jun 25, 2018<sup>n</sup>  
 Jul 26, 2018

Bentonite

Filter Pack

Well Screen

**GROUNDWATER ELEVATIONS**  
 Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** +3, x3: Numbers refer to Sensitivity    ○ =3% Strain at Failure

PROJECT: Phase Two ESA  
 CLIENT: Mattamy  
 PROJECT LOCATION: 1449 Dundas Street, Oakville, ON  
 DATUM: Geodetic  
 BOREHOLE LOCATION: N 4817908 E 604817

**DRILLING DATA**  
 Method: Solid Stem Auger  
 Diameter: 150mm  
 Date: Aug-21-2018  
 REF. NO.: 18-549-40  
 ENCL NO.: 9

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100						
161.5	<b>TOPSOIL:</b> 350mm														
161.2	<b>FILL:</b> clayey silt, trace topsoil, brown, moist, stiff						161								
160.4	<b>CLAYEY SILT TILL:</b> some sand, trace gravel, occasional cobble/boulder, greyish brown, moist, stiff to very stiff						160.8 m Aug 24, 2018								
1.1							160								
	grey below 3.8 m						159								
							158								
							157								
	hard and reddish brown below 7.6 m						156								
							155								
							154								
							153								
							152								
							151								
150.8	<b>SHALE:</b> highly weathered shale, reddish brown, moist						Bentonite								
10.7							150								
							149								
							148								
							147								
							146								
							145								
							144								

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - PF JAN 2019 GP J. DS.GDT 19-1-11

Continued Next Page

**GROUNDWATER ELEVATIONS**  
 Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ ● = 3% Strain at Failure

<p>PROJECT: Phase Two ESA CLIENT: Mattamy PROJECT LOCATION: 1449 Dundas Street, Oakville, ON DATUM: Geodetic BOREHOLE LOCATION: N 4817908 E 604817</p>	<p><b>DRILLING DATA</b> Method: Solid Stem Auger Diameter: 150mm Date: Aug-21-2018</p> <p>REF. NO.: 18-549-40 ENCL NO.: 9</p>
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SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40						
<div style="writing-mode: vertical-rl; transform: rotate(180deg);">                     19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 138.7                 </div>	<p><b>SHALE:</b> highly weathered shale, reddish brown, moist(Continued)</p>					<p>Filter Pack Well Screen</p>	<div style="writing-mode: vertical-rl; transform: rotate(180deg);">                     143 142 141 140 139                 </div>								
22.9	<p><b>END OF BOREHOLE</b> Notes: 1) Monitoring well installed upon completion of borehole. 2) Lithology inferred from adjacent borehole BH18-3D.</p>														

DS SOIL LOG - 18-549-40 1449 DUNDAS ST, OAKVILLE - RF - JAN 2019.GPJ DS.GDT 19-1-11

**GROUNDWATER ELEVATIONS**  
 Measurement: 1st, 2nd, 3rd, 4th  
**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity      ○ = 3% Strain at Failure

PROJECT: Phase Two ESA	<b>DRILLING DATA</b>
CLIENT: Mattamy	Method: Solid Stem Auger
PROJECT LOCATION: 1449 Dundas Street, Oakville, ON	Diameter: 150mm
DATUM: Geodetic	Date: Jun-12-2018
BOREHOLE LOCATION: N 4818001 E 604580	REF. NO.: 18-549-40
	ENCL NO.: 7

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100						
161.6	<b>TOPSOIL:</b> 350mm														GR SA SI CL
161.2	<b>FILL:</b> clayey silt, trace topsoil, brown, moist, stiff						161								
160.5	<b>CLAYEY SILT TILL:</b> some sand, trace gravel, occasional cobble/boulder, greyish brown, moist, stiff to very stiff						160								
1.1							159								
	grey below 3.8 m						Bentonite								
							157								
							W. L. 156.5 m Jun 25, 2018								
							155								
	hard and reddish brown below 7.6 m						Filter Pack								
							154								
							Well Screen								
							153								
							152								
							151								

10.7	<b>END OF BOREHOLE</b> Notes: 1)Monitoring well installed upon completion of borehole.														
------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DS SOIL LOG - 18-549-40 1449 DUNDAS ST, OAKVILLE - RF - JAN 2019.GPJ DS.GDT 19-1-11

**GROUNDWATER ELEVATIONS**  
Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ ●=3% Strain at Failure

PROJECT: Phase Two ESA  
 CLIENT: Mattamy  
 PROJECT LOCATION: 1449 Dundas Street, Oakville, ON  
 DATUM: Geodetic  
 BOREHOLE LOCATION: N 4817754 E 604912

**DRILLING DATA**  
 Method: Solid Stem Auger  
 Diameter: 150mm  
 Date: Jun-11-2018  
 REF. NO.: 18-549-40  
 ENCL NO.: 11

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40						
159.4	<b>TOPSOIL: 50mm</b>		1	SS	13										
158.6	<b>FILL:</b> clayey silt, trace gravel, grey, moist, stiff		2	SS	11										
158.6	<b>CLAYEY SILT TILL:</b> trace gravel, occasional cobble/boulder, greyish brown to grey, moist, stiff to very stiff		3	SS	16										
			4	SS	29										
			5	SS	39										
			6	SS	38										
			7	SS	43										
	grey to reddish brown below 6.1 m		8	SS	26										
			9	SS	25										
148.7	<b>SILTY SAND TILL:</b> trace clay, trace gravel, occasional cobble/boulder, reddish brown, wet, very dense		10	SS	91										
147.2	<b>TILL SHALE COMPLEX:</b> trace gravel, reddish brown, moist, hard		11	SS	90/ 200mm										
145.7	<b>SHALE:</b> highly weathered shale, reddish brown to grey, moist		12	SS	95										
144.1	<b>END OF BOREHOLE</b> Notes: 1) Monitoring well installed upon completion of borehole.		13	SS	50/ 100mm										

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - RF JAN 2019 GP J. DS.GDT 19-1-11

W. L. 154.7 m  
 W. L. 154.5 m  
 Jun 25, 2018

Bentonite

Filter Pack

Well Screen

**GROUNDWATER ELEVATIONS**  
 Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ ● = 3% Strain at Failure

<p>PROJECT: Phase Two ESA CLIENT: Mattamy PROJECT LOCATION: 1449 Dundas Street, Oakville, ON DATUM: Geodetic BOREHOLE LOCATION: N 4817754 E 604912</p>	<p><b>DRILLING DATA</b> Method: Solid Stem Auger Diameter: 150mm Date: Aug-20-2018</p> <p>REF. NO.: 18-549-40 ENCL NO.: 12</p>
--	--

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100						
159.4	<b>TOPSOIL:</b> 50mm	[Pattern]													
158.6	<b>FILL:</b> clayey silt, trace gravel, grey, moist, stiff	[Pattern]													
0.8	<b>CLAYEY SILT TILL:</b> trace gravel, occasional cobble/boulder, greyish brown to grey, moist, stiff to very stiff	[Pattern]													
grey to reddish brown below 6.1 m		[Pattern]													
148.7	<b>SILTY SAND TILL:</b> trace clay, trace gravel, occasional cobble/boulder, reddish brown, wet, very dense	[Pattern]													
147.2	<b>TILL SHALE COMPLEX:</b> trace gravel, reddish brown, moist, hard	[Pattern]													
145.7	<b>SHALE:</b> highly weathered shale, reddish brown to grey, moist	[Pattern]													
							Bentonite								

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - RF JAN 2019 GP J. DS.GDT 19-1-11

W. L. 157.1 m  
Aug 24, 2018

Continued Next Page  
GROUNDWATER ELEVATIONS  
Measurement 1st 2nd 3rd 4th

GRAPH NOTES  
+ 3, × 3: Numbers refer to Sensitivity  
○ = 3% Strain at Failure

PROJECT: Phase Two ESA CLIENT: Mattamy PROJECT LOCATION: 1449 Dundas Street, Oakville, ON DATUM: Geodetic BOREHOLE LOCATION: N 4817754 E 604912	<b>DRILLING DATA</b> Method: Solid Stem Auger Diameter: 150mm Date: Aug-20-2018 REF. NO.: 18-549-40 ENCL NO.: 12
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SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT				POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%)	
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20	40	60	80				100
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 136.5	<b>SHALE:</b> highly weathered shale, reddish brown to grey, moist(Continued)					Filter Pack Well Screen	141 140 139 138 137								
22.9	<b>END OF BOREHOLE</b> Notes: 1) Monitoring well installed upon completion of borehole. 2) Lithology inferred from adjacent borehole BH18-4D														

DS SOIL LOG - 18-549-40 1449 DUNDAS ST, OAKVILLE - RF - JAN 2019.GPJ DS.GDT 19-1-11

**GROUNDWATER ELEVATIONS**  
 Measurement

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity      ○ ●=3% Strain at Failure

<b>PROJECT:</b> Phase Two ESA	<b>DRILLING DATA</b>
<b>CLIENT:</b> Mattamy	Method: Solid Stem Auger
<b>PROJECT LOCATION:</b> 1449 Dundas Street, Oakville, ON	Diameter: 150mm
<b>DATUM:</b> Geodetic	Date: Jun-11-2018
<b>BOREHOLE LOCATION:</b> N 4817753 E 604913	REF. NO.: 18-549-40
	ENCL NO.: 10

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (C <sub>u</sub> ) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			20 40 60 80 100	20 40 60 80 100						
159.4	<b>TOPSOIL:</b> 50mm														
159.9	<b>FILL:</b> clayey silt, trace gravel, grey, moist, stiff														
158.6	<b>CLAYEY SILT TILL:</b> trace gravel, occasional cobble/boulder, greyish brown to grey, moist, stiff to very stiff														
158.0															
157.0															
156.0															
155.0															
154.7															
154.5															
153.0	grey to reddish brown below 6.1 m														
152.0															
151.0															
150.0															
149.0															
148.7	<b>SILTY SAND TILL:</b> trace clay, trace gravel, occasional cobble/boulder, reddish brown, wet, very dense														
148.1	<b>END OF BOREHOLE</b>														
11.3	Notes: 1) Monitoring well installed upon completion of borehole.														

DS SOIL LOG - 18-549-40 1449 DUNDAS ST, OAKVILLE - RF - JAN 2019.GPJ DS.GDT 19-1-11

**GROUNDWATER ELEVATIONS**  
Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity      ○ ●=3% Strain at Failure

PROJECT: Phase Two ESA  
 CLIENT: Mattamy  
 PROJECT LOCATION: 1449 Dundas Street, Oakville, ON  
 DATUM: Geodetic  
 BOREHOLE LOCATION: N 4817496 E 604757

**DRILLING DATA**  
 Method: Solid Stem Auger  
 Diameter: 150mm  
 Date: Jun-15-2018  
 REF. NO.: 18-549-40  
 ENCL NO.: 13

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE			"N" BLOWS 0.3 m	20						
163.5	<b>TOPSOIL:</b> 300mm													
163.0	<b>FILL:</b> clayey silt, trace topsoil, trace gravel, brown, moist, firm to stiff		1	SS	6									
162.0	<b>CLAYEY SILT TILL:</b> trace gravel, occasional cobble/boulder, greyish brown, moist, very stiff		2	SS	10									
161.5			3	SS	19									
161.0			4	SS	30									
160.5			5	SS	30									
159.5			6	SS	31									
158.5	grey below 4.6 m		7	SS	30									
156.2	<b>SHALE:</b> highly weathered shale, reddish brown, moist		8	SS	50/ 50mm									
152	<b>END OF BOREHOLE</b> Notes: 1)Monitoring well installed upon completion of borehole.													

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - RF JAN 2019 GP J. DS.GDT. 19-1-11

**GROUNDWATER ELEVATIONS**  
 Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ ●=3% Strain at Failure

PROJECT: Phase Two ESA  
CLIENT: Mattamy  
PROJECT LOCATION: 1449 Dundas Street, Oakville, ON  
DATUM: Geodetic  
BOREHOLE LOCATION:

**DRILLING DATA**  
Method: Solid Stem Auger  
Diameter: 150mm  
Date: Aug-22-2018  
REF. NO.: 18-549-40  
ENCL NO.: 14

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W <sub>L</sub>	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m <sup>3</sup> )	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)										
						○ UNCONFINED	○ 20	○ 40	○ 60	○ 80	○ 100							
0.0	TOPSOIL:350mm																	
0.4	SILTY CLAY: brown, moist																	
1.0																		
1.3	grey, very moist below 2.3 m																	
3.1	CLAYEY SILT TILL: some sand, trace gravel, occasional cobble/boulder, grey, moist, very stiff																	
6.6																		
7.0																		
10.7	SILTY SAND TILL: trace clay, trace gravel, occasional cobble/boulder, greyish brown, moist, dense																	
12.2	SANDY SILT TILL: trace gravel, occasional cobble/boulder, reddish brown, wet, very dense																	
13.7	SHALE: highly weathered shale, reddish brown, moist																	
15.3	END OF BOREHOLE Notes: 1) Monitoring well installed upon completion of borehole. 2) Monitoring well drilled without sampling. Lithology inferred from auger cuttings.																	

DS SOIL LOG - 18-549-40 1449 DUNDAS ST. OAKVILLE - RF JAN 2019 GP J. DS.GDT 19-1-11

Bentonite

Filter Pack

Well Screen

**GROUNDWATER ELEVATIONS**  
Measurement 1st 2nd 3rd 4th

**GRAPH NOTES** + 3, × 3: Numbers refer to Sensitivity ○ = 3% Strain at Failure



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# Appendix D




DS Consultants (Vaughan)  
ATTN: Rick Fioravanti  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 18-JUN-18  
Report Date: 06-JUL-18 15:01 (MT)  
Version: FINAL

Client Phone: 905-264-9393

## Certificate of Analysis

Lab Work Order #: L2114637  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-40  
C of C Numbers: 17-638235, 17-638236  
Legal Site Desc:



Amanda Fazekas  
Account Manager

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ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927  
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## Summary of Guideline Exceedances

Guideline		Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID							
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use</b>							
L2114637-4		BH18-1 SS5	Hydrocarbons	F2 (C10-C16)	11	10	ug/g
L2114637-19		BH18-5 SS5	Physical Tests	Conductivity	1.82	0.7	mS/cm
			Metals	Boron (B), Hot Water Ext.	1.76	1.5	ug/g
L2114637-20		BH18-5 SS7	Hydrocarbons	F2 (C10-C16)	18	10	ug/g

# ANALYTICAL REPORT

## Physical Tests - SOIL

Analyte	Unit	Guide Limits									
		#1	#2								
Conductivity	mS/cm	0.7	-	0.277		0.346					0.262
% Moisture	%	-	-	11.3	10.5	11.0		12.6	11.3	11.0	13.9
pH	pH units	-	-	8.02	7.74		7.93				7.97

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# ANALYTICAL REPORT

## Physical Tests - SOIL

Analyte	Unit	Guide Limits									
		#1	#2								
Conductivity	mS/cm	0.7	-	0.149		0.182			0.268		
% Moisture	%	-	-	11.0	9.53	13.4	7.74	9.09	12.3	19.6	15.8
pH	pH units	-	-	7.67		7.84			7.62	7.91	

**Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

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

## Physical Tests - SOIL

	Lab ID	L2114637-19	L2114637-20
<b>Sample Date</b>		13-JUN-18	13-JUN-18
<b>Sample ID</b>		BH18-5 SS5	BH18-5 SS7

Analyte	Unit	Guide Limits			
		#1	#2		
Conductivity	mS/cm	0.7	-	1.82	
% Moisture	%	-	-	10.3	8.73
pH	pH units	-	-	7.93	

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# ANALYTICAL REPORT

## Cyanides - SOIL

Lab ID	L2114637-2	L2114637-8	L2114637-10	L2114637-12	L2114637-15	L2114637-19
Sample Date	14-JUN-18	14-JUN-18	11-JUN-18	12-JUN-18	13-JUN-18	13-JUN-18
Sample ID	BH18-1 SS3	QAQC3	BH18-2 SS2	BH18-3 SS2	BH18-4 SS2	BH18-5 SS5

Analyte	Unit	Guide Limits								
		#1	#2							
Cyanide, Weak Acid Diss	ug/g	0.051	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

**Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

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

# ANALYTICAL REPORT

## Saturated Paste Extractables - SOIL

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID																		
		#1	#2	L2114637-2	14-JUN-18	BH18-1 SS3	L2114637-4	14-JUN-18	BH18-1 SS5	L2114637-8	14-JUN-18	QAQC3	L2114637-10	11-JUN-18	BH18-2 SS2	L2114637-12	12-JUN-18	BH18-3 SS2	L2114637-15	13-JUN-18	BH18-4 SS2	L2114637-19	13-JUN-18	BH18-5 SS5												
SAR	SAR	5	-	1.01	1.33	0.90	0.10	0.45	0.90	1.35																										
Calcium (Ca)	mg/L	-	-	4.0	10.2	4.4	9.4	8.4	12.5	156																										
Magnesium (Mg)	mg/L	-	-	7.6	12.3	7.5	1.5	2.1	4.9	73.8																										
Sodium (Na)	mg/L	-	-	14.8	26.7	13.3	1.3	5.6	14.9	81.7																										

**Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

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

## Metals - SOIL

Analyte	Unit	Guide Limits							
		#1	#2						
		<b>Lab ID</b>	L2114637-2	L2114637-8	L2114637-10	L2114637-12	L2114637-15	L2114637-19	
		<b>Sample Date</b>	14-JUN-18	14-JUN-18	11-JUN-18	12-JUN-18	13-JUN-18	13-JUN-18	
		<b>Sample ID</b>	BH18-1 SS3	QAQC3	BH18-2 SS2	BH18-3 SS2	BH18-4 SS2	BH18-5 SS5	
Antimony (Sb)	ug/g	1.3	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	-	5.9	5.6	5.3	5.0	5.9	7.5
Barium (Ba)	ug/g	220	-	138	85.2	75.6	84.3	92.3	77.4
Beryllium (Be)	ug/g	2.5	-	0.88	0.74	0.73	0.70	0.82	0.90
Boron (B)	ug/g	36	-	17.8	14.0	9.4	11.1	11.9	22.6
Boron (B), Hot Water Ext.	ug/g	1.5	-	0.21	0.15	0.19	<0.10	0.13	1.76
Cadmium (Cd)	ug/g	1.2	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	-	24.3	21.8	22.3	21.5	23.3	25.5
Cobalt (Co)	ug/g	22	-	14.2	12.3	10.9	11.6	12.4	16.6
Copper (Cu)	ug/g	92	-	35.0	28.4	27.2	25.1	30.2	39.5
Lead (Pb)	ug/g	120	-	10.0	9.5	12.0	9.5	10.9	14.7
Mercury (Hg)	ug/g	0.27	-	0.0123	0.0132	0.0235	0.0144	0.0163	0.0129
Molybdenum (Mo)	ug/g	2	-	<1.0	<1.0	<1.0	<1.0	<1.0	1.1
Nickel (Ni)	ug/g	82	-	30.0	26.9	23.8	24.7	27.9	34.0
Selenium (Se)	ug/g	1.5	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	-	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	-	34.4	30.4	32.9	30.4	33.0	35.4
Zinc (Zn)	ug/g	290	-	64.6	59.3	66.6	57.3	58.4	71.9

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# ANALYTICAL REPORT

## Speciated Metals - SOIL

Analyte	Unit	Guide Limits							
		#1	#2						
Chromium, Hexavalent	ug/g	0.66	-	<0.20	0.21	0.43	<0.20	<0.20	0.28

**Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

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

## Volatile Organic Compounds - SOIL

Analyte	Unit	Guide Limits		Lab ID	L2114637-4	L2114637-7	L2114637-10	L2114637-13	L2114637-17	L2114637-20
		#1	#2	Sample Date	14-JUN-18	14-JUN-18	11-JUN-18	12-JUN-18	13-JUN-18	13-JUN-18
				Sample ID	BH18-1 SS5	QAQC2	BH18-2 SS2	BH18-3 SS10	BH18-4 SS9	BH18-5 SS7
Acetone	ug/g	0.5	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	ug/g	0.02	-	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon tetrachloride	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dibromoethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	ug/g	-	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	ug/g	-	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
1,3-Dichloropropene (cis & trans)	ug/g	0.05	-	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
Ethylbenzene	ug/g	0.05	-	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	ug/g	0.5	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g	0.5	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MTBE	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

## Volatile Organic Compounds - SOIL

	Lab ID	L2114637-4	L2114637-7	L2114637-10	L2114637-13	L2114637-17	L2114637-20		
	Sample Date	14-JUN-18	14-JUN-18	11-JUN-18	12-JUN-18	13-JUN-18	13-JUN-18		
	Sample ID	BH18-1 SS5	QAQC2	BH18-2 SS2	BH18-3 SS10	BH18-4 SS9	BH18-5 SS7		
Analyte	Unit	Guide Limits							
		#1	#2						
1,1,1,2-Tetrachloroethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	ug/g	0.2	-	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	ug/g	0.05	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Trichlorofluoromethane	ug/g	0.25	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl chloride	ug/g	0.02	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	ug/g	-	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	-	101.7	109.6	102.8	105.1	88.0	103.0
Surrogate: 1,4-Difluorobenzene	%	-	-	104.0	111.3	104.9	107.2	90.2	104.9

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# ANALYTICAL REPORT

## Hydrocarbons - SOIL

Analyte	Unit	Guide Limits		Lab ID	L2114637-4	L2114637-7	L2114637-10	L2114637-13	L2114637-17	L2114637-20
		#1	#2	Sample Date	14-JUN-18	14-JUN-18	11-JUN-18	12-JUN-18	13-JUN-18	13-JUN-18
				Sample ID	BH18-1 SS5	QAQC2	BH18-2 SS2	BH18-3 SS10	BH18-4 SS9	BH18-5 SS7
F1 (C6-C10)	ug/g	25	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	ug/g	25	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	ug/g	10	-	11	10	<10	<10	<10	18	
F3 (C16-C34)	ug/g	240	-	<50	<50	<50	<50	<50	<50	64
F4 (C34-C50)	ug/g	120	-	<50	<50	<50	<50	<50	<50	<50
Total Hydrocarbons (C6-C50)	ug/g	-	-	<72	<72	<72	<72	<72	<72	82
Chrom. to baseline at nC50		-	-	YES	YES	YES	YES	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	88.3	89.0	84.9	93.7	80.4	90.2	
Surrogate: 3,4-Dichlorotoluene	%	-	-	89.4	93.4	84.7	88.9	77.5	85.5	

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

## Organochlorine Pesticides - SOIL

Analyte	Unit	Guide Limits		Lab ID	L2114637-1	L2114637-6	L2114637-9	L2114637-11	L2114637-14	L2114637-18
		#1	#2	Sample Date	14-JUN-18	14-JUN-18	11-JUN-18	12-JUN-18	13-JUN-18	13-JUN-18
				Sample ID	BH18-1 SS1	QAQC1	BH18-2 SS1	BH18-3 SS1	BH18-4 SS1	BH18-5 SS1
Aldrin	ug/g	0.05	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	0.01	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	-	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	-	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	-	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	-	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan I	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	-	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	ug/g	0.04	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	-	88.3	88.5	90.6	89.5	84.0	84.8	
Surrogate: d14-Terphenyl	%	-	-	71.4	73.9	75.1	77.9	68.0	75.3	

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# Reference Information

**Methods Listed (if applicable):**

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

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

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

**CHLORDANE-T-CALC-WT** Soil Chlordane Total sums CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

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

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

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

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

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

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

**DDD-DDE-DDT-CALC-WT** Soil DDD, DDE, DDT sums CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

**EC-WT** Soil Conductivity (EC) MOEE E3138

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

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

**ENDOSULFAN-T-CALC-WT** Soil Endosulfan Total sums CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

**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

# Reference Information

**Methods Listed (if applicable):**

ALS Test Code	Matrix	Test Description	Method Reference**
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Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

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

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

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

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

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

Notes:

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

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

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

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

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

**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, 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

# Reference Information

**Methods Listed (if applicable):**

ALS Test Code	Matrix	Test Description	Method Reference**
<p>of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).</p>			
<b>MOISTURE-WT</b>	Soil	% Moisture	Gravimetric: Oven Dried
<b>PEST-OC-511-WT</b>	Soil	OC Pesticides-O.Reg 153/04 (July 2011)	SW846 8270 (511)
<p>Soil sample is extracted in a solvent, after extraction a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.</p>			
<p>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).</p>			
<b>PH-WT</b>	Soil	pH	MOEE E3137A
<p>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.</p>			
<p>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).</p>			
<b>SAR-R511-WT</b>	Soil	SAR-O.Reg 153/04 (July 2011)	SW846 6010C
<p>A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.</p>			
<p>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).</p>			
<b>VOC-1,3-DCP-CALC-WT</b>	Soil	Regulation 153 VOCs	SW8260B/SW8270C
<b>VOC-511-HS-WT</b>	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)
<p>Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.</p>			
<p>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).</p>			
<b>XYLENES-SUM-CALC-WT</b>	Soil	Sum of Xylene Isomer Concentrations	CALCULATION
<p>Total xylenes represents the sum of o-xylene and m&amp;p-xylene.</p>			
<hr/> <p>**ALS test methods may incorporate modifications from specified reference methods to improve performance.</p> <hr/>			
<p>Chain of Custody Numbers:</p>			
17-638235	17-638236		
<p><i>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:</i></p>			
Laboratory Definition Code	Laboratory Location		
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

# Reference Information

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## 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: L2114637

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>B-HWS-R511-WT</b>		<b>Soil</b>						
<b>Batch R4096849</b>								
<b>WG2805779-4</b>	<b>DUP</b>	<b>L2109950-4</b>						
Boron (B), Hot Water Ext.		0.34	0.33		ug/g	0.7	30	25-JUN-18
<b>WG2805779-2</b>	<b>IRM</b>	<b>HOTB-SAL_SOIL5</b>						
Boron (B), Hot Water Ext.			112.9		%		70-130	25-JUN-18
<b>WG2805779-3</b>	<b>LCS</b>							
Boron (B), Hot Water Ext.			109.7		%		70-130	25-JUN-18
<b>WG2805779-1</b>	<b>MB</b>							
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	25-JUN-18
<b>Batch R4097240</b>								
<b>WG2804872-4</b>	<b>DUP</b>	<b>L2114197-1</b>						
Boron (B), Hot Water Ext.		0.18	0.18		ug/g	4.4	30	25-JUN-18
<b>WG2804872-2</b>	<b>IRM</b>	<b>HOTB-SAL_SOIL5</b>						
Boron (B), Hot Water Ext.			97.1		%		70-130	25-JUN-18
<b>WG2804872-3</b>	<b>LCS</b>							
Boron (B), Hot Water Ext.			111.7		%		70-130	25-JUN-18
<b>WG2804872-1</b>	<b>MB</b>							
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	25-JUN-18
<b>Batch R4100354</b>								
<b>WG2808282-4</b>	<b>DUP</b>	<b>L2117132-13</b>						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	30	28-JUN-18
<b>WG2808282-2</b>	<b>IRM</b>	<b>HOTB-SAL_SOIL5</b>						
Boron (B), Hot Water Ext.			113.3		%		70-130	28-JUN-18
<b>WG2808282-3</b>	<b>LCS</b>							
Boron (B), Hot Water Ext.			108.7		%		70-130	28-JUN-18
<b>WG2808282-1</b>	<b>MB</b>							
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	28-JUN-18
<b>CN-WAD-R511-WT</b>		<b>Soil</b>						
<b>Batch R4096408</b>								
<b>WG2804726-3</b>	<b>DUP</b>	<b>L2109950-1</b>						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	25-JUN-18
<b>WG2804726-2</b>	<b>LCS</b>							
Cyanide, Weak Acid Diss			94.3		%		80-120	25-JUN-18
<b>WG2804726-1</b>	<b>MB</b>							
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	25-JUN-18
<b>WG2804726-4</b>	<b>MS</b>	<b>L2109950-1</b>						
Cyanide, Weak Acid Diss			103.6		%		70-130	25-JUN-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CN-WAD-R511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4099647</b>							
<b>WG2808073-3</b>	<b>DUP</b>	<b>L2118385-1</b>						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	28-JUN-18
<b>WG2808073-2</b>	<b>LCS</b>							
Cyanide, Weak Acid Diss			104.3		%		80-120	29-JUN-18
<b>WG2808073-1</b>	<b>MB</b>							
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	28-JUN-18
<b>WG2808073-4</b>	<b>MS</b>	<b>L2118385-1</b>						
Cyanide, Weak Acid Diss			97.4		%		70-130	28-JUN-18
<b>CR-CR6-IC-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4096600</b>							
<b>WG2804298-4</b>	<b>CRM</b>	<b>WT-SQC012</b>						
Chromium, Hexavalent			85.5		%		70-130	25-JUN-18
<b>WG2804298-3</b>	<b>DUP</b>	<b>L2114230-20</b>						
Chromium, Hexavalent		<0.20	0.36	RPD-NA	ug/g	N/A	35	25-JUN-18
<b>WG2804298-2</b>	<b>LCS</b>							
Chromium, Hexavalent			99.2		%		80-120	25-JUN-18
<b>WG2804298-1</b>	<b>MB</b>							
Chromium, Hexavalent			<0.20		ug/g		0.2	25-JUN-18
<b>Batch</b>	<b>R4100695</b>							
<b>WG2808118-4</b>	<b>CRM</b>	<b>WT-SQC012</b>						
Chromium, Hexavalent			84.9		%		70-130	28-JUN-18
<b>WG2808118-3</b>	<b>DUP</b>	<b>L2117132-6</b>						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	28-JUN-18
<b>WG2808118-2</b>	<b>LCS</b>							
Chromium, Hexavalent			89.5		%		80-120	28-JUN-18
<b>WG2808118-1</b>	<b>MB</b>							
Chromium, Hexavalent			<0.20		ug/g		0.2	28-JUN-18
<b>EC-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4096707</b>							
<b>WG2804909-4</b>	<b>DUP</b>	<b>WG2804909-3</b>						
Conductivity		0.856	0.835		mS/cm	2.5	20	25-JUN-18
<b>WG2805994-1</b>	<b>LCS</b>							
Conductivity			96.7		%		90-110	25-JUN-18
<b>WG2804909-1</b>	<b>MB</b>							
Conductivity			<0.0040		mS/cm		0.004	25-JUN-18



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6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4098324</b>							
<b>WG2807864-4</b>	<b>DUP</b>	<b>WG2807864-3</b>						
Conductivity		1.20	1.29		mS/cm	6.8	20	27-JUN-18
<b>WG2808248-1</b>	<b>LCS</b>							
Conductivity			105.0		%		90-110	27-JUN-18
<b>WG2807864-1</b>	<b>MB</b>							
Conductivity			<0.0040		mS/cm		0.004	27-JUN-18
<b>F1-HS-511-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4091606</b>							
<b>WG2801445-4</b>	<b>DUP</b>	<b>WG2801445-3</b>						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	21-JUN-18
<b>WG2801445-2</b>	<b>LCS</b>							
F1 (C6-C10)			89.7		%		80-120	21-JUN-18
<b>WG2801445-1</b>	<b>MB</b>							
F1 (C6-C10)			<5.0		ug/g		5	21-JUN-18
Surrogate: 3,4-Dichlorotoluene			96.3		%		60-140	21-JUN-18
<b>WG2801445-6</b>	<b>MS</b>	<b>L2114637-7</b>						
F1 (C6-C10)			107.0		%		60-140	21-JUN-18
<b>F2-F4-511-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4096219</b>							
<b>WG2803919-3</b>	<b>DUP</b>	<b>WG2803919-5</b>						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	25-JUN-18
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	25-JUN-18
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	25-JUN-18
<b>WG2803919-2</b>	<b>LCS</b>							
F2 (C10-C16)			91.4		%		80-120	25-JUN-18
F3 (C16-C34)			91.0		%		80-120	25-JUN-18
F4 (C34-C50)			94.2		%		80-120	25-JUN-18
<b>WG2803919-1</b>	<b>MB</b>							
F2 (C10-C16)			<10		ug/g		10	25-JUN-18
F3 (C16-C34)			<50		ug/g		50	25-JUN-18
F4 (C34-C50)			<50		ug/g		50	25-JUN-18
Surrogate: 2-Bromobenzotrifluoride			85.8		%		60-140	25-JUN-18
<b>WG2803919-4</b>	<b>MS</b>	<b>WG2803919-5</b>						
F2 (C10-C16)			96.3		%		60-140	25-JUN-18
F3 (C16-C34)			96.8		%		60-140	25-JUN-18
F4 (C34-C50)			101.5		%		60-140	25-JUN-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-200.2-CVAA-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4096418</b>							
<b>WG2804760-2</b>	<b>CRM</b>	<b>WT-CANMET-TILL1</b>						
Mercury (Hg)			96.8		%		70-130	25-JUN-18
<b>WG2804760-6</b>	<b>DUP</b>	<b>WG2804760-5</b>						
Mercury (Hg)		0.0068	0.0069		ug/g	0.7	40	25-JUN-18
<b>WG2804760-3</b>	<b>LCS</b>							
Mercury (Hg)			106.0		%		80-120	25-JUN-18
<b>WG2804760-1</b>	<b>MB</b>							
Mercury (Hg)			<0.0050		mg/kg		0.005	25-JUN-18
<b>Batch</b>	<b>R4098359</b>							
<b>WG2807867-2</b>	<b>CRM</b>	<b>WT-CANMET-TILL1</b>						
Mercury (Hg)			107.2		%		70-130	27-JUN-18
<b>WG2807867-6</b>	<b>DUP</b>	<b>WG2807867-5</b>						
Mercury (Hg)		0.0152	0.0149		ug/g	2.0	40	27-JUN-18
<b>WG2807867-3</b>	<b>LCS</b>							
Mercury (Hg)			119.0		%		80-120	27-JUN-18
<b>WG2807867-1</b>	<b>MB</b>							
Mercury (Hg)			<0.0050		mg/kg		0.005	27-JUN-18
<b>MET-200.2-CCMS-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4097405</b>							
<b>WG2804760-2</b>	<b>CRM</b>	<b>WT-CANMET-TILL1</b>						
Antimony (Sb)			105.5		%		70-130	25-JUN-18
Arsenic (As)			116.1		%		70-130	25-JUN-18
Barium (Ba)			121.9		%		70-130	25-JUN-18
Beryllium (Be)			118.5		%		70-130	25-JUN-18
Boron (B)			3.3		mg/kg		0-8.2	25-JUN-18
Cadmium (Cd)			126.6		%		70-130	25-JUN-18
Chromium (Cr)			112.4		%		70-130	25-JUN-18
Cobalt (Co)			112.6		%		70-130	25-JUN-18
Copper (Cu)			115.6		%		70-130	25-JUN-18
Lead (Pb)			111.0		%		70-130	25-JUN-18
Molybdenum (Mo)			108.4		%		70-130	25-JUN-18
Nickel (Ni)			113.0		%		70-130	25-JUN-18
Selenium (Se)			0.35		mg/kg		0.11-0.51	25-JUN-18
Silver (Ag)			0.26		mg/kg		0.13-0.33	25-JUN-18
Thallium (Tl)			0.138		mg/kg		0.077-0.18	25-JUN-18
Uranium (U)			112.4		%		70-130	25-JUN-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-200.2-CCMS-WT</b>								
<b>Soil</b>								
<b>Batch</b>	<b>R4097405</b>							
<b>WG2804760-2</b>	<b>CRM</b>	<b>WT-CANMET-TILL1</b>						
Vanadium (V)			111.0		%		70-130	25-JUN-18
Zinc (Zn)			114.8		%		70-130	25-JUN-18
<b>WG2804760-6</b>	<b>DUP</b>	<b>WG2804760-5</b>						
Antimony (Sb)		0.24	0.24		ug/g	0.1	30	25-JUN-18
Arsenic (As)		1.24	1.19		ug/g	4.8	30	25-JUN-18
Barium (Ba)		14.6	13.8		ug/g	5.0	40	25-JUN-18
Beryllium (Be)		0.11	0.10		ug/g	2.3	30	25-JUN-18
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	25-JUN-18
Cadmium (Cd)		0.038	0.039		ug/g	2.6	30	25-JUN-18
Chromium (Cr)		6.01	6.13		ug/g	2.0	30	25-JUN-18
Cobalt (Co)		2.13	2.08		ug/g	2.1	30	25-JUN-18
Copper (Cu)		10.2	12.3		ug/g	18	30	25-JUN-18
Lead (Pb)		9.41	9.52		ug/g	1.1	40	25-JUN-18
Molybdenum (Mo)		0.23	0.25		ug/g	9.3	40	25-JUN-18
Nickel (Ni)		3.72	3.69		ug/g	0.9	30	25-JUN-18
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	25-JUN-18
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	25-JUN-18
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	25-JUN-18
Uranium (U)		0.248	0.236		ug/g	5.2	30	25-JUN-18
Vanadium (V)		14.0	13.6		ug/g	3.0	30	25-JUN-18
Zinc (Zn)		16.0	16.7		ug/g	4.1	30	25-JUN-18
<b>WG2804760-4</b>	<b>LCS</b>							
Antimony (Sb)			106.5		%		80-120	25-JUN-18
Arsenic (As)			102.5		%		80-120	25-JUN-18
Barium (Ba)			104.2		%		80-120	25-JUN-18
Beryllium (Be)			103.3		%		80-120	25-JUN-18
Boron (B)			96.5		%		80-120	25-JUN-18
Cadmium (Cd)			102.7		%		80-120	25-JUN-18
Chromium (Cr)			100.2		%		80-120	25-JUN-18
Cobalt (Co)			99.0		%		80-120	25-JUN-18
Copper (Cu)			98.4		%		80-120	25-JUN-18
Lead (Pb)			101.0		%		80-120	25-JUN-18
Molybdenum (Mo)			97.7		%		80-120	25-JUN-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-200.2-CCMS-WT</b>								
<b>Soil</b>								
<b>Batch R4097405</b>								
<b>WG2804760-4 LCS</b>								
Nickel (Ni)			98.6		%		80-120	25-JUN-18
Selenium (Se)			106.2		%		80-120	25-JUN-18
Silver (Ag)			98.5		%		80-120	25-JUN-18
Thallium (Tl)			98.8		%		80-120	25-JUN-18
Uranium (U)			100.4		%		80-120	25-JUN-18
Vanadium (V)			102.2		%		80-120	25-JUN-18
Zinc (Zn)			98.1		%		80-120	25-JUN-18
<b>WG2804760-1 MB</b>								
Antimony (Sb)			<0.10		mg/kg		0.1	25-JUN-18
Arsenic (As)			<0.10		mg/kg		0.1	25-JUN-18
Barium (Ba)			<0.50		mg/kg		0.5	25-JUN-18
Beryllium (Be)			<0.10		mg/kg		0.1	25-JUN-18
Boron (B)			<5.0		mg/kg		5	25-JUN-18
Cadmium (Cd)			<0.020		mg/kg		0.02	25-JUN-18
Chromium (Cr)			<0.50		mg/kg		0.5	25-JUN-18
Cobalt (Co)			<0.10		mg/kg		0.1	25-JUN-18
Copper (Cu)			<0.50		mg/kg		0.5	25-JUN-18
Lead (Pb)			<0.50		mg/kg		0.5	25-JUN-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	25-JUN-18
Nickel (Ni)			<0.50		mg/kg		0.5	25-JUN-18
Selenium (Se)			<0.20		mg/kg		0.2	25-JUN-18
Silver (Ag)			<0.10		mg/kg		0.1	25-JUN-18
Thallium (Tl)			<0.050		mg/kg		0.05	25-JUN-18
Uranium (U)			<0.050		mg/kg		0.05	25-JUN-18
Vanadium (V)			<0.20		mg/kg		0.2	25-JUN-18
Zinc (Zn)			<2.0		mg/kg		2	25-JUN-18
<b>Batch R4099147</b>								
<b>WG2807867-2 CRM</b>								
<b>WT-CANMET-TILL1</b>								
Antimony (Sb)			95.8		%		70-130	27-JUN-18
Arsenic (As)			101.7		%		70-130	27-JUN-18
Barium (Ba)			99.4		%		70-130	27-JUN-18
Beryllium (Be)			108.5		%		70-130	27-JUN-18
Boron (B)			3.5		mg/kg		0-8.2	27-JUN-18
Cadmium (Cd)			102.0		%		70-130	27-JUN-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-200.2-CCMS-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4099147</b>							
<b>WG2807867-2</b>	<b>CRM</b>	<b>WT-CANMET-TILL1</b>						
Chromium (Cr)			101.8		%		70-130	27-JUN-18
Cobalt (Co)			100.6		%		70-130	27-JUN-18
Copper (Cu)			101.1		%		70-130	27-JUN-18
Lead (Pb)			95.2		%		70-130	27-JUN-18
Molybdenum (Mo)			105.6		%		70-130	27-JUN-18
Nickel (Ni)			99.0		%		70-130	27-JUN-18
Selenium (Se)			0.28		mg/kg		0.11-0.51	27-JUN-18
Silver (Ag)			0.23		mg/kg		0.13-0.33	27-JUN-18
Thallium (Tl)			0.119		mg/kg		0.077-0.18	27-JUN-18
Uranium (U)			106.4		%		70-130	27-JUN-18
Vanadium (V)			102.1		%		70-130	27-JUN-18
Zinc (Zn)			100.2		%		70-130	27-JUN-18
<b>WG2807867-6</b>	<b>DUP</b>	<b>WG2807867-5</b>						
Antimony (Sb)		0.14	0.13		ug/g	8.5	30	27-JUN-18
Arsenic (As)		7.06	6.45		ug/g	9.0	30	27-JUN-18
Barium (Ba)		47.4	41.2		ug/g	14	40	27-JUN-18
Beryllium (Be)		0.68	0.57		ug/g	18	30	27-JUN-18
Boron (B)		12.2	9.9		ug/g	21	30	27-JUN-18
Cadmium (Cd)		0.077	0.065		ug/g	16	30	27-JUN-18
Chromium (Cr)		19.9	16.7		ug/g	17	30	27-JUN-18
Cobalt (Co)		13.3	12.0		ug/g	9.9	30	27-JUN-18
Copper (Cu)		35.6	33.0		ug/g	7.8	30	27-JUN-18
Lead (Pb)		10.9	10.3		ug/g	5.7	40	27-JUN-18
Molybdenum (Mo)		0.40	0.35		ug/g	14	40	27-JUN-18
Nickel (Ni)		25.1	23.0		ug/g	8.9	30	27-JUN-18
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	27-JUN-18
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	27-JUN-18
Thallium (Tl)		0.130	0.111		ug/g	16	30	27-JUN-18
Uranium (U)		0.450	0.426		ug/g	5.4	30	27-JUN-18
Vanadium (V)		29.3	24.9		ug/g	16	30	27-JUN-18
Zinc (Zn)		56.7	52.0		ug/g	8.5	30	27-JUN-18
<b>WG2807867-4</b>	<b>LCS</b>							
Antimony (Sb)			102.3		%		80-120	27-JUN-18



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6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-200.2-CCMS-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4099147</b>							
<b>WG2807867-4</b>	<b>LCS</b>							
Arsenic (As)			100.8		%		80-120	27-JUN-18
Barium (Ba)			95.5		%		80-120	27-JUN-18
Beryllium (Be)			98.2		%		80-120	27-JUN-18
Boron (B)			93.5		%		80-120	27-JUN-18
Cadmium (Cd)			99.0		%		80-120	27-JUN-18
Chromium (Cr)			100.4		%		80-120	27-JUN-18
Cobalt (Co)			97.8		%		80-120	27-JUN-18
Copper (Cu)			97.1		%		80-120	27-JUN-18
Lead (Pb)			97.2		%		80-120	27-JUN-18
Molybdenum (Mo)			103.9		%		80-120	27-JUN-18
Nickel (Ni)			96.8		%		80-120	27-JUN-18
Selenium (Se)			95.9		%		80-120	27-JUN-18
Silver (Ag)			95.8		%		80-120	27-JUN-18
Thallium (Tl)			98.6		%		80-120	27-JUN-18
Uranium (U)			98.1		%		80-120	27-JUN-18
Vanadium (V)			101.2		%		80-120	27-JUN-18
Zinc (Zn)			94.0		%		80-120	27-JUN-18
<b>WG2807867-1</b>	<b>MB</b>							
Antimony (Sb)			<0.10		mg/kg		0.1	27-JUN-18
Arsenic (As)			<0.10		mg/kg		0.1	27-JUN-18
Barium (Ba)			<0.50		mg/kg		0.5	27-JUN-18
Beryllium (Be)			<0.10		mg/kg		0.1	27-JUN-18
Boron (B)			<5.0		mg/kg		5	27-JUN-18
Cadmium (Cd)			<0.020		mg/kg		0.02	27-JUN-18
Chromium (Cr)			<0.50		mg/kg		0.5	27-JUN-18
Cobalt (Co)			<0.10		mg/kg		0.1	27-JUN-18
Copper (Cu)			<0.50		mg/kg		0.5	27-JUN-18
Lead (Pb)			<0.50		mg/kg		0.5	27-JUN-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-JUN-18
Nickel (Ni)			<0.50		mg/kg		0.5	27-JUN-18
Selenium (Se)			<0.20		mg/kg		0.2	27-JUN-18
Silver (Ag)			<0.10		mg/kg		0.1	27-JUN-18
Thallium (Tl)			<0.050		mg/kg		0.05	27-JUN-18
Uranium (U)			<0.050		mg/kg		0.05	27-JUN-18



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Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-200.2-CCMS-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4099147</b>							
<b>WG2807867-1</b>	<b>MB</b>							
Vanadium (V)			<0.20		mg/kg		0.2	27-JUN-18
Zinc (Zn)			<2.0		mg/kg		2	27-JUN-18
<b>MOISTURE-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4097047</b>							
<b>WG2805856-3</b>	<b>DUP</b>	<b>L2115171-3</b>						
% Moisture		29.0	28.5		%	1.8	20	26-JUN-18
<b>WG2805856-2</b>	<b>LCS</b>							
% Moisture			100.1		%		90-110	26-JUN-18
<b>WG2805856-1</b>	<b>MB</b>							
% Moisture			<0.10		%		0.1	26-JUN-18
<b>Batch</b>	<b>R4097049</b>							
<b>WG2805812-3</b>	<b>DUP</b>	<b>L2114187-1</b>						
% Moisture		11.3	11.4		%	0.9	20	26-JUN-18
<b>WG2805812-2</b>	<b>LCS</b>							
% Moisture			100.1		%		90-110	26-JUN-18
<b>WG2805812-1</b>	<b>MB</b>							
% Moisture			<0.10		%		0.1	26-JUN-18
<b>Batch</b>	<b>R4099109</b>							
<b>WG2808173-3</b>	<b>DUP</b>	<b>L2115767-3</b>						
% Moisture		18.2	18.2		%	0.1	20	27-JUN-18
<b>WG2808173-2</b>	<b>LCS</b>							
% Moisture			99.8		%		90-110	27-JUN-18
<b>WG2808173-1</b>	<b>MB</b>							
% Moisture			<0.10		%		0.1	27-JUN-18
<b>PEST-OC-511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4100671</b>							
<b>WG2804759-3</b>	<b>DUP</b>	<b>WG2804759-5</b>						
Aldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
a-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
g-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
op-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
pp-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
o,p-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
pp-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
op-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18



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Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PEST-OC-511-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4100671</b>							
<b>WG2804759-3</b>	<b>DUP</b>	<b>WG2804759-5</b>						
pp-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
Dieldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
Endosulfan I		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
Endosulfan II		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
Endrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
gamma-hexachlorocyclohexane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	28-JUN-18
Heptachlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
Heptachlor Epoxide		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
Hexachlorobenzene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	28-JUN-18
Hexachlorobutadiene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	28-JUN-18
Hexachloroethane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	28-JUN-18
Methoxychlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	28-JUN-18
<b>WG2804759-2</b>	<b>LCS</b>							
Aldrin			110.8		%		50-140	28-JUN-18
a-chlordane			99.2		%		50-140	28-JUN-18
g-chlordane			104.9		%		50-140	28-JUN-18
op-DDD			106.4		%		50-140	28-JUN-18
pp-DDD			103.8		%		50-140	28-JUN-18
o,p-DDE			93.0		%		50-140	28-JUN-18
pp-DDE			94.3		%		50-140	28-JUN-18
op-DDT			98.9		%		50-140	28-JUN-18
pp-DDT			94.2		%		50-140	28-JUN-18
Dieldrin			112.4		%		50-140	28-JUN-18
Endosulfan I			99.5		%		50-140	28-JUN-18
Endosulfan II			105.0		%		50-140	28-JUN-18
Endrin			163.7	LCS-H	%		50-140	28-JUN-18
gamma-hexachlorocyclohexane			95.1		%		50-140	28-JUN-18
Heptachlor			99.9		%		50-140	28-JUN-18
Heptachlor Epoxide			103.8		%		50-140	28-JUN-18
Hexachlorobenzene			94.3		%		50-140	28-JUN-18
Hexachlorobutadiene			97.6		%		50-140	28-JUN-18
Hexachloroethane			103.7		%		50-140	28-JUN-18
Methoxychlor			117.0		%		50-140	28-JUN-18
<b>WG2804759-1</b>	<b>MB</b>							



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Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PEST-OC-511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4100671</b>							
<b>WG2804759-1</b>	<b>MB</b>							
Aldrin			<0.020		ug/g		0.02	28-JUN-18
a-chlordane			<0.020		ug/g		0.02	28-JUN-18
g-chlordane			<0.020		ug/g		0.02	28-JUN-18
op-DDD			<0.020		ug/g		0.02	28-JUN-18
pp-DDD			<0.020		ug/g		0.02	28-JUN-18
o,p-DDE			<0.020		ug/g		0.02	28-JUN-18
pp-DDE			<0.020		ug/g		0.02	28-JUN-18
op-DDT			<0.020		ug/g		0.02	28-JUN-18
pp-DDT			<0.020		ug/g		0.02	28-JUN-18
Dieldrin			<0.020		ug/g		0.02	28-JUN-18
Endosulfan I			<0.020		ug/g		0.02	28-JUN-18
Endosulfan II			<0.020		ug/g		0.02	28-JUN-18
Endrin			<0.020		ug/g		0.02	28-JUN-18
gamma-hexachlorocyclohexane			<0.010		ug/g		0.01	28-JUN-18
Heptachlor			<0.020		ug/g		0.02	28-JUN-18
Heptachlor Epoxide			<0.020		ug/g		0.02	28-JUN-18
Hexachlorobenzene			<0.010		ug/g		0.01	28-JUN-18
Hexachlorobutadiene			<0.010		ug/g		0.01	28-JUN-18
Hexachloroethane			<0.010		ug/g		0.01	28-JUN-18
Methoxychlor			<0.020		ug/g		0.02	28-JUN-18
Surrogate: 2-Fluorobiphenyl			90.0		%		50-140	28-JUN-18
Surrogate: d14-Terphenyl			81.0		%		50-140	28-JUN-18
<b>WG2804759-4</b>	<b>MS</b>	<b>WG2804759-5</b>						
Aldrin			107.3		%		50-140	28-JUN-18
a-chlordane			93.6		%		50-140	28-JUN-18
g-chlordane			99.1		%		50-140	28-JUN-18
op-DDD			102.4		%		50-140	28-JUN-18
pp-DDD			104.0		%		50-140	28-JUN-18
o,p-DDE			91.5		%		50-140	28-JUN-18
pp-DDE			93.2		%		50-140	28-JUN-18
op-DDT			98.4		%		50-140	28-JUN-18
pp-DDT			97.2		%		50-140	28-JUN-18
Dieldrin			106.1		%		50-140	28-JUN-18
Endosulfan I			92.8		%		50-140	28-JUN-18



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Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PEST-OC-511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4100671</b>							
<b>WG2804759-4</b>	<b>MS</b>	<b>WG2804759-5</b>						
Endosulfan II			100.2		%		50-140	28-JUN-18
Endrin			181.6	RRQC	%		50-140	28-JUN-18
gamma-hexachlorocyclohexane			90.1		%		50-140	28-JUN-18
Heptachlor			92.6		%		50-140	28-JUN-18
Heptachlor Epoxide			95.5		%		50-140	28-JUN-18
Hexachlorobenzene			88.7		%		50-140	28-JUN-18
Hexachlorobutadiene			88.9		%		50-140	28-JUN-18
Hexachloroethane			95.5		%		50-140	28-JUN-18
Methoxychlor			132.9		%		50-140	28-JUN-18
COMMENTS: RRQC: Analyte recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.								
<b>PH-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4095053</b>							
<b>WG2804129-1</b>	<b>DUP</b>	<b>L2114197-1</b>						
pH		7.72	7.70	J	pH units	0.02	0.3	22-JUN-18
<b>WG2804294-2</b>	<b>LCS</b>							
pH			6.98		pH units		6.9-7.1	22-JUN-18
<b>Batch</b>	<b>R4095346</b>							
<b>WG2804319-1</b>	<b>DUP</b>	<b>L2114686-1</b>						
pH		7.73	7.78	J	pH units	0.05	0.3	22-JUN-18
<b>WG2804384-1</b>	<b>LCS</b>							
pH			7.02		pH units		6.9-7.1	22-JUN-18
<b>Batch</b>	<b>R4098462</b>							
<b>WG2807536-1</b>	<b>DUP</b>	<b>L2119007-2</b>						
pH		7.70	7.70	J	pH units	0.00	0.3	27-JUN-18
<b>WG2808241-1</b>	<b>LCS</b>							
pH			6.95		pH units		6.9-7.1	27-JUN-18
<b>Batch</b>	<b>R4098830</b>							
<b>WG2808271-1</b>	<b>DUP</b>	<b>L2118442-1</b>						
pH		7.91	7.90	J	pH units	0.01	0.3	27-JUN-18
<b>WG2808465-1</b>	<b>LCS</b>							
pH			6.97		pH units		6.9-7.1	27-JUN-18
<b>SAR-R511-WT</b>	<b>Soil</b>							



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Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SAR-R511-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4096855</b>							
<b>WG2804909-4</b>	<b>DUP</b>	<b>WG2804909-3</b>						
Calcium (Ca)		22.2	22.0		mg/L	0.9	30	25-JUN-18
Sodium (Na)		93.0	93.1		mg/L	0.1	30	25-JUN-18
Magnesium (Mg)		3.8	3.8		mg/L	0.9	30	25-JUN-18
<b>WG2804909-2</b>	<b>IRM</b>	<b>WT SAR2</b>						
Calcium (Ca)			109.5		%		70-130	25-JUN-18
Sodium (Na)			96.6		%		70-130	25-JUN-18
Magnesium (Mg)			109.8		%		70-130	25-JUN-18
<b>WG2804909-1</b>	<b>MB</b>							
Calcium (Ca)			<1.0		mg/L		1	25-JUN-18
Sodium (Na)			<1.0		mg/L		1	25-JUN-18
Magnesium (Mg)			<1.0		mg/L		1	25-JUN-18
<b>Batch</b>	<b>R4098479</b>							
<b>WG2807864-4</b>	<b>DUP</b>	<b>WG2807864-3</b>						
Calcium (Ca)		<1.0	<1.0	RPD-NA	mg/L	N/A	30	27-JUN-18
Sodium (Na)		260	253		mg/L	2.6	30	27-JUN-18
Magnesium (Mg)		1.1	1.2		mg/L	3.9	30	27-JUN-18
<b>WG2807864-2</b>	<b>IRM</b>	<b>WT SAR2</b>						
Calcium (Ca)			126.1		%		70-130	27-JUN-18
Sodium (Na)			105.3		%		70-130	27-JUN-18
Magnesium (Mg)			122.5		%		70-130	27-JUN-18
<b>WG2807864-1</b>	<b>MB</b>							
Calcium (Ca)			<1.0		mg/L		1	27-JUN-18
Sodium (Na)			<1.0		mg/L		1	27-JUN-18
Magnesium (Mg)			<1.0		mg/L		1	27-JUN-18
<b>VOC-511-HS-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4091606</b>							
<b>WG2801445-4</b>	<b>DUP</b>	<b>WG2801445-3</b>						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18



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Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4091606</b>							
<b>WG2801445-4</b>	<b>DUP</b>	<b>WG2801445-3</b>						
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	21-JUN-18
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	21-JUN-18
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	21-JUN-18
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	21-JUN-18
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	21-JUN-18
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	21-JUN-18
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	21-JUN-18
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-JUN-18
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	21-JUN-18
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	21-JUN-18
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-JUN-18
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	21-JUN-18
Vinyl chloride		<0.020	<0.020		ug/g			21-JUN-18



## Quality Control Report

Workorder: L2114637

Report Date: 06-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4091606</b>							
<b>WG2801445-4</b>	<b>DUP</b>	<b>WG2801445-3</b>						
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-JUN-18
<b>WG2801445-2</b>	<b>LCS</b>							
1,1,1,2-Tetrachloroethane			108.1		%		60-130	21-JUN-18
1,1,2,2-Tetrachloroethane			115.3		%		60-130	21-JUN-18
1,1,1-Trichloroethane			103.0		%		60-130	21-JUN-18
1,1,2-Trichloroethane			113.3		%		60-130	21-JUN-18
1,1-Dichloroethane			104.9		%		60-130	21-JUN-18
1,1-Dichloroethylene			91.8		%		60-130	21-JUN-18
1,2-Dibromoethane			117.1		%		70-130	21-JUN-18
1,2-Dichlorobenzene			106.6		%		70-130	21-JUN-18
1,2-Dichloroethane			114.2		%		60-130	21-JUN-18
1,2-Dichloropropane			112.0		%		70-130	21-JUN-18
1,3-Dichlorobenzene			99.8		%		70-130	21-JUN-18
1,4-Dichlorobenzene			102.2		%		70-130	21-JUN-18
Acetone			137.2		%		60-140	21-JUN-18
Benzene			107.3		%		70-130	21-JUN-18
Bromodichloromethane			107.8		%		50-140	21-JUN-18
Bromoform			113.2		%		70-130	21-JUN-18
Bromomethane			86.6		%		50-140	21-JUN-18
Carbon tetrachloride			101.1		%		70-130	21-JUN-18
Chlorobenzene			106.5		%		70-130	21-JUN-18
Chloroform			107.2		%		70-130	21-JUN-18
cis-1,2-Dichloroethylene			106.1		%		70-130	21-JUN-18
cis-1,3-Dichloropropene			109.8		%		70-130	21-JUN-18
Dibromochloromethane			117.5		%		60-130	21-JUN-18
Dichlorodifluoromethane			48.3	MES	%		50-140	21-JUN-18
Ethylbenzene			100.2		%		70-130	21-JUN-18
n-Hexane			108.5		%		70-130	21-JUN-18
Methylene Chloride			110.5		%		70-130	21-JUN-18
MTBE			104.7		%		70-130	21-JUN-18
m+p-Xylenes			99.6		%		70-130	21-JUN-18
Methyl Ethyl Ketone			130.6		%		60-140	21-JUN-18
Methyl Isobutyl Ketone			130.1		%		60-140	21-JUN-18
o-Xylene			103.3		%		70-130	21-JUN-18



## Quality Control Report

Workorder: L2114637

Report Date: 06-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4091606</b>							
<b>WG2801445-2</b>	<b>LCS</b>							
Styrene			105.6		%		70-130	21-JUN-18
Tetrachloroethylene			97.7		%		60-130	21-JUN-18
Toluene			101.4		%		70-130	21-JUN-18
trans-1,2-Dichloroethylene			100.9		%		60-130	21-JUN-18
trans-1,3-Dichloropropene			110.1		%		70-130	21-JUN-18
Trichloroethylene			104.2		%		60-130	21-JUN-18
Trichlorofluoromethane			97.4		%		50-140	21-JUN-18
Vinyl chloride			72.7		%		60-140	21-JUN-18
<b>WG2801445-1</b>	<b>MB</b>							
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	21-JUN-18
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	21-JUN-18
1,1,1-Trichloroethane			<0.050		ug/g		0.05	21-JUN-18
1,1,2-Trichloroethane			<0.050		ug/g		0.05	21-JUN-18
1,1-Dichloroethane			<0.050		ug/g		0.05	21-JUN-18
1,1-Dichloroethylene			<0.050		ug/g		0.05	21-JUN-18
1,2-Dibromoethane			<0.050		ug/g		0.05	21-JUN-18
1,2-Dichlorobenzene			<0.050		ug/g		0.05	21-JUN-18
1,2-Dichloroethane			<0.050		ug/g		0.05	21-JUN-18
1,2-Dichloropropane			<0.050		ug/g		0.05	21-JUN-18
1,3-Dichlorobenzene			<0.050		ug/g		0.05	21-JUN-18
1,4-Dichlorobenzene			<0.050		ug/g		0.05	21-JUN-18
Acetone			<0.50		ug/g		0.5	21-JUN-18
Benzene			<0.0068		ug/g		0.0068	21-JUN-18
Bromodichloromethane			<0.050		ug/g		0.05	21-JUN-18
Bromoform			<0.050		ug/g		0.05	21-JUN-18
Bromomethane			<0.050		ug/g		0.05	21-JUN-18
Carbon tetrachloride			<0.050		ug/g		0.05	21-JUN-18
Chlorobenzene			<0.050		ug/g		0.05	21-JUN-18
Chloroform			<0.050		ug/g		0.05	21-JUN-18
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	21-JUN-18
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	21-JUN-18
Dibromochloromethane			<0.050		ug/g		0.05	21-JUN-18
Dichlorodifluoromethane			<0.050		ug/g		0.05	21-JUN-18
Ethylbenzene			<0.018		ug/g		0.018	21-JUN-18



## Quality Control Report

Workorder: L2114637

Report Date: 06-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4091606</b>							
<b>WG2801445-1 MB</b>								
n-Hexane			<0.050		ug/g		0.05	21-JUN-18
Methylene Chloride			<0.050		ug/g		0.05	21-JUN-18
MTBE			<0.050		ug/g		0.05	21-JUN-18
m+p-Xylenes			<0.030		ug/g		0.03	21-JUN-18
Methyl Ethyl Ketone			<0.50		ug/g		0.5	21-JUN-18
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	21-JUN-18
o-Xylene			<0.020		ug/g		0.02	21-JUN-18
Styrene			<0.050		ug/g		0.05	21-JUN-18
Tetrachloroethylene			<0.050		ug/g		0.05	21-JUN-18
Toluene			<0.080		ug/g		0.08	21-JUN-18
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	21-JUN-18
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	21-JUN-18
Trichloroethylene			<0.010		ug/g		0.01	21-JUN-18
Trichlorofluoromethane			<0.050		ug/g		0.05	21-JUN-18
Vinyl chloride			<0.020		ug/g		0.02	21-JUN-18
Surrogate: 1,4-Difluorobenzene			105.1		%		50-140	21-JUN-18
Surrogate: 4-Bromofluorobenzene			104.4		%		50-140	21-JUN-18
<b>WG2801445-5 MS</b>		<b>L2114637-4</b>						
1,1,1,2-Tetrachloroethane			118.0		%		50-140	21-JUN-18
1,1,2,2-Tetrachloroethane			122.7		%		50-140	21-JUN-18
1,1,1-Trichloroethane			112.2		%		50-140	21-JUN-18
1,1,2-Trichloroethane			122.8		%		50-140	21-JUN-18
1,1-Dichloroethane			113.9		%		50-140	21-JUN-18
1,1-Dichloroethylene			99.4		%		50-140	21-JUN-18
1,2-Dibromoethane			126.2		%		50-140	21-JUN-18
1,2-Dichlorobenzene			116.4		%		50-140	21-JUN-18
1,2-Dichloroethane			122.4		%		50-140	21-JUN-18
1,2-Dichloropropane			120.7		%		50-140	21-JUN-18
1,3-Dichlorobenzene			109.5		%		50-140	21-JUN-18
1,4-Dichlorobenzene			112.1		%		50-140	21-JUN-18
Acetone			149.9	MES	%		50-140	21-JUN-18
Benzene			116.6		%		50-140	21-JUN-18
Bromodichloromethane			116.5		%		50-140	21-JUN-18
Bromoform			122.0		%		50-140	21-JUN-18



## Quality Control Report

Workorder: L2114637

Report Date: 06-JUL-18

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Client: DS Consultants (Vaughan)  
 6221 Highway 7 Unit 16  
 Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4091606</b>							
<b>WG2801445-5 MS</b>		<b>L2114637-4</b>						
Bromomethane			91.8		%		50-140	21-JUN-18
Carbon tetrachloride			109.9		%		50-140	21-JUN-18
Chlorobenzene			115.4		%		50-140	21-JUN-18
Chloroform			116.2		%		50-140	21-JUN-18
cis-1,2-Dichloroethylene			114.6		%		50-140	21-JUN-18
cis-1,3-Dichloropropene			115.0		%		50-140	21-JUN-18
Dibromochloromethane			127.7		%		50-140	21-JUN-18
Dichlorodifluoromethane			49.1	MES	%		50-140	21-JUN-18
Ethylbenzene			109.5		%		50-140	21-JUN-18
n-Hexane			118.0		%		50-140	21-JUN-18
Methylene Chloride			118.6		%		50-140	21-JUN-18
MTBE			113.2		%		50-140	21-JUN-18
m+p-Xylenes			108.2		%		50-140	21-JUN-18
Methyl Ethyl Ketone			140.8	MES	%		50-140	21-JUN-18
Methyl Isobutyl Ketone			135.6		%		50-140	21-JUN-18
o-Xylene			112.3		%		50-140	21-JUN-18
Styrene			113.9		%		50-140	21-JUN-18
Tetrachloroethylene			106.6		%		50-140	21-JUN-18
Toluene			111.2		%		50-140	21-JUN-18
trans-1,2-Dichloroethylene			108.4		%		50-140	21-JUN-18
trans-1,3-Dichloropropene			115.5		%		50-140	21-JUN-18
Trichloroethylene			112.6		%		50-140	21-JUN-18
Trichlorofluoromethane			105.4		%		50-140	21-JUN-18
Vinyl chloride			77.7		%		50-140	21-JUN-18

# Quality Control Report

Workorder: L2114637

Report Date: 06-JUL-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

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Contact: Rick Fioravanti

## Legend:

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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:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

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## 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.

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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.

GRAIN SIZE DETERMINATIONS

Client: DS Consultants  
 Project Number: 26380  
 Sampler:  
 Technician: ZA  
 Lab ID Number: L2114637-15

Sample Location:  
 Sample ID: BH18-4 SS2  
 Sample Depth:  
 Date Sampled: 13-06-18  
 Date Submitted: 18-06-18  
 Date Completed: 07-03-18

Total Sample Weight 89 grams  
 Hydro. Sample Weight 50.000 grams  
 % Past #10 1.000 \* 100  
 Sub Factor 1.780

Specific Gravity: 2.650  
 Liquid Specific Gravity: 1.000  
 Grav Factor: 1.606

Sieve Size	Weight Retained (grams)	Percent Retained	Diameter (mm)	Cum. % Retained	Cum. % Passing
38.1 mm. DIA.:	0.000	0.000	38.100	0.000	100.000
25.4 mm. DIA.:	0.000	0.000	25.400	0.000	100.000
19.0 mm. DIA.:	0.000	0.000	19.000	0.000	100.000
9.5 mm. DIA.:	0.000	0.000	9.500	0.000	100.000
NO. 4 SIEVE :	0.000	0.000	4.500	0.000	100.000
NO. 10 SIEVE :	0.000	0.000	2.000	0.000	100.000
NO. 20 SIEVE :	2.000	4.000	0.850	4.000	96.000
NO. 40 SIEVE :	2.000	4.000	0.425	8.000	92.000
NO. 60 SIEVE :	1.000	2.000	0.250	10.000	90.000
NO. 100 SIEVE:	1.000	2.000	0.150	12.000	88.000
NO. 200 SIEVE:	2.000	4.000	0.075	16.000	84.000

Time (min)	Hydrometer Reading	Temperature (C)	Diameter (mm)	% Suspended (Subsample)	% Suspended (Total Sample)
1.00	27.0	21.7	0.040	78.477	78.477
2.00	25.0	21.7	0.029	72.053	72.053
4.00	24.0	21.6	0.021	68.778	68.778
8.00	23.0	21.6	0.015	65.566	65.566
15.00	22.0	21.5	0.011	62.291	62.291
30.00	21.0	21.2	0.008	58.891	58.891
60.00	20.0	20.8	0.006	55.428	55.428
120.00	17.0	20.4	0.004	45.541	45.541
240.00	16.0	20.0	0.003	42.079	42.079
480.00	14.5	19.7	0.002	37.073	37.073
1440.00	12.0	20.8	0.001	29.731	29.731

GRAIN SIZE	% BY WT.	DIA. RANGE (mm)
% GRAVEL :	0.00	> 4.5
% COARSE SAND :	0.00	2.0 - 4.5
% MEDIUM SAND :	8.00	0.425 - 2.0
% FINE SAND :	8.00	0.075 - 0.425
% SILT :	48.30	0.075 - 0.002
% CLAY :	35.70	< 0.002
% CLAY :	50.65	< 0.005

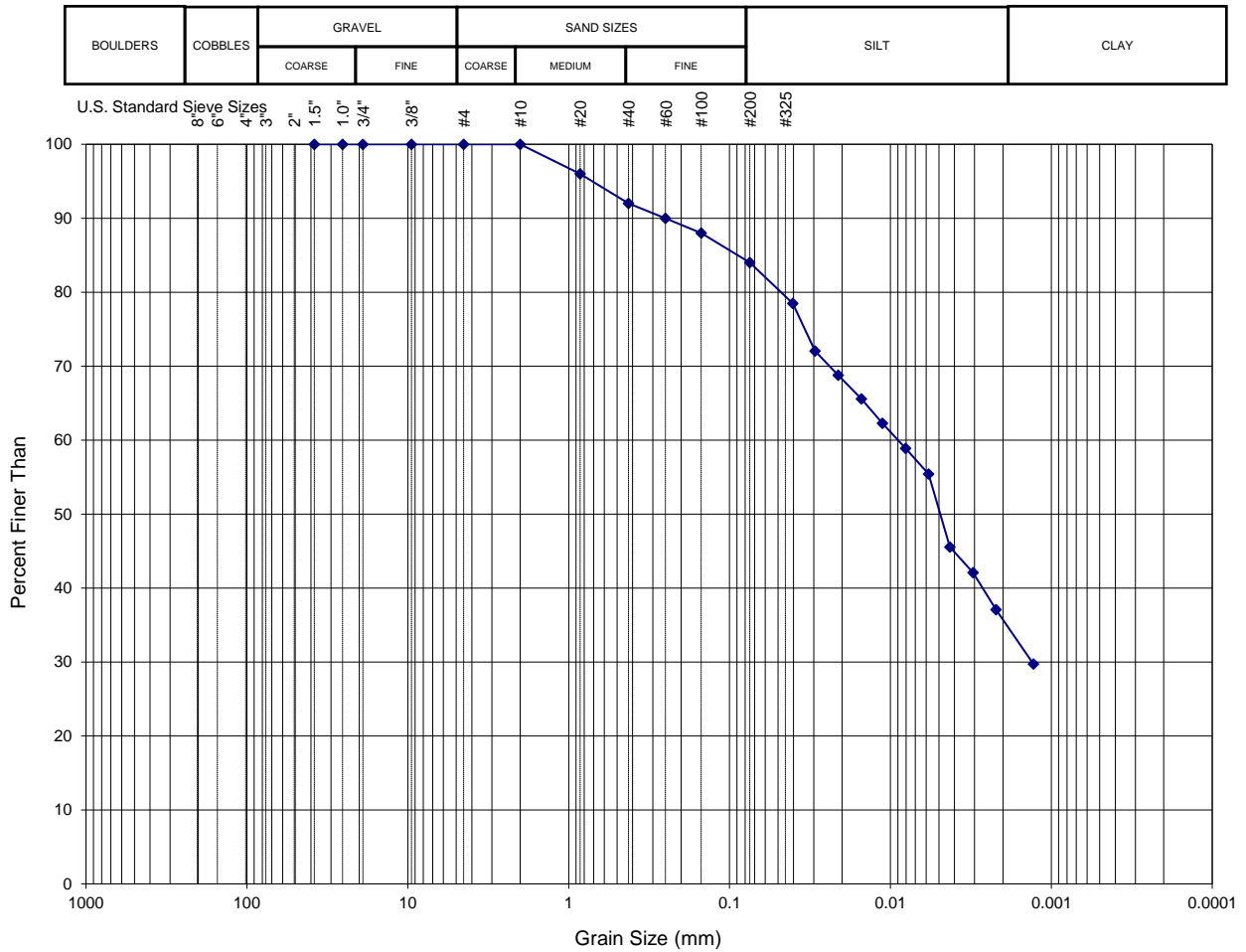
# ALS Environmental

WATERLOO

## PARTICLE SIZE DISTRIBUTION CURVE

ASTM METHOD D422-63

**Project Name:** DS Consultants  
**Project Number:** 26380  
**Sample Location:** BH18-4 SS2  
**Sample Number:** BH18-4 SS2  
**Sample Depth:**  
**Lab ID Number:** L2114637-15  
**Technician:** ZA  
**Sampler:**  
**Dates:**  
 Collected On: 13-06-18  
 Analyzed: 03-07-18



DESCRIPTION	SOIL CLASSIFICATION DESCRIPTIVE MODIFIERS	SUMMARY
<b>SILT AND CLAY, WITH SAND</b>	AND 36 - 50 %	GRAVEL 0 %
FINE GRAINED	ADJECTIVE (e.g. sandy) 21 - 35 %	SAND 16 %
ESTIMATED HAZEN NUMBER: 9.32E-08 cm/s	WITH 11 - 20 %	SILT + CLAY 84 %
<b>NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM</b>	TRACE 1 - 10 %	

GRAIN SIZE DETERMINATIONS

Client: DS Consultants (Vaughan)  
 Project Number: 26380  
 Sampler:  
 Technician: ZA  
 Lab ID Number: L2114637-16

Sample Location:  
 Sample ID: BH18-4 SS7  
 Sample Depth:  
 Date Sampled: 13-06-18  
 Date Submitted: 18-06-18  
 Date Completed: 07-03-18

Total Sample Weight 100 grams  
 Hydro. Sample Weight 50.000 grams  
 % Past #10 0.970 \* 100  
 Sub Factor 1.940

Specific Gravity: 2.650  
 Liquid Specific Gravity: 1.000  
 Grav Factor: 1.606

Sieve Size	Weight Retained (grams)	Percent Retained	Diameter (mm)	Cum. % Retained	Cum. % Passing
38.1 mm. DIA.:	0.000	0.000	38.100	0.000	100.000
25.4 mm. DIA.:	0.000	0.000	25.400	0.000	100.000
19.0 mm. DIA.:	0.000	0.000	19.000	0.000	100.000
9.5 mm. DIA.:	3.000	3.000	9.500	3.000	97.000
NO. 4 SIEVE :	0.000	0.000	4.500	3.000	97.000
NO. 10 SIEVE :	0.000	0.000	2.000	3.000	97.000
NO. 20 SIEVE :	8.000	15.520	0.850	18.520	81.480
NO. 40 SIEVE :	4.000	7.760	0.425	26.280	73.720
NO. 60 SIEVE :	3.000	5.820	0.250	32.100	67.900
NO. 100 SIEVE:	2.000	3.880	0.150	35.980	64.020
NO. 200 SIEVE:	3.000	5.820	0.075	41.800	58.200

Time (min)	Hydrometer Reading	Temperature (C)	Diameter (mm)	% Suspended (Subsample)	% Suspended (Total Sample)
1.00	18.0	21.6	0.046	49.505	48.020
2.00	16.0	21.6	0.033	43.081	41.789
4.00	15.0	21.6	0.024	39.869	38.673
8.00	14.0	21.6	0.017	36.657	35.557
15.00	13.0	21.4	0.012	33.319	32.320
30.00	12.0	21.2	0.009	29.982	29.082
60.00	11.0	20.8	0.006	26.519	25.724
120.00	10.0	20.4	0.005	23.057	22.365
240.00	9.5	20.0	0.003	21.200	20.564
480.00	8.5	19.7	0.002	17.800	17.266
1440.00	8.0	20.8	0.001	16.883	16.376

GRAIN SIZE	% BY WT.	DIA. RANGE (mm)
% GRAVEL :	3.00	> 4.5
% COARSE SAND :	0.00	2.0 - 4.5
% MEDIUM SAND :	23.28	0.425 - 2.0
% FINE SAND :	15.52	0.075 - 0.425
% SILT :	41.19	0.075 - 0.002
% CLAY :	17.01	< 0.002
% CLAY :	23.23	< 0.005

# ALS Environmental

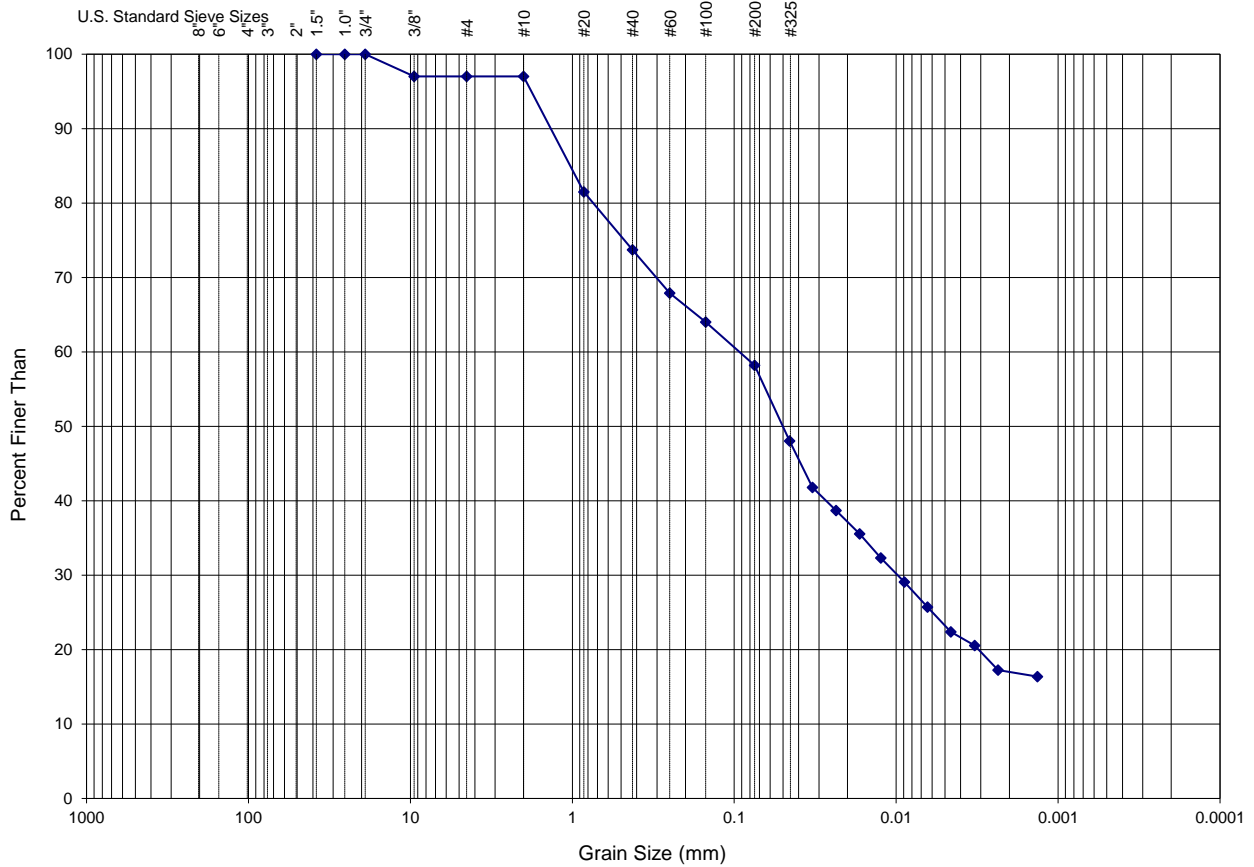
WATERLOO

## PARTICLE SIZE DISTRIBUTION CURVE

ASTM METHOD D422-63

**Project Name:** DS Consultants (Vaughan)  
**Project Number:** 26380  
**Sample Location:** BH18-4 SS7  
**Sample Number:** BH18-4 SS7  
**Sample Depth:** L2114637-16  
**Lab ID Number:** ZA  
**Technician:** ZA  
**Sampler:**  
**Dates:**  
 Collected On: 13-06-18  
 Analyzed: 03-07-18

BOULDERS	COBBLES	GRAVEL		SAND SIZES			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		



DESCRIPTION	SOIL CLASSIFICATION DESCRIPTIVE MODIFIERS	SUMMARY
SILT AND SAND WITH CLAY, TRACE GRAVEL	AND 36 - 50 %	GRAVEL 3 %
FINE GRAINED	ADJECTIVE (e.g. sandy) 21 - 35 %	SAND 39 %
ESTIMATED HAZEN NUMBER: 1.27E-06 cm/s	WITH 11 - 20 %	SILT + CLAY 58 %
NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM	TRACE 1 - 10 %	

GRAIN SIZE DETERMINATIONS

Client: DS Consultants (Vaughan)  
 Project Number: 26380  
 Sampler:  
 Technician: ZA  
 Lab ID Number: L2114637-3

Sample Location:  
 Sample ID: BH18-1 SS2  
 Sample Depth:  
 Date Sampled: 14-06-18  
 Date Submitted: 18-06-18  
 Date Completed: 07-05-18

Total Sample Weight 95 grams  
 Hydro. Sample Weight 50.000 grams  
 % Past #10 0.905 \* 100  
 Sub Factor 1.720

Specific Gravity: 2.650  
 Liquid Specific Gravity: 1.000  
 Grav Factor: 1.606

Sieve Size	Weight Retained (grams)	Percent Retained	Diameter (mm)	Cum. % Retained	Cum. % Passing
38.1 mm. DIA.:	0.000	0.000	38.100	0.000	100.000
25.4 mm. DIA.:	0.000	0.000	25.400	0.000	100.000
19.0 mm. DIA.:	0.000	0.000	19.000	0.000	100.000
9.5 mm. DIA.:	9.000	9.474	9.500	9.474	90.526
NO. 4 SIEVE :	0.000	0.000	4.500	9.474	90.526
NO. 10 SIEVE :	0.000	0.000	2.000	9.474	90.526
NO. 20 SIEVE :	3.000	5.432	0.850	14.905	85.095
NO. 40 SIEVE :	2.000	3.621	0.425	18.526	81.474
NO. 60 SIEVE :	1.000	1.811	0.250	20.337	79.663
NO. 100 SIEVE:	1.000	1.811	0.150	22.147	77.853
NO. 200 SIEVE:	2.000	3.621	0.075	25.768	74.232

Time (min)	Hydrometer Reading	Temperature (C)	Diameter (mm)	% Suspended (Subsample)	% Suspended (Total Sample)
1.00	25.0	19.2	0.043	70.487	63.809
2.00	24.0	19.2	0.031	67.275	60.901
4.00	23.0	19.2	0.022	64.063	57.993
8.00	22.0	19.2	0.016	60.850	55.086
15.00	21.0	19.2	0.012	57.638	52.178
30.00	20.0	19.2	0.008	54.426	49.270
60.00	17.0	19.2	0.006	44.790	40.547
120.00	16.0	19.2	0.004	41.578	37.639
240.00	13.0	19.2	0.003	31.941	28.915
480.00	13.0	18.9	0.002	31.753	28.745
1440.00	12.0	20.0	0.001	29.230	26.461

GRAIN SIZE	% BY WT.	DIA. RANGE (mm)
% GRAVEL :	9.47	> 4.5
% COARSE SAND :	0.00	2.0 - 4.5
% MEDIUM SAND :	9.05	0.425 - 2.0
% FINE SAND :	7.24	0.075 - 0.425
% SILT :	46.01	0.075 - 0.002
% CLAY :	28.22	< 0.002
% CLAY :	38.79	< 0.005

# ALS Environmental

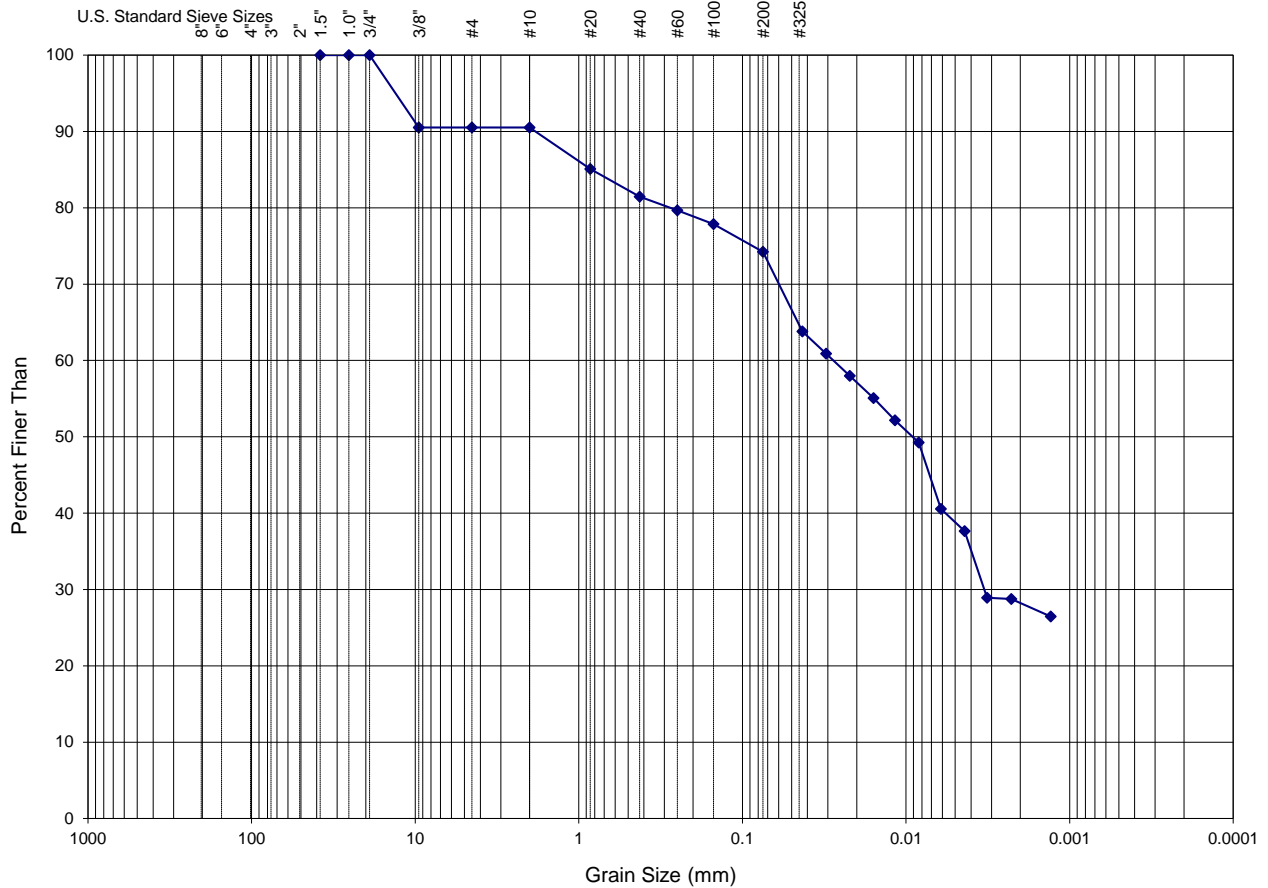
WATERLOO

## PARTICLE SIZE DISTRIBUTION CURVE

ASTM METHOD D422-63

**Project Name:** DS Consultants (Vaughan)  
**Project Number:** 26380  
**Sample Location:**  
**Sample Number:** BH18-1 SS2  
**Sample Depth:**  
**Lab ID Number:** L2114637-3  
**Technician:** ZA  
**Sampler:**  
**Dates:**  
 Collected On: 14-06-18  
 Analyzed: 05-07-18

BOULDERS	COBBLES	GRAVEL		SAND SIZES			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		



DESCRIPTION	SOIL CLASSIFICATION DESCRIPTIVE MODIFIERS	SUMMARY
<b>CLAYEY SILT WITH SAND, TRACE GRAVEL</b>	AND 36 - 50 %	GRAVEL 9 %
FINE GRAINED	ADJECTIVE (e.g. sandy) 21 - 35 %	SAND 16 %
ESTIMATED HAZEN NUMBER: 2.61E-06 cm/s	WITH 11 - 20 %	SILT + CLAY 74 %
<b>NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM</b>	TRACE 1 - 10 %	

GRAIN SIZE DETERMINATIONS

Client: DS Consultants (Vaughan)  
 Project Number: 26380  
 Sampler:  
 Technician: ZA  
 Lab ID Number: L2114637-5

Sample Location:  
 Sample ID: BH18-1 SS7  
 Sample Depth:  
 Date Sampled: 14-06-18  
 Date Submitted: 18-06-18  
 Date Completed: 07-05-18

Total Sample Weight 151 grams  
 Hydro. Sample Weight 50.000 grams  
 % Past #10 1.000 \* 100  
 Sub Factor 3.020

Specific Gravity: 2.650  
 Liquid Specific Gravity: 1.000  
 Grav Factor: 1.606

Sieve Size	Weight Retained (grams)	Percent Retained	Diameter (mm)	Cum. % Retained	Cum. % Passing
38.1 mm. DIA.:	0.000	0.000	38.100	0.000	100.000
25.4 mm. DIA.:	0.000	0.000	25.400	0.000	100.000
19.0 mm. DIA.:	0.000	0.000	19.000	0.000	100.000
9.5 mm. DIA.:	0.000	0.000	9.500	0.000	100.000
NO. 4 SIEVE :	0.000	0.000	4.500	0.000	100.000
NO. 10 SIEVE :	0.000	0.000	2.000	0.000	100.000
NO. 20 SIEVE :	7.000	14.000	0.850	14.000	86.000
NO. 40 SIEVE :	3.000	6.000	0.425	20.000	80.000
NO. 60 SIEVE :	3.000	6.000	0.250	26.000	74.000
NO. 100 SIEVE:	3.000	6.000	0.150	32.000	68.000
NO. 200 SIEVE:	3.000	6.000	0.075	38.000	62.000

Time (min)	Hydrometer Reading	Temperature (C)	Diameter (mm)	% Suspended (Subsample)	% Suspended (Total Sample)
1.00	20.0	19.2	0.046	54.426	54.426
2.00	19.0	19.2	0.033	51.214	51.214
4.00	18.0	19.2	0.023	48.002	48.002
8.00	17.0	19.2	0.017	44.790	44.790
15.00	16.0	19.2	0.012	41.578	41.578
30.00	15.0	19.2	0.009	38.366	38.366
60.00	14.0	19.2	0.006	35.153	35.153
120.00	13.0	19.2	0.005	31.941	31.941
240.00	11.0	19.2	0.003	25.517	25.517
480.00	10.0	18.9	0.002	22.117	22.117
1440.00	10.0	20.0	0.001	22.806	22.806

GRAIN SIZE	% BY WT.	DIA. RANGE (mm)
% GRAVEL :	0.00	> 4.5
% COARSE SAND :	0.00	2.0 - 4.5
% MEDIUM SAND :	20.00	0.425 - 2.0
% FINE SAND :	18.00	0.075 - 0.425
% SILT :	39.69	0.075 - 0.002
% CLAY :	22.31	< 0.002
% CLAY :	32.90	< 0.005

# ALS Environmental

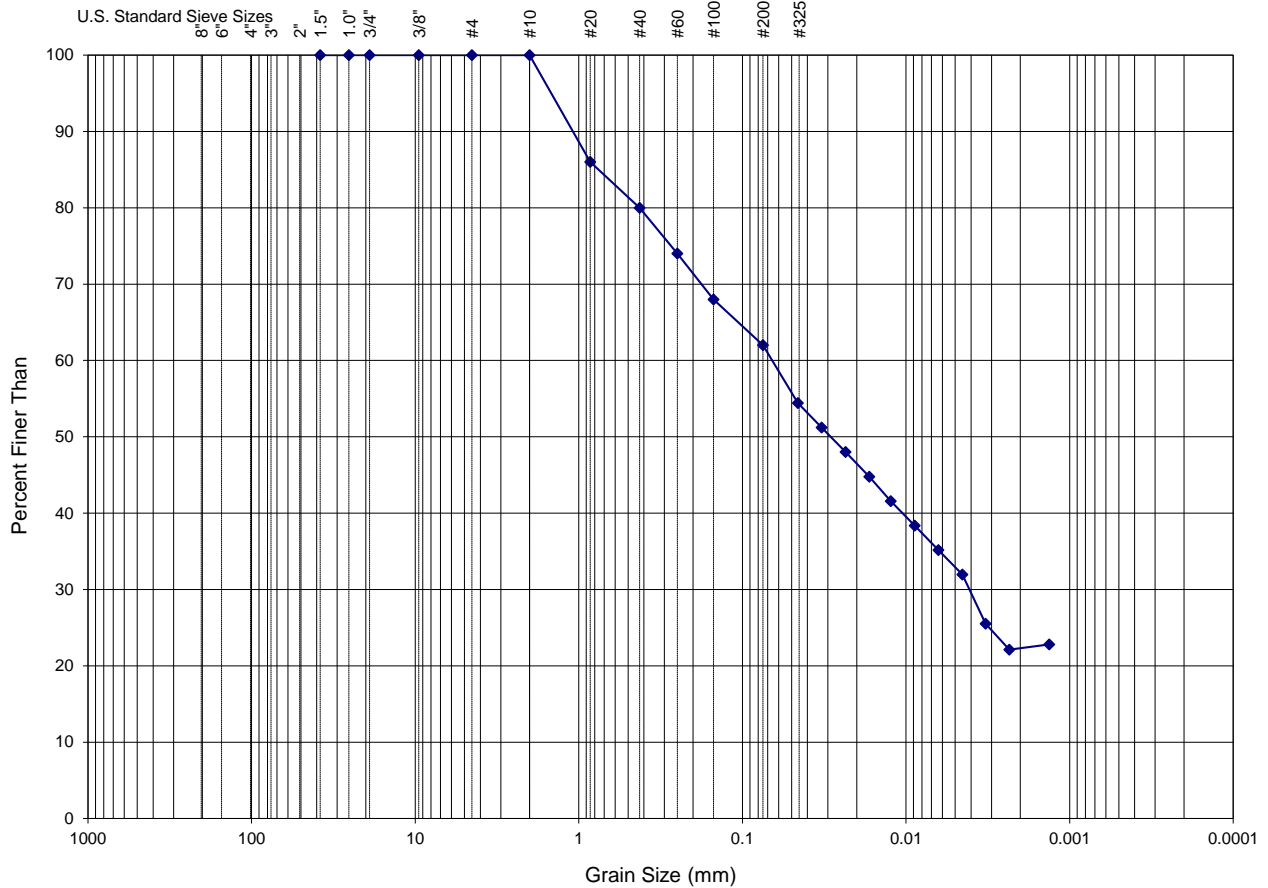
WATERLOO

## PARTICLE SIZE DISTRIBUTION CURVE

ASTM METHOD D422-63

**Project Name:** DS Consultants (Vaughan)  
**Project Number:** 26380  
**Sample Location:** BH18-1 SS7  
**Sample Number:**  
**Sample Depth:**  
**Lab ID Number:** L2114637-5  
**Technician:** ZA  
**Sampler:**  
**Dates:**  
 Collected On: 14-06-18  
 Analyzed: 05-07-18

BOULDERS	COBBLES	GRAVEL		SAND SIZES			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

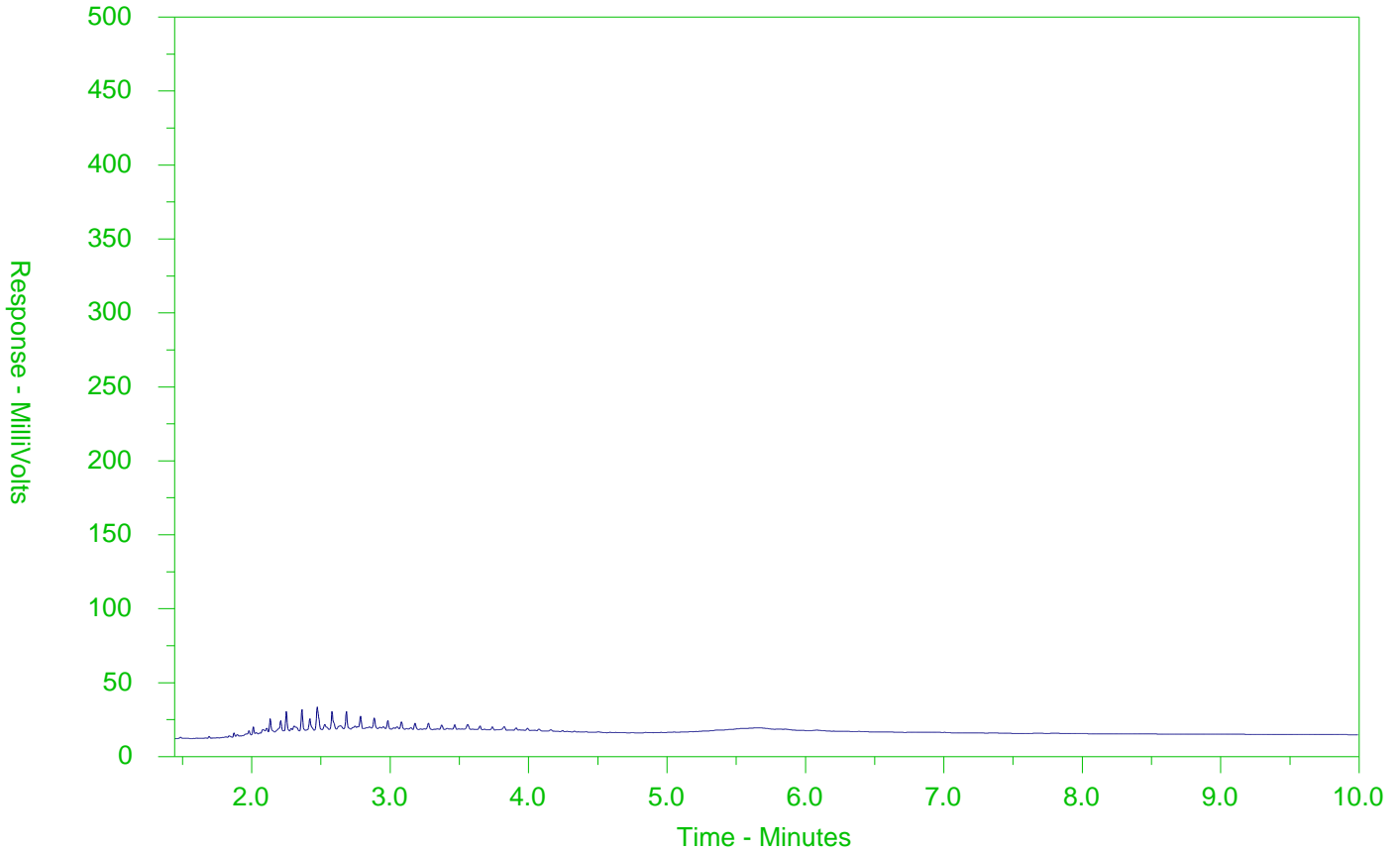


DESCRIPTION	SOIL CLASSIFICATION DESCRIPTIVE MODIFIERS	SUMMARY
<b>CLAYEY SILT AND SAND</b>		
FINE GRAINED	AND 36 - 50 %	GRAVEL <u>0</u> %
ESTIMATED HAZEN NUMBER: 5.08E-07 cm/s	ADJECTIVE (e.g. sandy) 21 - 35 %	SAND <u>38</u> %
<b>NOTE: UNIFIED SOIL CLASSIFICATION SYSTEM</b>	WITH 11 - 20 %	SILT + CLAY <u>62</u> %
	TRACE 1 - 10 %	

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2114637-4  
 Client Sample ID: BH18-1 SS5



← 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.

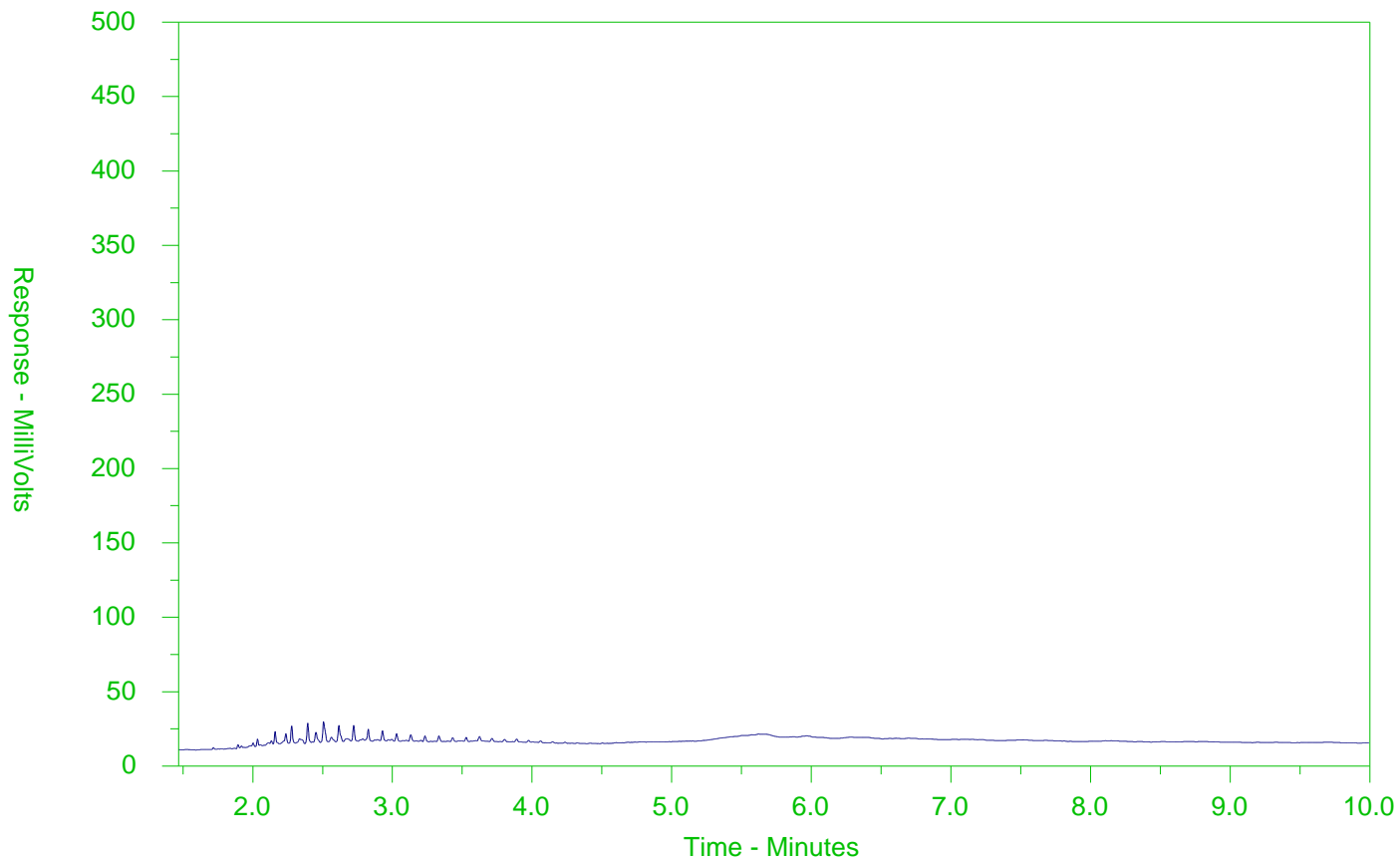
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2114637-7  
 Client Sample ID: QAQC2



← 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.

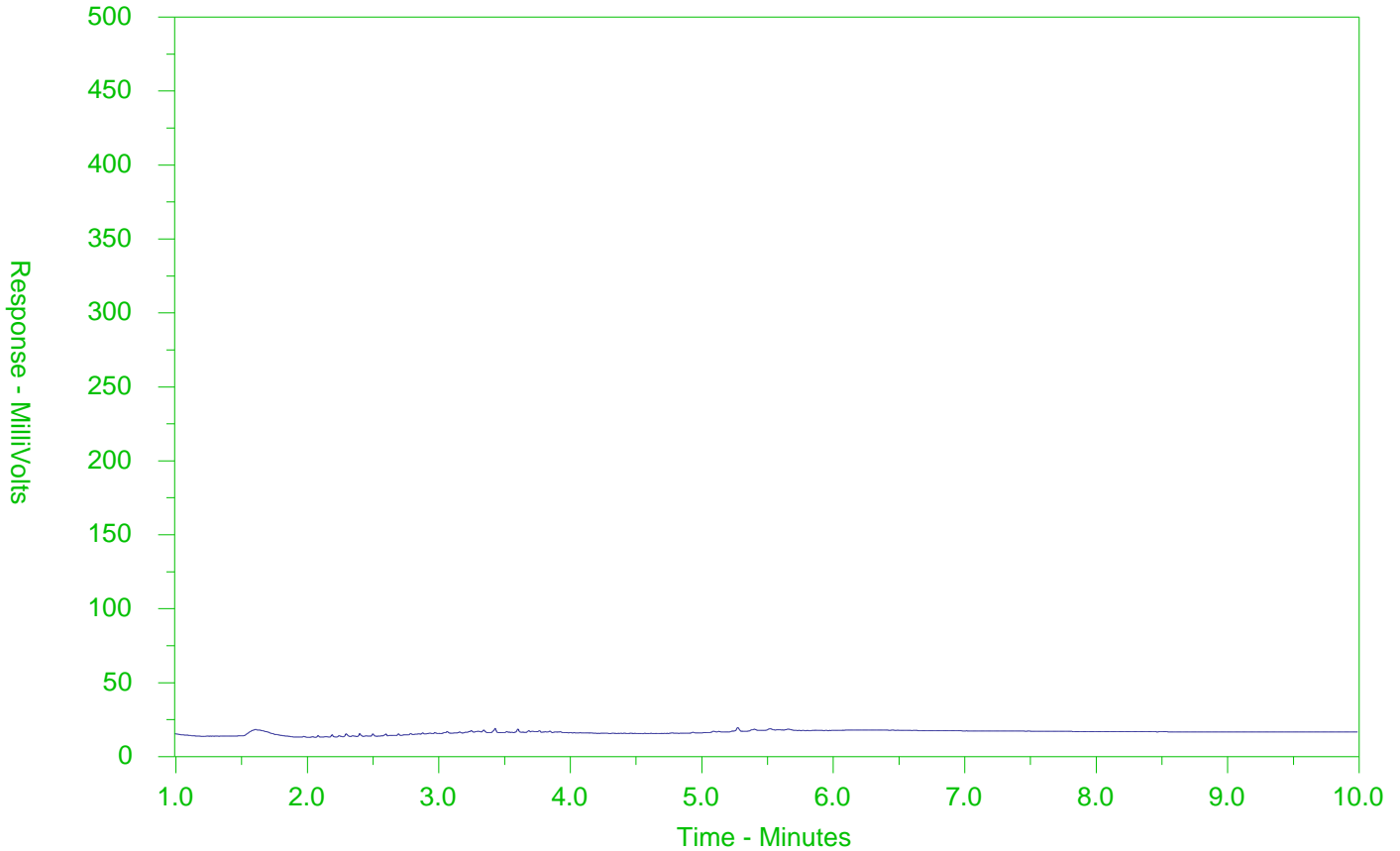
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2114637-10  
 Client Sample ID: BH18-2 SS2



← 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.

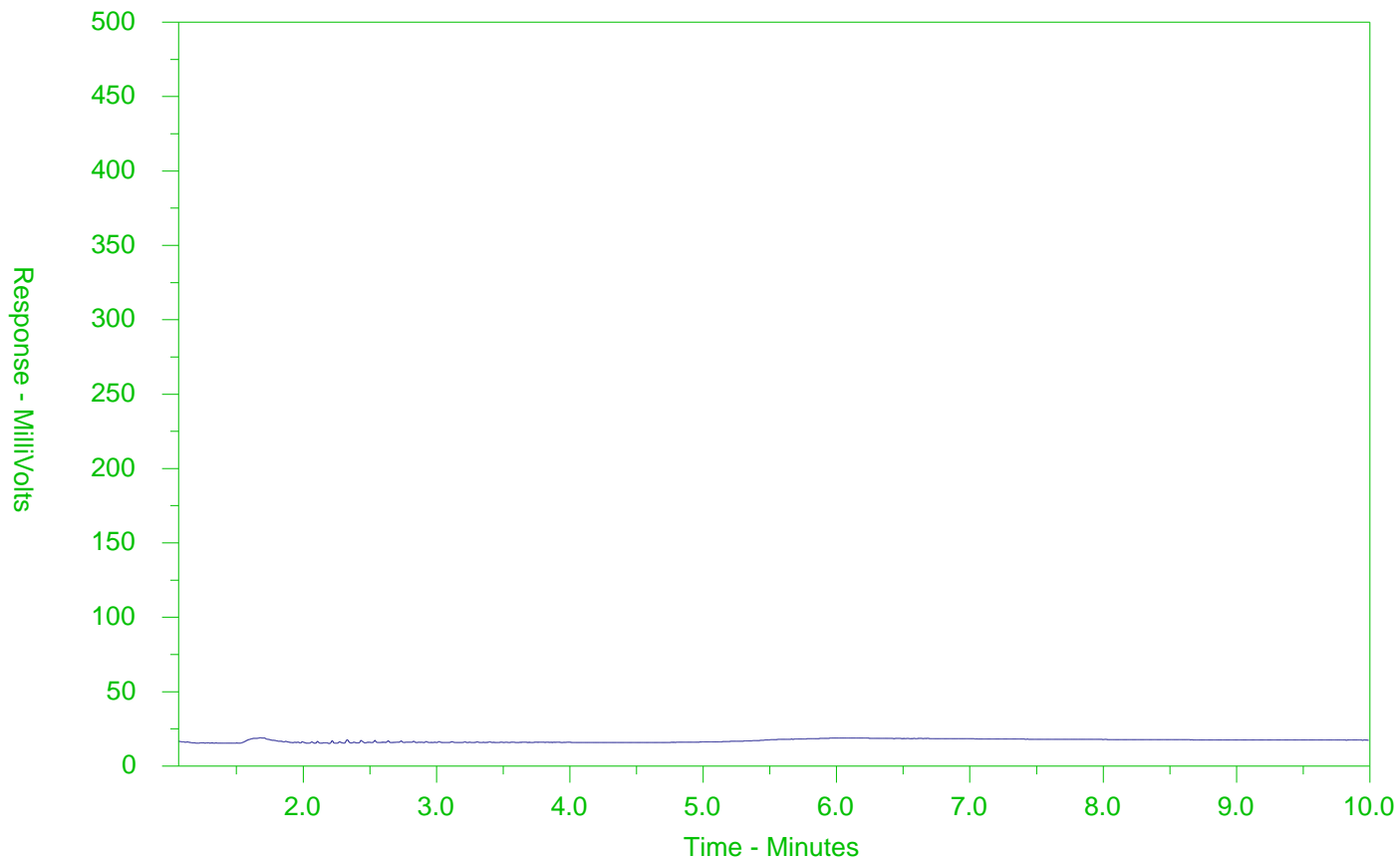
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2114637-13  
 Client Sample ID: BH18-3 SS10



← 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.

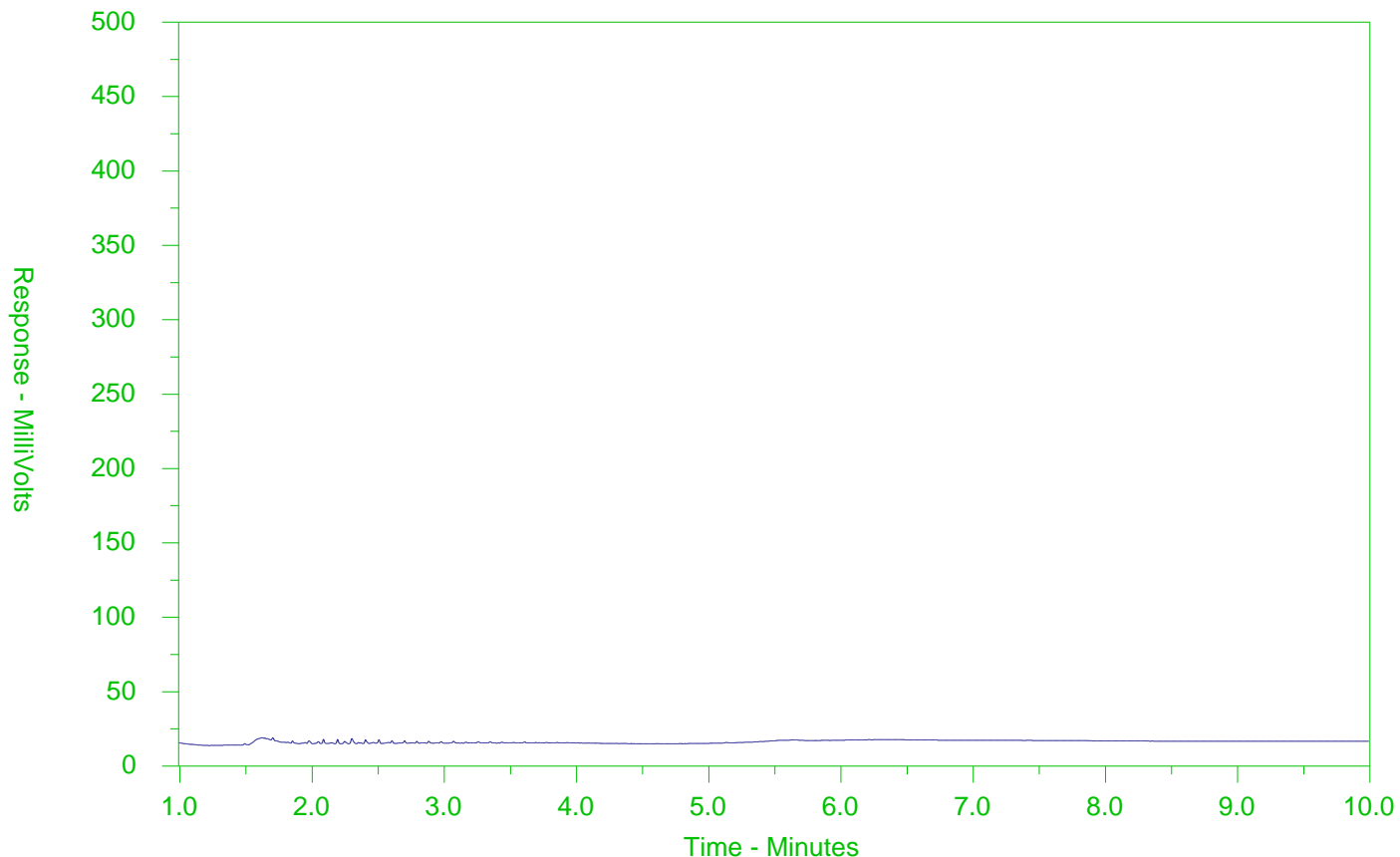
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2114637-17  
 Client Sample ID: BH18-4 SS9



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

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

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

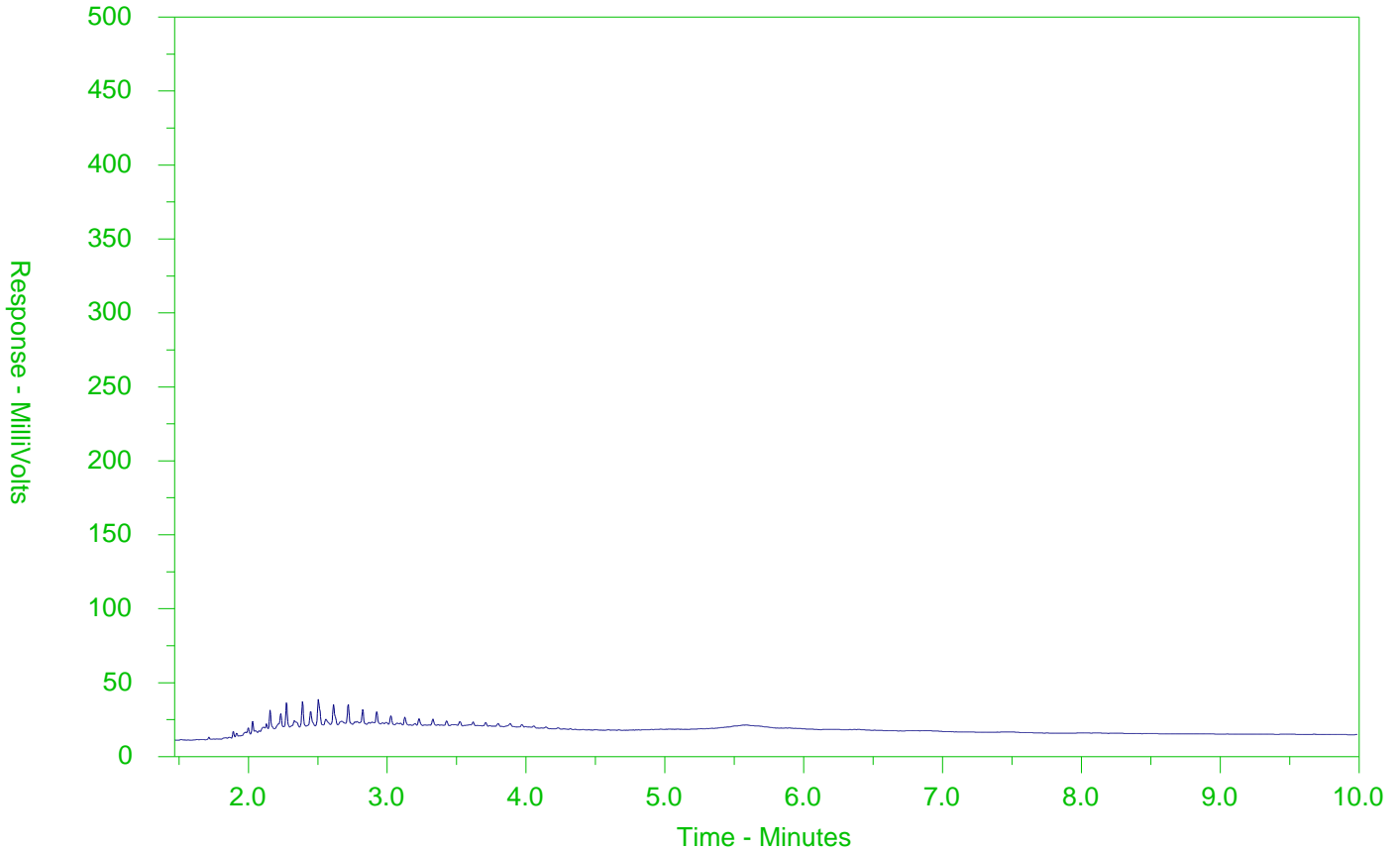
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2114637-20  
 Client Sample ID: BH18-5 SS7



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

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

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

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

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



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2114637-COFC

OC Number: 17-638235

Page 1 of 2

<b>Report To</b> Contact and company name below will appear on the final report Company: <b>DS Consultants Ltd</b> Contact: <b>Rick Foravanti</b> Phone: Company address below will appear on the final report Street: <b>1221 HWY 7, unit 16</b> City/Province: <b>Vaughan ON</b> Postal Code: <b>L4A 0K0</b>		<b>Report Format / Distribution</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL   <input type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL   <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: <b>Rick.Foravanti@DSconsultants.com</b> Email 2: Email 3:		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b> Regular (R) <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply 4 day (P4-20%) <input type="checkbox"/> 1 Business day (E-100%) <input type="checkbox"/> 3 day (P3-25%) <input type="checkbox"/> Same Day, Weekend or Statutory holiday (E2-200% (Laboratory opening fees may apply)) <input type="checkbox"/> 2 day (P2-30%) <input type="checkbox"/> Date and Time Required for all E&P TATs: dd-mm-yy hh:mm For TATs that can not be performed according to the service level selected, you will be contacted.																																																																																																																																																																																																						
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Company: Contact:		<b>Invoice Distribution</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: <b>Simon P</b> Email 2:		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below <table border="1"> <thead> <tr> <th>ALS Sample # (lab use only)</th> <th>Sample Identification and/or Coordinates (This description will appear on the report)</th> <th>Date (dd-mm-yy)</th> <th>Time (hh:mm)</th> <th>Sample Type</th> <th>Metals + Inorg.</th> <th>PLCS + BTEX</th> <th>VOCs</th> <th>OC pesticides</th> <th>gran size</th> <th>PH</th> <th>EC + SAR</th> <th>SAMPLES ON HOLD</th> <th>Sample is hazardous (please provide further details)</th> <th>NUMBER OF CONTAINERS</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BH18-1 S51</td> <td>11-06-18</td> <td>09:30</td> <td>SOIL</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td>2</td> <td>BH18-1 S53</td> <td></td> <td>09:50</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2</td> </tr> <tr> <td>3</td> <td>BH18-1 S52</td> <td></td> <td>09:40</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td>3</td> </tr> <tr> <td>4</td> <td>BH18-1 S55</td> <td></td> <td>10:10</td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td>4</td> </tr> <tr> <td>5</td> <td>BH18-1 S57</td> <td></td> <td>10:40</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td>5</td> </tr> <tr> <td>6</td> <td>QAGC 1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>6</td> </tr> <tr> <td>7</td> <td>QAGC 2</td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7</td> </tr> <tr> <td>8</td> <td>QAGC 3</td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>8</td> </tr> <tr> <td>9</td> <td>BH18-2 S51</td> <td>11-06-18</td> <td>09:00</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>9</td> </tr> <tr> <td>10</td> <td>BH18-2 S52</td> <td>11-06-18</td> <td>09:10</td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>10</td> </tr> <tr> <td>11</td> <td>BH18-3 S51</td> <td>12-06-18</td> <td>08:45</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>11</td> </tr> <tr> <td>12</td> <td>BH18-3 S52</td> <td>12-06-18</td> <td>09:00</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>12</td> </tr> </tbody> </table>				ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Metals + Inorg.	PLCS + BTEX	VOCs	OC pesticides	gran size	PH	EC + SAR	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS	1	BH18-1 S51	11-06-18	09:30	SOIL										1	2	BH18-1 S53		09:50		X									2	3	BH18-1 S52		09:40						X	X				3	4	BH18-1 S55		10:10		X	X			X	X	X			4	5	BH18-1 S57		10:40						X	X				5	6	QAGC 1													6	7	QAGC 2				X	X								7	8	QAGC 3				X	X								8	9	BH18-2 S51	11-06-18	09:00											9	10	BH18-2 S52	11-06-18	09:10		X	X	X							10	11	BH18-3 S51	12-06-18	08:45											11	12	BH18-3 S52	12-06-18	09:00		X									12
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<b>Project Information</b> ALS Account # / Quote #: <b>18-549-40</b> Job #: <b>18-549-40</b> PO/APE: LSD:		<b>Oil and Gas Required Fields (client use)</b> APE/Cost Center: <b>POH</b> Major/Minor Code: <b>Routing Code:</b> Requisitioner: Location:		ALS Lab Work Order # (lab use only): <b>L2114637</b> ALS Contact: <b>Amanda</b> <b>196</b> Sampler: <b>Rick F.</b>																																																																																																																																																																																																						
<b>Drinking Water (DW) Samples (client use)</b> Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption use? <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b> <b>TABLE 8 - medium - Fine textured</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b> Frozen <input type="checkbox"/> SF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C: <b>4.4</b> FINAL COOLER TEMPERATURES °C:																																																																																																																																																																																																						
<b>SHIPMENT RELEASE (client use)</b> Released by: <b>Rick Foravanti</b> Date: <b>June 18-18</b> 3:30 Time:		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b> Received by: Date: Time:		<b>FINAL SHIPMENT RECEPTION (lab use only)</b> Received by: <b>[Signature]</b> Date: <b>June 18/18</b> 17:30 Time:																																																																																																																																																																																																						

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION  
 FAILURE TO COMPLETE ALL PORTIONS OF THIS FORM MAY DELAY ANALYSIS. PLEASE FILL IN THIS FORM LEGITIMATELY. 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.






DS Consultants (Vaughan)  
ATTN: Rick Fioravanti  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 03-DEC-18  
Report Date: 06-DEC-18 14:20 (MT)  
Version: FINAL

Client Phone: 647-237-5110

## Certificate of Analysis

Lab Work Order #: L2204650  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-40  
C of C Numbers: 17-639196  
Legal Site Desc:



Amanda Fazekas  
Account Manager

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ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927  
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# ANALYTICAL REPORT

## Summary of Guideline Exceedances

Guideline							
ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit	
Ontario Regulation 153/04 - April 15, 2011 Standards - T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use							
(No parameter exceedances)							

# ANALYTICAL REPORT

## Physical Tests - SOIL

Analyte	Unit	Guide Limits																						
		#1	#2																					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;"><b>Lab ID</b></td> <td>L2204650-1</td> <td>L2204650-2</td> <td>L2204650-3</td> <td>L2204650-4</td> <td>L2204650-5</td> </tr> <tr> <td style="text-align: right;"><b>Sample Date</b></td> <td>28-NOV-18</td> <td>28-NOV-18</td> <td>28-NOV-18</td> <td>28-NOV-18</td> <td>28-NOV-18</td> </tr> <tr> <td style="text-align: right;"><b>Sample ID</b></td> <td>TP18-1 S1</td> <td>TP18-2 S1</td> <td>TP18-3 S1</td> <td>TP18-4 S1</td> <td>DUP-1</td> </tr> </table>							<b>Lab ID</b>	L2204650-1	L2204650-2	L2204650-3	L2204650-4	L2204650-5	<b>Sample Date</b>	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18	<b>Sample ID</b>	TP18-1 S1	TP18-2 S1	TP18-3 S1	TP18-4 S1	DUP-1
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<b>Sample ID</b>	TP18-1 S1	TP18-2 S1	TP18-3 S1	TP18-4 S1	DUP-1																			
% Moisture	%	-	-	13.4	13.5	16.1	9.62	10.4																

**Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

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

## Volatile Organic Compounds - SOIL

		Lab ID	L2204650-1	L2204650-2	L2204650-3	L2204650-4	L2204650-5	
		Sample Date	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18	
		Sample ID	TP18-1 S1	TP18-2 S1	TP18-3 S1	TP18-4 S1	DUP-1	
Analyte	Unit	Guide Limits						
		#1	#2					
Benzene	ug/g	0.02	-	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	ug/g	0.05	-	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	ug/g	0.2	-	<0.080	<0.080	<0.080	<0.080	<0.080
o-Xylene	ug/g	-	-	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	ug/g	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	ug/g	0.05	-	<0.050	<0.050	<0.050	<0.050	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	-	99.5	98.1	104.5	95.6	97.9
Surrogate: 1,4-Difluorobenzene	%	-	-	104.4	103.5	110.8	101.1	103.7

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

## Hydrocarbons - SOIL

Analyte	Unit	Guide Limits		Lab ID	L2204650-1	L2204650-2	L2204650-3	L2204650-4	L2204650-5
		#1	#2	Sample Date	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18
				Sample ID	TP18-1 S1	TP18-2 S1	TP18-3 S1	TP18-4 S1	DUP-1
F1 (C6-C10)	ug/g	25	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	ug/g	25	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	ug/g	10	-	<10	<10	<10	<10	<10	<10
F2-Naphth	ug/g	-	-	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	ug/g	240	-	<50	<50	<50	<50	<50	<50
F3-PAH	ug/g	-	-	<50	<50	<50	<50	<50	<50
F4 (C34-C50)	ug/g	120	-	78	<50	<50	<50	<50	<50
Total Hydrocarbons (C6-C50)	ug/g	-	-	78	<72	<72	<72	<72	<72
Chrom. to baseline at nC50		-	-	YES	YES	YES	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	91.1	95.5	99.3	91.9	93.3	
Surrogate: 3,4-Dichlorotoluene	%	-	-	110.4	108.9	103.5	101.1	109.1	

**Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

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

## Polycyclic Aromatic Hydrocarbons - SOIL

Analyte	Unit	Guide Limits		Lab ID	L2204650-1	L2204650-2	L2204650-3	L2204650-4	L2204650-5
		#1	#2	Sample Date	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18	28-NOV-18
				Sample ID	TP18-1 S1	TP18-2 S1	TP18-3 S1	TP18-4 S1	DUP-1
Acenaphthene	ug/g	0.072	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	ug/g	0.093	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	ug/g	0.22	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)anthracene	ug/g	0.36	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	ug/g	0.3	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(b)fluoranthene	ug/g	0.47	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	ug/g	0.68	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	ug/g	0.48	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	ug/g	2.8	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo(ah)anthracene	ug/g	0.1	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	ug/g	0.69	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	ug/g	0.19	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	ug/g	0.23	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1+2-Methylnaphthalenes	ug/g	0.59	-	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
1-Methylnaphthalene	ug/g	0.59	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
2-Methylnaphthalene	ug/g	0.59	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Naphthalene	ug/g	0.09	-	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Phenanthrene	ug/g	0.69	-	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046
Pyrene	ug/g	1	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Surrogate: 2-Fluorobiphenyl	%	-	-	83.9	75.8	76.4	76.8	75.2	
Surrogate: p-Terphenyl d14	%	-	-	83.3	73.8	74.9	75.1	74.2	

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# Reference Information

**Methods Listed (if applicable):**

ALS Test Code	Matrix	Test Description	Method Reference**
<b>BTX-511-HS-WT</b>	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).

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

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

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

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

**Notes:**

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

# Reference Information

**Methods Listed (if applicable):**

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

<b>METHYLNAPS-CALC-WT</b>	Soil	ABN-Calculated Parameters	SW846 8270
<b>MOISTURE-WT</b>	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
<b>PAH-511-WT</b>	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 technique is used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

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

<b>XYLENES-SUM-CALC-WT</b>	Soil	Sum of Xylene Isomer Concentrations	CALCULATION
----------------------------	------	-------------------------------------	-------------

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

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

Chain of Custody Numbers:

17-639196

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

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

**GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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



## Quality Control Report

Workorder: L2204650

Report Date: 06-DEC-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BTX-511-HS-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4374742</b>							
<b>WG2945520-4</b>	<b>DUP</b>	<b>WG2945520-3</b>						
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	05-DEC-18
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	05-DEC-18
m+p-Xylenes		0.033	0.032		ug/g	4.5	40	05-DEC-18
o-Xylene		0.028	0.028		ug/g	0.0	40	05-DEC-18
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	05-DEC-18
<b>WG2945520-2</b>	<b>LCS</b>							
Benzene			101.8		%		70-130	05-DEC-18
Ethylbenzene			109.3		%		70-130	05-DEC-18
m+p-Xylenes			106.5		%		70-130	05-DEC-18
o-Xylene			107.9		%		70-130	05-DEC-18
Toluene			107.7		%		70-130	05-DEC-18
<b>WG2945520-1</b>	<b>MB</b>							
Benzene			<0.0068		ug/g		0.0068	05-DEC-18
Ethylbenzene			<0.018		ug/g		0.018	05-DEC-18
m+p-Xylenes			<0.030		ug/g		0.03	05-DEC-18
o-Xylene			<0.020		ug/g		0.02	05-DEC-18
Toluene			<0.080		ug/g		0.08	05-DEC-18
Surrogate: 1,4-Difluorobenzene			111.5		%		50-140	05-DEC-18
Surrogate: 4-Bromofluorobenzene			108.3		%		50-140	05-DEC-18
<b>WG2945520-5</b>	<b>MS</b>	<b>L2204356-1</b>						
Benzene			106.6		%		60-140	05-DEC-18
Ethylbenzene			111.1		%		60-140	05-DEC-18
m+p-Xylenes			107.3		%		60-140	05-DEC-18
o-Xylene			110.5		%		60-140	05-DEC-18
Toluene			110.5		%		60-140	05-DEC-18
<b>F1-HS-511-WT</b>		<b>Soil</b>						
<b>Batch</b>	<b>R4374742</b>							
<b>WG2945520-4</b>	<b>DUP</b>	<b>WG2945520-3</b>						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	05-DEC-18
<b>WG2945520-2</b>	<b>LCS</b>							
F1 (C6-C10)			116.9		%		80-120	05-DEC-18
<b>WG2945520-1</b>	<b>MB</b>							
F1 (C6-C10)			<5.0		ug/g		5	05-DEC-18
Surrogate: 3,4-Dichlorotoluene			101.4		%		60-140	05-DEC-18
<b>WG2945520-6</b>	<b>MS</b>	<b>L2204356-3</b>						



## Quality Control Report

Workorder: L2204650

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F1-HS-511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4374742</b>							
<b>WG2945520-6</b>	<b>MS</b>	<b>L2204356-3</b>						
F1 (C6-C10)			111.8		%		60-140	05-DEC-18
<b>F2-F4-511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4373716</b>							
<b>WG2945162-3</b>	<b>DUP</b>	<b>WG2945162-5</b>						
F2 (C10-C16)		13	13		ug/g	1.4	30	04-DEC-18
F3 (C16-C34)		60	54		ug/g	11	30	04-DEC-18
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	04-DEC-18
<b>WG2945162-2</b>	<b>LCS</b>							
F2 (C10-C16)			107.8		%		80-120	04-DEC-18
F3 (C16-C34)			119.1		%		80-120	04-DEC-18
F4 (C34-C50)			116.8		%		80-120	04-DEC-18
<b>WG2945162-1</b>	<b>MB</b>							
F2 (C10-C16)			<10		ug/g		10	04-DEC-18
F3 (C16-C34)			<50		ug/g		50	04-DEC-18
F4 (C34-C50)			<50		ug/g		50	04-DEC-18
Surrogate: 2-Bromobenzotrifluoride			95.8		%		60-140	04-DEC-18
<b>WG2945162-4</b>	<b>MS</b>	<b>WG2945162-5</b>						
F2 (C10-C16)			116.8		%		60-140	04-DEC-18
F3 (C16-C34)			122.3		%		60-140	04-DEC-18
F4 (C34-C50)			119.5		%		60-140	04-DEC-18
<b>MOISTURE-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4370827</b>							
<b>WG2945419-3</b>	<b>DUP</b>	<b>L2204791-7</b>						
% Moisture			17.0		%	0.3	20	04-DEC-18
<b>WG2945419-2</b>	<b>LCS</b>							
% Moisture			99.4		%		90-110	04-DEC-18
<b>WG2945419-1</b>	<b>MB</b>							
% Moisture			<0.10		%		0.1	04-DEC-18
<b>PAH-511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4374129</b>							
<b>WG2945446-3</b>	<b>DUP</b>	<b>WG2945446-5</b>						
1-Methylnaphthalene			<0.030	RPD-NA	ug/g	N/A	40	05-DEC-18
2-Methylnaphthalene			<0.030	RPD-NA	ug/g	N/A	40	05-DEC-18
Acenaphthene			<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18



## Quality Control Report

Workorder: L2204650

Report Date: 06-DEC-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PAH-511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4374129</b>							
<b>WG2945446-3</b>	<b>DUP</b>	<b>WG2945446-5</b>						
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
Naphthalene		<0.013	<0.013	RPD-NA	ug/g	N/A	40	05-DEC-18
Phenanthrene		<0.046	<0.046	RPD-NA	ug/g	N/A	40	05-DEC-18
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	05-DEC-18
<b>WG2945446-2</b>	<b>LCS</b>							
1-Methylnaphthalene			89.5		%		50-140	05-DEC-18
2-Methylnaphthalene			90.6		%		50-140	05-DEC-18
Acenaphthene			89.8		%		50-140	05-DEC-18
Acenaphthylene			84.7		%		50-140	05-DEC-18
Anthracene			83.7		%		50-140	05-DEC-18
Benzo(a)anthracene			83.1		%		50-140	05-DEC-18
Benzo(a)pyrene			82.2		%		50-140	05-DEC-18
Benzo(b)fluoranthene			85.1		%		50-140	05-DEC-18
Benzo(g,h,i)perylene			83.5		%		50-140	05-DEC-18
Benzo(k)fluoranthene			83.2		%		50-140	05-DEC-18
Chrysene			94.1		%		50-140	05-DEC-18
Dibenzo(ah)anthracene			83.9		%		50-140	05-DEC-18
Fluoranthene			82.9		%		50-140	05-DEC-18
Fluorene			86.2		%		50-140	05-DEC-18
Indeno(1,2,3-cd)pyrene			81.2		%		50-140	05-DEC-18
Naphthalene			89.7		%		50-140	05-DEC-18
Phenanthrene			85.8		%		50-140	05-DEC-18



## Quality Control Report

Workorder: L2204650

Report Date: 06-DEC-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PAH-511-WT</b>	<b>Soil</b>							
<b>Batch</b>	<b>R4374129</b>							
<b>WG2945446-2</b>	<b>LCS</b>							
Pyrene			84.6		%		50-140	05-DEC-18
<b>WG2945446-1</b>	<b>MB</b>							
1-Methylnaphthalene			<0.030		ug/g		0.03	05-DEC-18
2-Methylnaphthalene			<0.030		ug/g		0.03	05-DEC-18
Acenaphthene			<0.050		ug/g		0.05	05-DEC-18
Acenaphthylene			<0.050		ug/g		0.05	05-DEC-18
Anthracene			<0.050		ug/g		0.05	05-DEC-18
Benzo(a)anthracene			<0.050		ug/g		0.05	05-DEC-18
Benzo(a)pyrene			<0.050		ug/g		0.05	05-DEC-18
Benzo(b)fluoranthene			<0.050		ug/g		0.05	05-DEC-18
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	05-DEC-18
Benzo(k)fluoranthene			<0.050		ug/g		0.05	05-DEC-18
Chrysene			<0.050		ug/g		0.05	05-DEC-18
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	05-DEC-18
Fluoranthene			<0.050		ug/g		0.05	05-DEC-18
Fluorene			<0.050		ug/g		0.05	05-DEC-18
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	05-DEC-18
Naphthalene			<0.013		ug/g		0.013	05-DEC-18
Phenanthrene			<0.046		ug/g		0.046	05-DEC-18
Pyrene			<0.050		ug/g		0.05	05-DEC-18
Surrogate: 2-Fluorobiphenyl			74.0		%		50-140	05-DEC-18
Surrogate: p-Terphenyl d14			69.5		%		50-140	05-DEC-18
<b>WG2945446-4</b>	<b>MS</b>	<b>WG2945446-5</b>						
1-Methylnaphthalene			88.7		%		50-140	05-DEC-18
2-Methylnaphthalene			89.6		%		50-140	05-DEC-18
Acenaphthene			89.1		%		50-140	05-DEC-18
Acenaphthylene			85.3		%		50-140	05-DEC-18
Anthracene			85.3		%		50-140	05-DEC-18
Benzo(a)anthracene			87.5		%		50-140	05-DEC-18
Benzo(a)pyrene			85.8		%		50-140	05-DEC-18
Benzo(b)fluoranthene			80.3		%		50-140	05-DEC-18
Benzo(g,h,i)perylene			83.2		%		50-140	05-DEC-18
Benzo(k)fluoranthene			90.8		%		50-140	05-DEC-18
Chrysene			93.7		%		50-140	05-DEC-18



## Quality Control Report

Workorder: L2204650

Report Date: 06-DEC-18

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Client: DS Consultants (Vaughan)  
 6221 Highway 7 Unit 16  
 Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PAH-511-WT</b>	<b>Soil</b>							
<b>Batch</b>	<b>R4374129</b>							
<b>WG2945446-4 MS</b>		<b>WG2945446-5</b>						
Dibenzo(ah)anthracene			85.8		%		50-140	05-DEC-18
Fluoranthene			85.1		%		50-140	05-DEC-18
Fluorene			86.3		%		50-140	05-DEC-18
Indeno(1,2,3-cd)pyrene			83.1		%		50-140	05-DEC-18
Naphthalene			88.3		%		50-140	05-DEC-18
Phenanthrene			85.8		%		50-140	05-DEC-18
Pyrene			86.9		%		50-140	05-DEC-18

# Quality Control Report

Workorder: L2204650

Report Date: 06-DEC-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

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Contact: Rick Fioravanti

## Legend:

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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:

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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.

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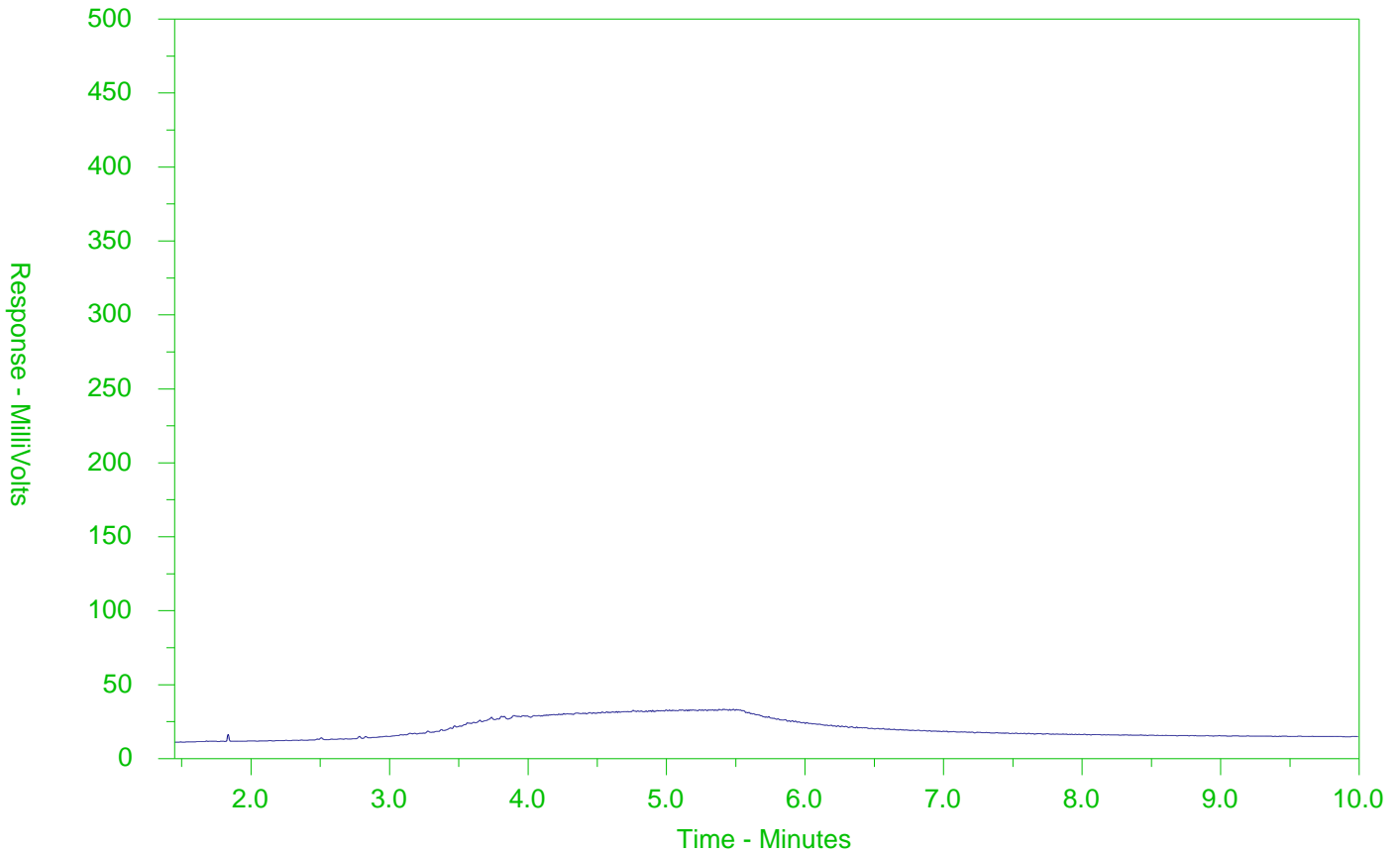
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L2204650-1  
 Client Sample ID: TP18-1 S1



← 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.

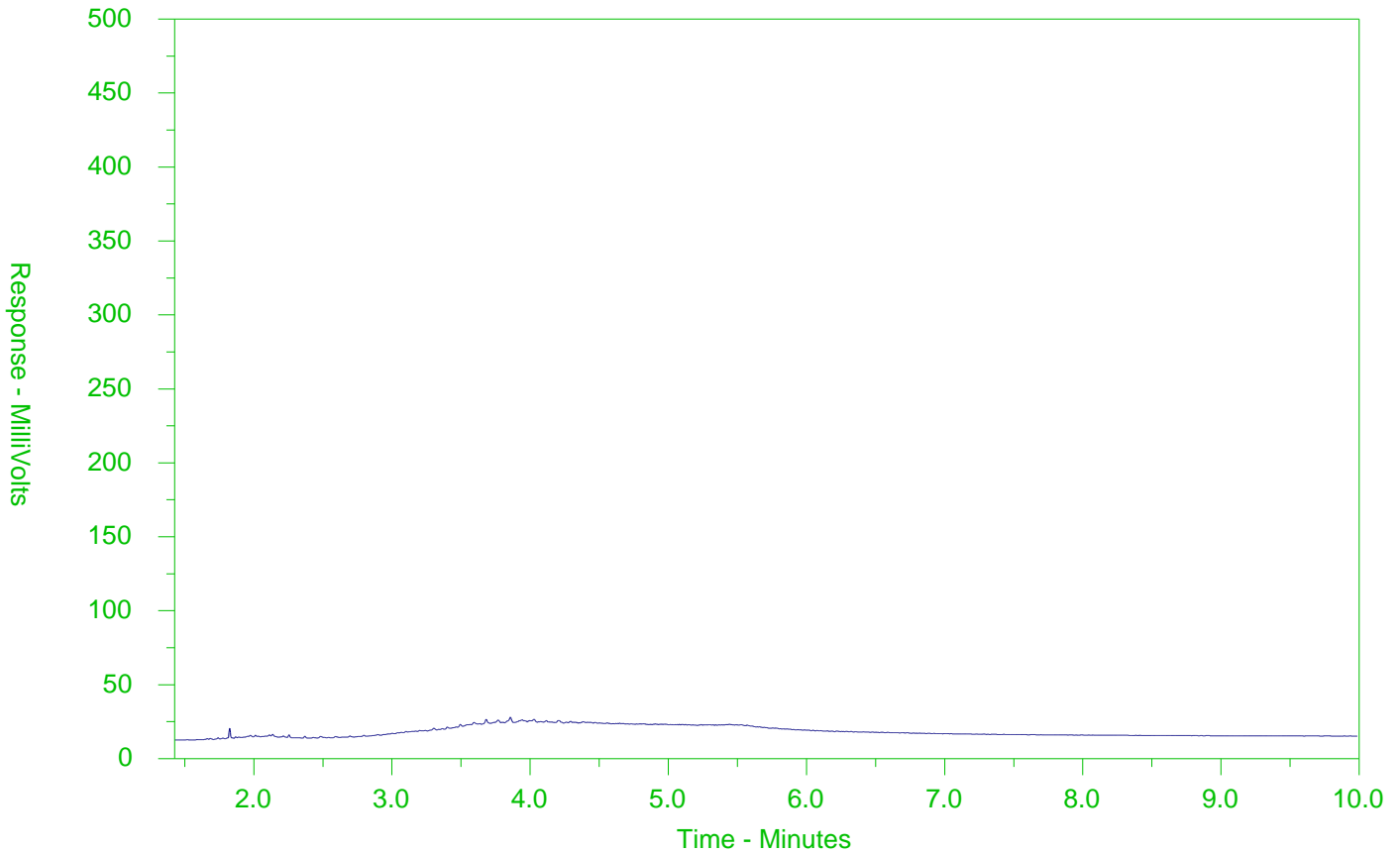
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2204650-2  
 Client Sample ID: TP18-2 S1



← 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.

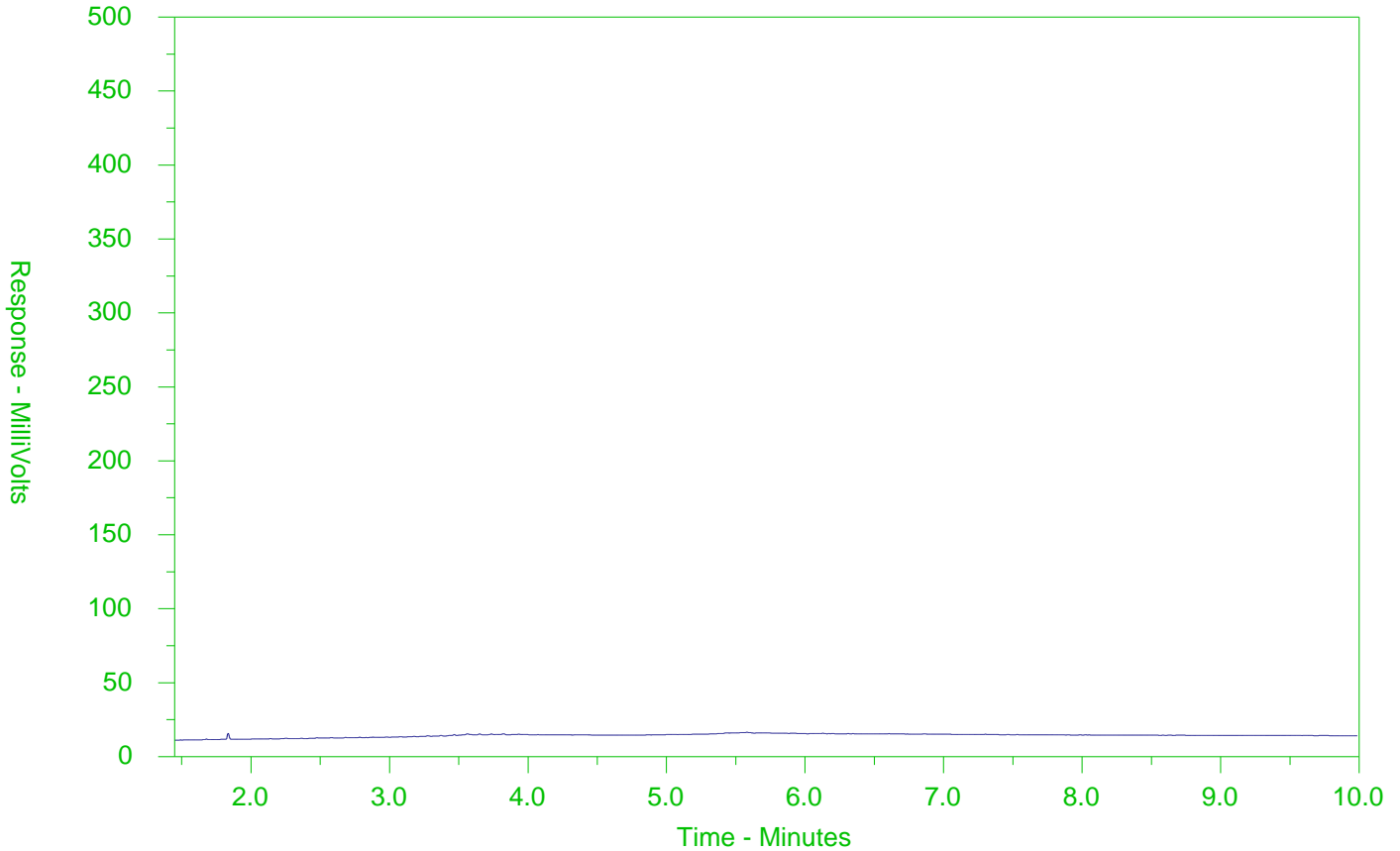
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2204650-3  
 Client Sample ID: TP18-3 S1



← 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.

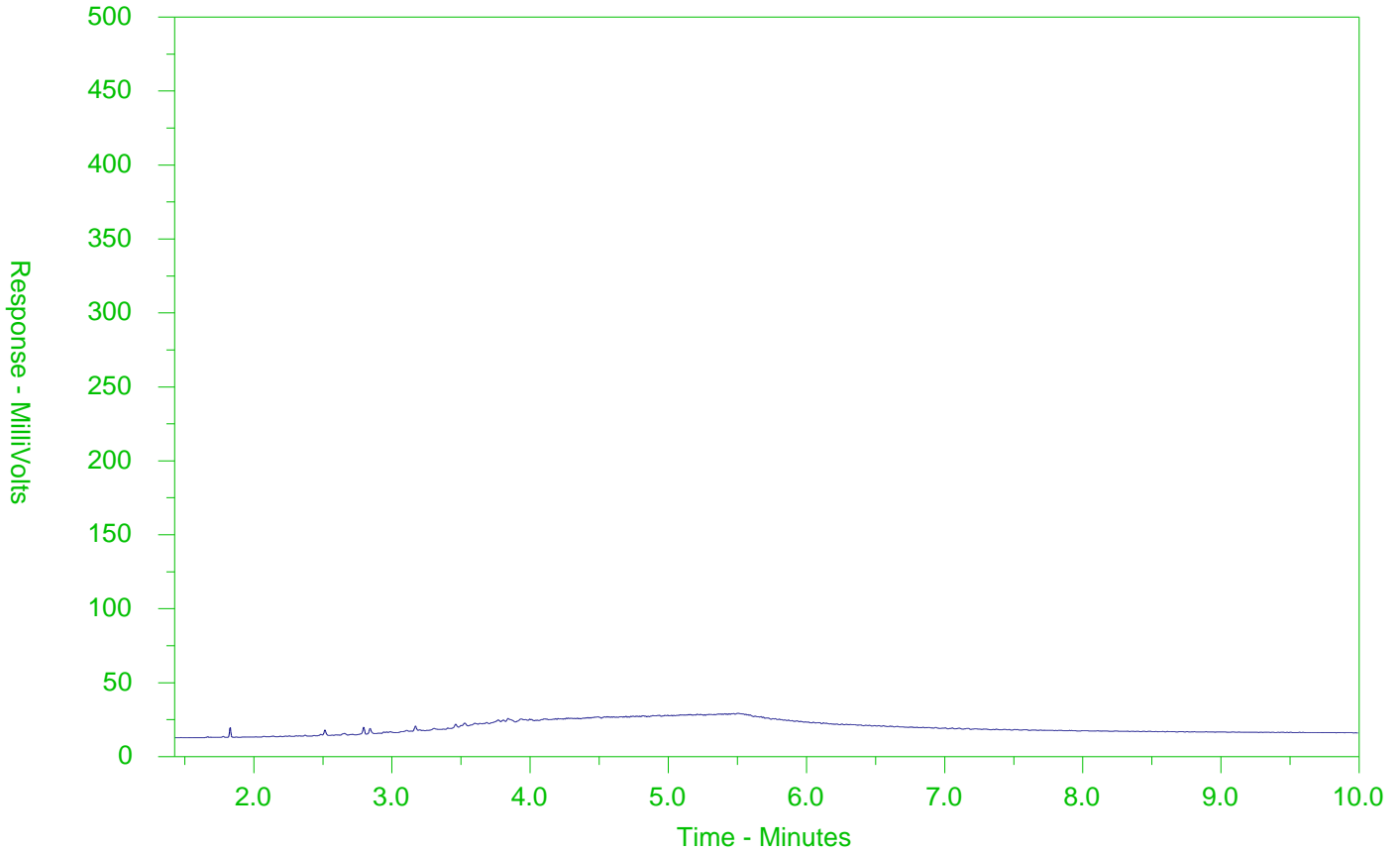
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2204650-4  
 Client Sample ID: TP18-4 S1



← 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.

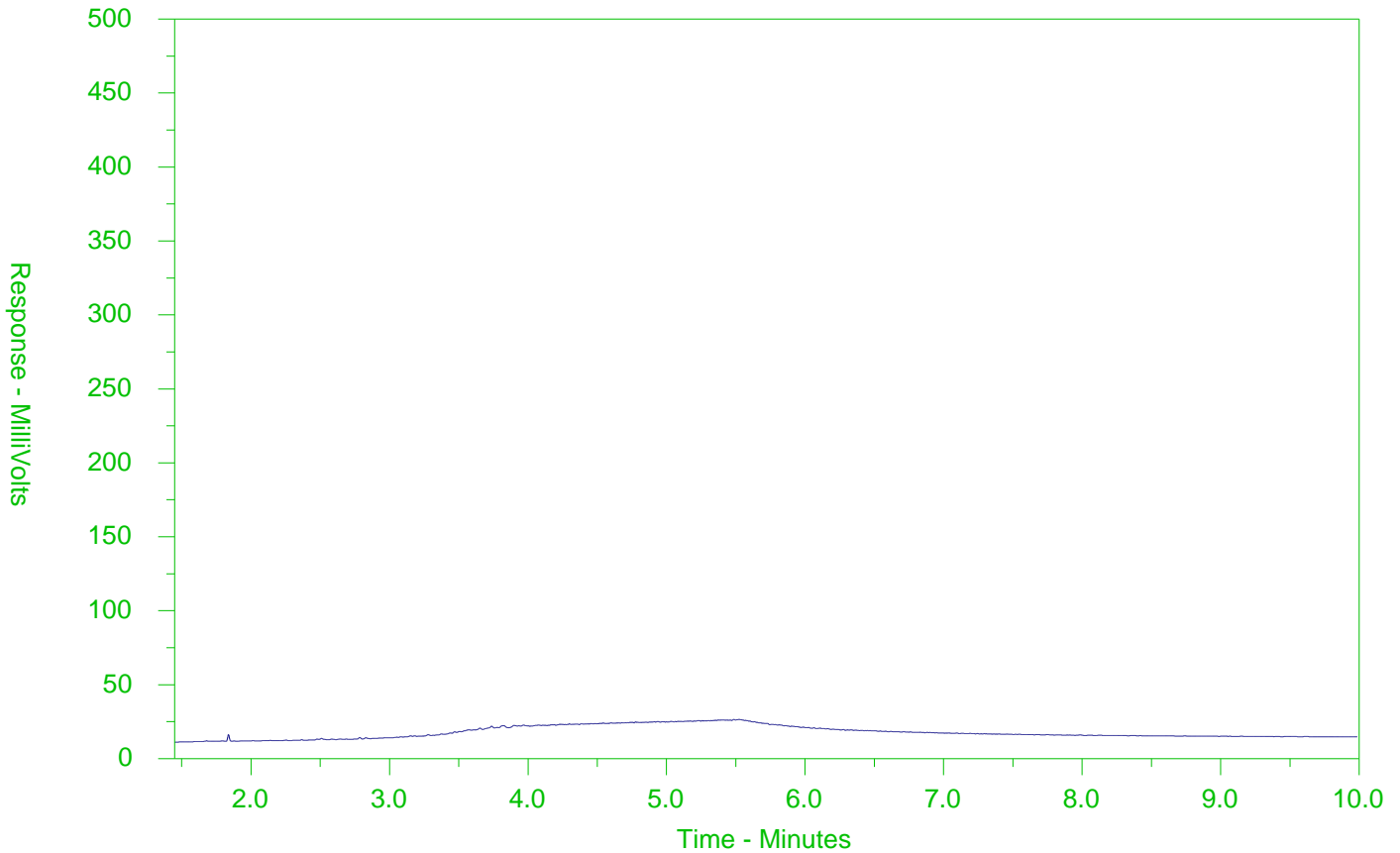
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2204650-5  
 Client Sample ID: DUP-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](http://www.alsglobal.com).






DS Consultants (Vaughan)  
ATTN: Rick Fioravanti  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 29-JUN-18  
Report Date: 09-JUL-18 14:23 (MT)  
Version: FINAL

Client Phone: 647-237-5110

## Certificate of Analysis

Lab Work Order #: L2121927  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-40  
C of C Numbers: 17-630404  
Legal Site Desc:



Amanda Fazekas  
Account Manager

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## Summary of Guideline Exceedances

Guideline		Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID							
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T8-Ground Water - All Types of Property Use</b>							
L2121927-2		MW18-35	Anions and Nutrients	Chloride (Cl)	848	790	mg/L
			Dissolved Metals	Sodium (Na)-Dissolved	594000	490000	ug/L
L2121927-3		MW18-45	Anions and Nutrients	Chloride (Cl)	2330	790	mg/L
			Dissolved Metals	Sodium (Na)-Dissolved	1200000	490000	ug/L
L2121927-4		MW18-2D	Anions and Nutrients	Chloride (Cl)	1290	790	mg/L
			Dissolved Metals	Sodium (Na)-Dissolved	645000	490000	ug/L
L2121927-5		MW18-3D	Anions and Nutrients	Chloride (Cl)	4120	790	mg/L
			Dissolved Metals	Sodium (Na)-Dissolved	1690000	490000	ug/L
L2121927-6		MW18-4D	Anions and Nutrients	Chloride (Cl)	4020	790	mg/L
			Dissolved Metals	Sodium (Na)-Dissolved	1710000	490000	ug/L

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

## Physical Tests - WATER

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	L2121927-1	L2121927-2	L2121927-3	L2121927-4	L2121927-5	L2121927-6	L2121927-7
		#1	#2										
Conductivity	mS/cm	-	-		28-JUN-18	MW18-25	4.24	5.88	9.41	5.51	12.2	11.9	3.12
pH	pH units	-	-		28-JUN-18	MW18-35	7.68	7.70	7.74	7.70	7.67	7.59	7.82

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Anions and Nutrients - WATER

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID							
		#1	#2	L2121927-1	28-JUN-18	MW18-25	L2121927-2	28-JUN-18	MW18-35	L2121927-3	28-JUN-18	MW18-45	L2121927-4	28-JUN-18	MW18-2D	L2121927-5	28-JUN-18	MW18-3D	L2121927-6	28-JUN-18	MW18-4D	L2121927-7	28-JUN-18	MW18A-5	
Chloride (Cl)	mg/L	790	-	670 <sup>DLHC</sup>	848 <sup>DLHC</sup>	2330 <sup>DLHC</sup>	1290 <sup>DLHC</sup>	4120 <sup>DLHC</sup>	4020 <sup>DLHC</sup>	313 <sup>DLHC</sup>															

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Cyanides - WATER

Analyte	Unit	Guide Limits										
		#1	#2									
Cyanide, Weak Acid Diss	ug/L	52	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

**Guide Limit #1: T8-Ground Water - All Types of Property Use**

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

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



# ANALYTICAL REPORT

## Dissolved Metals - WATER

Analyte	Unit	Guide Limits		Lab ID	L2121927-1	L2121927-2	L2121927-3	L2121927-4	L2121927-5	L2121927-6	L2121927-7
		#1	#2	Sample Date	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18
				Sample ID	MW18-25	MW18-35	MW18-45	MW18-2D	MW18-3D	MW18-4D	MW18A-5
Dissolved Mercury Filtration Location	-	-	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	-	-	FIELD	FIELD	FIELD	LAB	LAB	LAB	LAB	LAB	FIELD
Antimony (Sb)-Dissolved	ug/L	6	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	1.1 <sup>DLHC</sup>
Arsenic (As)-Dissolved	ug/L	25	-	12.4 <sup>DLHC</sup>	2.6 <sup>DLHC</sup>	1.2 <sup>DLHC</sup>	3.7 <sup>DLHC</sup>	2.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Barium (Ba)-Dissolved	ug/L	1000	-	33.7 <sup>DLHC</sup>	53.1 <sup>DLHC</sup>	30.9 <sup>DLHC</sup>	14.4 <sup>DLHC</sup>	186 <sup>DLHC</sup>	16.9 <sup>DLHC</sup>	11.4 <sup>DLHC</sup>	11.4 <sup>DLHC</sup>
Beryllium (Be)-Dissolved	ug/L	4	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Boron (B)-Dissolved	ug/L	5000	-	1870 <sup>DLHC</sup>	1690 <sup>DLHC</sup>	2360 <sup>DLHC</sup>	2730 <sup>DLHC</sup>	2410 <sup>DLHC</sup>	2990 <sup>DLHC</sup>	600 <sup>DLHC</sup>	600 <sup>DLHC</sup>
Cadmium (Cd)-Dissolved	ug/L	2.1	-	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	0.077 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	0.150 <sup>DLHC</sup>	0.682 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>
Chromium (Cr)-Dissolved	ug/L	50	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
Cobalt (Co)-Dissolved	ug/L	3.8	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	2.1 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Copper (Cu)-Dissolved	ug/L	69	-	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>
Lead (Pb)-Dissolved	ug/L	10	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	1.75 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Mercury (Hg)-Dissolved	ug/L	0.29	-	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>
Molybdenum (Mo)-Dissolved	ug/L	70	-	6.58 <sup>DLHC</sup>	16.5 <sup>DLHC</sup>	13.4 <sup>DLHC</sup>	6.41 <sup>DLHC</sup>	16.8 <sup>DLHC</sup>	11.0 <sup>DLHC</sup>	38.0 <sup>DLHC</sup>	38.0 <sup>DLHC</sup>
Nickel (Ni)-Dissolved	ug/L	100	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
Selenium (Se)-Dissolved	ug/L	10	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Silver (Ag)-Dissolved	ug/L	1.2	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Sodium (Na)-Dissolved	ug/L	490000	-	422000 <sup>DLHC</sup>	594000 <sup>DLHC</sup>	1200000 <sup>DLHC</sup>	645000 <sup>DLHC</sup>	1690000 <sup>DLHC</sup>	1710000 <sup>DLHC</sup>	246000 <sup>DLHC</sup>	246000 <sup>DLHC</sup>
Thallium (Tl)-Dissolved	ug/L	2	-	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	0.85 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>
Uranium (U)-Dissolved	ug/L	20	-	2.56 <sup>DLHC</sup>	14.3 <sup>DLHC</sup>	2.61 <sup>DLHC</sup>	0.46 <sup>DLHC</sup>	4.35 <sup>DLHC</sup>	0.58 <sup>DLHC</sup>	12.9 <sup>DLHC</sup>	12.9 <sup>DLHC</sup>
Vanadium (V)-Dissolved	ug/L	6.2	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
Zinc (Zn)-Dissolved	ug/L	890	-	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	14 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Speciated Metals - WATER

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID							
		#1	#2	L2121927-1	28-JUN-18	MW18-25	L2121927-2	28-JUN-18	MW18-35	L2121927-3	28-JUN-18	MW18-45	L2121927-4	28-JUN-18	MW18-2D	L2121927-5	28-JUN-18	MW18-3D	L2121927-6	28-JUN-18	MW18-4D	L2121927-7	28-JUN-18	MW18A-5	
Chromium, Hexavalent	ug/L	25	-	0.82	0.65	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Volatile Organic Compounds - WATER

Analyte	Unit	Guide Limits		Lab ID	L2121927-1	L2121927-2	L2121927-3	L2121927-7	
		#1	#2	Sample Date	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18	
				Sample ID	MW18-25	MW18-35	MW18-45	MW18A-5	
Acetone	ug/L	2700	-	<30	<sup>OWP</sup>	<30	<sup>OWP</sup>	<30	<sup>OWP</sup>
Benzene	ug/L	5	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
Bromodichloromethane	ug/L	16	-	<2.0	<sup>OWP</sup>	<2.0	<sup>OWP</sup>	<2.0	<sup>OWP</sup>
Bromoform	ug/L	25	-	<5.0	<sup>OWP</sup>	<5.0	<sup>OWP</sup>	<5.0	<sup>OWP</sup>
Bromomethane	ug/L	0.89	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
Carbon tetrachloride	ug/L	0.79	-	<0.20	<sup>OWP</sup>	<0.20	<sup>OWP</sup>	<0.20	<sup>OWP</sup>
Chlorobenzene	ug/L	30	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
Dibromochloromethane	ug/L	25	-	<2.0	<sup>OWP</sup>	<2.0	<sup>OWP</sup>	<2.0	<sup>OWP</sup>
Chloroform	ug/L	2.4	-	<1.0	<sup>OWP</sup>	<1.0	<sup>OWP</sup>	<1.0	<sup>OWP</sup>
1,2-Dibromoethane	ug/L	0.2	-	<0.20	<sup>OWP</sup>	<0.20	<sup>OWP</sup>	<0.20	<sup>OWP</sup>
1,2-Dichlorobenzene	ug/L	3	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
1,3-Dichlorobenzene	ug/L	59	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
1,4-Dichlorobenzene	ug/L	1	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
Dichlorodifluoromethane	ug/L	590	-	<2.0	<sup>OWP</sup>	<2.0	<sup>OWP</sup>	<2.0	<sup>OWP</sup>
1,1-Dichloroethane	ug/L	5	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
1,2-Dichloroethane	ug/L	1.6	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
1,1-Dichloroethylene	ug/L	1.6	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
cis-1,2-Dichloroethylene	ug/L	1.6	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
trans-1,2-Dichloroethylene	ug/L	1.6	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
Methylene Chloride	ug/L	50	-	<5.0	<sup>OWP</sup>	<5.0	<sup>OWP</sup>	<5.5	<sup>RRR</sup>
1,2-Dichloropropane	ug/L	5	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
cis-1,3-Dichloropropene	ug/L	-	-	<0.30	<sup>OWP</sup>	<0.30	<sup>OWP</sup>	<0.30	<sup>OWP</sup>
trans-1,3-Dichloropropene	ug/L	-	-	<0.30	<sup>OWP</sup>	<0.30	<sup>OWP</sup>	<0.30	<sup>OWP</sup>
1,3-Dichloropropene (cis & trans)	ug/L	0.5	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
Ethylbenzene	ug/L	2.4	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
n-Hexane	ug/L	51	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>
Methyl Ethyl Ketone	ug/L	1800	-	<20	<sup>OWP</sup>	<20	<sup>OWP</sup>	<20	<sup>OWP</sup>
Methyl Isobutyl Ketone	ug/L	640	-	<20	<sup>OWP</sup>	<20	<sup>OWP</sup>	<20	<sup>OWP</sup>
MTBE	ug/L	15	-	<2.0	<sup>OWP</sup>	<2.0	<sup>OWP</sup>	<2.0	<sup>OWP</sup>
Styrene	ug/L	5.4	-	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>	<0.50	<sup>OWP</sup>

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

## Volatile Organic Compounds - WATER

		Lab ID	L2121927-1	L2121927-2	L2121927-3	L2121927-7	
		Sample Date	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18	
		Sample ID	MW18-25	MW18-35	MW18-45	MW18A-5	
Analyte	Unit	Guide Limits					
		#1	#2				
1,1,1,2-Tetrachloroethane	ug/L	1.1	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
1,1,2,2-Tetrachloroethane	ug/L	1	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Tetrachloroethylene	ug/L	1.6	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Toluene	ug/L	22	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
1,1,1-Trichloroethane	ug/L	200	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
1,1,2-Trichloroethane	ug/L	4.7	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Trichloroethylene	ug/L	1.6	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Trichlorofluoromethane	ug/L	150	-	<5.0 <sup>OWP</sup>	<5.0 <sup>OWP</sup>	<5.0 <sup>OWP</sup>	<5.0
Vinyl chloride	ug/L	0.5	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
o-Xylene	ug/L	-	-	<0.30 <sup>OWP</sup>	<0.30 <sup>OWP</sup>	<0.30 <sup>OWP</sup>	<0.30
m+p-Xylenes	ug/L	-	-	<0.40 <sup>OWP</sup>	<0.40 <sup>OWP</sup>	<0.40 <sup>OWP</sup>	<0.40
Xylenes (Total)	ug/L	300	-	<0.50	<0.50	<0.50	<0.50
Surrogate: 4-Bromofluorobenzene	%	-	-	99.8	97.9	99.6	97.1
Surrogate: 1,4-Difluorobenzene	%	-	-	100.6	100.9	101.2	101.1

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Hydrocarbons - WATER

		Lab ID	L2121927-1	L2121927-2	L2121927-3	L2121927-7	
		Sample Date	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18	
		Sample ID	MW18-25	MW18-35	MW18-45	MW18A-5	
Analyte	Unit	Guide Limits					
		#1	#2				
F1 (C6-C10)	ug/L	420	-	<25 <sup>OWP</sup>	<25 <sup>OWP</sup>	<25 <sup>OWP</sup>	<25
F1-BTEX	ug/L	420	-	<25	<25	<25	<25
F2 (C10-C16)	ug/L	150	-	<100	<100	<100	<100
F3 (C16-C34)	ug/L	500	-	<250	<250	<250	<250
F4 (C34-C50)	ug/L	500	-	<250	<250	<250	<250
Total Hydrocarbons (C6-C50)	ug/L	-	-	<370	<370	<370	<370
Chrom. to baseline at nC50		-	-	YES	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	72.0	75.8	71.1	88.0
Surrogate: 3,4-Dichlorotoluene	%	-	-	81.7	73.6	82.1	71.0

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Organochlorine Pesticides - WATER

Analyte	Unit	Guide Limits		Lab ID	L2121927-1	L2121927-2	L2121927-3	L2121927-7
		#1	#2	Sample Date	28-JUN-18	28-JUN-18	28-JUN-18	28-JUN-18
				Sample ID	MW18-25	MW18-35	MW18-45	MW18A-5
Aldrin	ug/L	0.35	-	<0.010	<0.010	<0.010	<0.010	<0.010
gamma-hexachlorocyclohexane	ug/L	0.95	-	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/L	-	-	<0.040	<0.040	<0.040	<0.040	<0.040
Chlordane (Total)	ug/L	0.06	-	<0.057	<0.057	<0.057	<0.057	<0.057
g-chlordane	ug/L	-	-	<0.040	<0.040	<0.040	<0.040	<0.040
o,p-DDD	ug/L	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
pp-DDD	ug/L	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
Total DDD	ug/L	1.8	-	<0.042	<0.042	<0.042	<0.042	<0.042
o,p-DDE	ug/L	-	-	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
pp-DDE	ug/L	-	-	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Total DDE	ug/L	10	-	<0.011	<0.011	<0.011	<0.011	<0.011
op-DDT	ug/L	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
pp-DDT	ug/L	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
Total DDT	ug/L	0.05	-	<0.042	<0.042	<0.042	<0.042	<0.042
Dieldrin	ug/L	0.35	-	<0.050	<0.050	<0.050	<0.050	<0.050
Endosulfan I	ug/L	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
Endosulfan II	ug/L	-	-	<0.030	<0.030	<0.030	<0.030	<0.030
Endosulfan (Total)	ug/L	0.56	-	<0.042	<0.042	<0.042	<0.042	<0.042
Endrin	ug/L	0.36	-	<0.040	<0.040	<0.040	<0.040	<0.040
Heptachlor	ug/L	0.038	-	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor Epoxide	ug/L	0.038	-	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobenzene	ug/L	1	-	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/L	0.44	-	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/L	2.1	-	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/L	0.3	-	<0.050	<0.050	<0.050	<0.050	<0.050
Surrogate: 2-Fluorobiphenyl	%	-	-	73.0	82.8	86.9	77.3	
Surrogate: d14-Terphenyl	%	-	-	75.6	76.4	74.9	67.9	

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

# Reference Information

L2121927 CONT'D....  
Job Reference: 18-549-40  
PAGE 12 of 15  
09-JUL-18 14:23 (MT)

## Additional Comments for Sample Listed:

Sample Number	Matrix	Report Remarks	Sample Comment:
L2121927-7	Water	Note: RL raised due to instrument sensitivity.	

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of

# Reference Information

sediment.

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

RRR Refer to Report Remarks for issues regarding this analysis

**Methods Listed (if applicable):**

ALS Test Code	Matrix	Test Description	Method Reference**
<b>CHLORDANE-T-CALC-WT</b>	Water	Chlordane Total sums	CALCULATION
Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.			
<b>CL-IC-N-WT</b>	Water	Chloride by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>CN-WAD-R511-WT</b>	Water	Cyanide (WAD)-O.Reg 153/04	APHA 4500CN I-Weak acid Dist Colorimet
Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>CR-CR6-IC-R511-WT</b>	Water	Hex Chrom-O.Reg 153/04 (July 2011)	EPA 7199
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>DDD-DDE-DDT-CALC-WT</b>	Water	DDD, DDE, DDT sums	CALCULATION
Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.			
<b>EC-R511-WT</b>	Water	Conductivity-O.Reg 153/04 (July 2011)	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>ENDOSULFAN-T-CALC-WT</b>	Water	Endosulfan Total sums	CALCULATION
Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.			
<b>F1-F4-511-CALC-WT</b>	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.

# Reference Information

**Methods Listed (if applicable):**

ALS Test Code	Matrix	Test Description	Method Reference**
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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.

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

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

<b>HG-D-UG/L-CVAA-WT</b>	Water	Diss. Mercury in Water by CVAAS (ug/L)	EPA 1631E (mod)
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Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

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

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

<b>PEST-OC-511-WT</b>	Water	OC Pesticides-O. Reg 153/04 (July 2011)	SW846 8270 (511)
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Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

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

<b>PH-WT</b>	Water	pH	APHA 4500 H-Electrode
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Water samples are analyzed directly by a calibrated pH meter.

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

# Reference Information

## Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
<b>VOC-1,3-DCP-CALC-WT</b>	Water	Regulation 153 VOCs	SW8260B/SW8270C
<b>VOC-511-HS-WT</b>	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260
<b>XYLENES-SUM-CALC-WT</b>	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Liquid samples are analyzed by headspace GC/MSD.

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

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

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

## Chain of Custody Numbers:

17-630404

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
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WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
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## 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: L2121927

Report Date: 09-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4110349</b>							
<b>WG2812672-12</b>	<b>DUP</b>	<b>L2121780-1</b>						
Chloride (Cl)		17.1	17.0		mg/L	0.6	20	03-JUL-18
<b>WG2812672-10</b>	<b>LCS</b>							
Chloride (Cl)			104.4		%		90-110	03-JUL-18
<b>WG2812672-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	03-JUL-18
<b>WG2812672-11</b>	<b>MS</b>	<b>L2121780-1</b>						
Chloride (Cl)			99.96		%		75-125	03-JUL-18
<b>CN-WAD-R511-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4114403</b>							
<b>WG2814518-3</b>	<b>DUP</b>	<b>L2121662-1</b>						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	05-JUL-18
<b>WG2814518-7</b>	<b>DUP</b>	<b>L2121936-5</b>						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	05-JUL-18
<b>WG2814518-2</b>	<b>LCS</b>							
Cyanide, Weak Acid Diss			101.9		%		80-120	05-JUL-18
<b>WG2814518-6</b>	<b>LCS</b>							
Cyanide, Weak Acid Diss			101.2		%		80-120	05-JUL-18
<b>WG2814518-1</b>	<b>MB</b>							
Cyanide, Weak Acid Diss			<2.0		ug/L		2	05-JUL-18
<b>WG2814518-5</b>	<b>MB</b>							
Cyanide, Weak Acid Diss			<2.0		ug/L		2	05-JUL-18
<b>WG2814518-4</b>	<b>MS</b>	<b>L2121662-1</b>						
Cyanide, Weak Acid Diss			98.7		%		75-125	05-JUL-18
<b>WG2814518-8</b>	<b>MS</b>	<b>L2121936-5</b>						
Cyanide, Weak Acid Diss			121.5		%		75-125	05-JUL-18
<b>CR-CR6-IC-R511-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4112367</b>							
<b>WG2813110-10</b>	<b>DUP</b>	<b>WG2813110-8</b>						
Chromium, Hexavalent		<0.50	<0.50	RPD-NA	ug/L	N/A	20	03-JUL-18
<b>WG2813110-7</b>	<b>LCS</b>							
Chromium, Hexavalent			101.4		%		80-120	03-JUL-18
<b>WG2813110-6</b>	<b>MB</b>							
Chromium, Hexavalent			<0.50		ug/L		0.5	03-JUL-18
<b>WG2813110-9</b>	<b>MS</b>	<b>WG2813110-8</b>						
Chromium, Hexavalent			97.1		%		70-130	03-JUL-18
<b>EC-R511-WT</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2121927

Report Date: 09-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-R511-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4110867</b>							
<b>WG2811304-20</b>	<b>DUP</b>	<b>WG2811304-19</b>						
Conductivity		0.517	0.514		mS/cm	0.6	10	30-JUN-18
<b>WG2811304-18</b>	<b>LCS</b>							
Conductivity			97.2		%		90-110	30-JUN-18
<b>WG2811304-17</b>	<b>MB</b>							
Conductivity			<0.0030		mS/cm		0.003	30-JUN-18
<b>F1-HS-511-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4114165</b>							
<b>WG2810380-4</b>	<b>DUP</b>	<b>WG2810380-3</b>						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	06-JUL-18
<b>WG2810380-1</b>	<b>LCS</b>							
F1 (C6-C10)			104.1		%		80-120	06-JUL-18
<b>WG2810380-2</b>	<b>MB</b>							
F1 (C6-C10)			<25		ug/L		25	06-JUL-18
Surrogate: 3,4-Dichlorotoluene			82.5		%		60-140	06-JUL-18
<b>WG2810380-5</b>	<b>MS</b>	<b>WG2810380-3</b>						
F1 (C6-C10)			95.9		%		60-140	06-JUL-18
<b>F2-F4-511-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4113447</b>							
<b>WG2814344-2</b>	<b>LCS</b>							
F2 (C10-C16)			95.6		%		70-130	05-JUL-18
F3 (C16-C34)			93.9		%		70-130	05-JUL-18
F4 (C34-C50)			103.9		%		70-130	05-JUL-18
<b>WG2814344-3</b>	<b>LCSD</b>	<b>WG2814344-2</b>						
F2 (C10-C16)		95.6	99.5		%	4.0	50	05-JUL-18
F3 (C16-C34)		93.9	102.3		%	8.6	50	05-JUL-18
F4 (C34-C50)		103.9	103.2		%	0.7	50	05-JUL-18
<b>WG2814344-1</b>	<b>MB</b>							
F2 (C10-C16)			<100		ug/L		100	05-JUL-18
F3 (C16-C34)			<250		ug/L		250	05-JUL-18
F4 (C34-C50)			<250		ug/L		250	05-JUL-18
Surrogate: 2-Bromobenzotrifluoride			74.2		%		60-140	05-JUL-18
<b>HG-D-UG/L-CVAA-WT</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2121927

Report Date: 09-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-UG/L-CVAA-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4110354</b>							
<b>WG2812691-4</b>	<b>DUP</b>	<b>L2121662-9</b>						
Mercury (Hg)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	03-JUL-18
<b>WG2812691-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.0		%		80-120	03-JUL-18
<b>WG2812691-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	03-JUL-18
<b>WG2812691-6</b>	<b>MS</b>	<b>L2121662-10</b>						
Mercury (Hg)-Dissolved			95.5		%		70-130	03-JUL-18
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4113853</b>							
<b>WG2814225-4</b>	<b>DUP</b>	<b>WG2814225-3</b>						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-JUL-18
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-JUL-18
Barium (Ba)-Dissolved		25.4	25.0		ug/L	1.4	20	06-JUL-18
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-JUL-18
Boron (B)-Dissolved		280	280		ug/L	0.8	20	06-JUL-18
Cadmium (Cd)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	06-JUL-18
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	06-JUL-18
Cobalt (Co)-Dissolved		2.3	2.3		ug/L	0.3	20	06-JUL-18
Copper (Cu)-Dissolved		<2.0	<2.0	RPD-NA	ug/L	N/A	20	06-JUL-18
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-18
Molybdenum (Mo)-Dissolved		0.66	0.65		ug/L	2.2	20	06-JUL-18
Nickel (Ni)-Dissolved		5.3	5.4		ug/L	3.1	20	06-JUL-18
Selenium (Se)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-18
Sodium (Na)-Dissolved		566000	572000		ug/L	0.9	20	06-JUL-18
Thallium (Tl)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	06-JUL-18
Uranium (U)-Dissolved		2.85	2.77		ug/L	2.6	20	06-JUL-18
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	06-JUL-18
Zinc (Zn)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	06-JUL-18
<b>WG2814227-4</b>	<b>DUP</b>	<b>WG2814227-3</b>						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	05-JUL-18
Arsenic (As)-Dissolved		3.7	3.6		ug/L	0.3	20	05-JUL-18
Barium (Ba)-Dissolved		14.4	14.4		ug/L	0.0	20	05-JUL-18
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	05-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4113853</b>							
<b>WG2814227-4</b>	<b>DUP</b>	<b>WG2814227-3</b>						
Boron (B)-Dissolved		2730	2790		ug/L	2.4	20	05-JUL-18
Cadmium (Cd)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	05-JUL-18
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	05-JUL-18
Cobalt (Co)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	05-JUL-18
Copper (Cu)-Dissolved		<2.0	<2.0	RPD-NA	ug/L	N/A	20	05-JUL-18
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	05-JUL-18
Molybdenum (Mo)-Dissolved		6.41	6.40		ug/L	0.2	20	05-JUL-18
Nickel (Ni)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	05-JUL-18
Selenium (Se)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	05-JUL-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	05-JUL-18
Sodium (Na)-Dissolved		645000	637000		ug/L	1.2	20	05-JUL-18
Thallium (Tl)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	05-JUL-18
Uranium (U)-Dissolved		0.46	0.46		ug/L	0.5	20	05-JUL-18
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	05-JUL-18
Zinc (Zn)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	05-JUL-18
<b>WG2814225-2</b>	<b>LCS</b>							
Antimony (Sb)-Dissolved			104.1		%		80-120	05-JUL-18
Arsenic (As)-Dissolved			99.3		%		80-120	05-JUL-18
Barium (Ba)-Dissolved			100.6		%		80-120	05-JUL-18
Beryllium (Be)-Dissolved			92.1		%		80-120	05-JUL-18
Boron (B)-Dissolved			91.9		%		80-120	05-JUL-18
Cadmium (Cd)-Dissolved			102.6		%		80-120	05-JUL-18
Chromium (Cr)-Dissolved			98.3		%		80-120	05-JUL-18
Cobalt (Co)-Dissolved			97.3		%		80-120	05-JUL-18
Copper (Cu)-Dissolved			96.5		%		80-120	05-JUL-18
Lead (Pb)-Dissolved			104.7		%		80-120	05-JUL-18
Molybdenum (Mo)-Dissolved			99.8		%		80-120	05-JUL-18
Nickel (Ni)-Dissolved			95.4		%		80-120	05-JUL-18
Selenium (Se)-Dissolved			94.7		%		80-120	05-JUL-18
Silver (Ag)-Dissolved			109.4		%		80-120	05-JUL-18
Sodium (Na)-Dissolved			94.2		%		80-120	05-JUL-18
Thallium (Tl)-Dissolved			103.1		%		80-120	05-JUL-18
Uranium (U)-Dissolved			109.3		%		80-120	05-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4113853</b>							
<b>WG2814225-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			99.3		%		80-120	05-JUL-18
Zinc (Zn)-Dissolved			90.1		%		80-120	05-JUL-18
<b>WG2814227-2</b>	<b>LCS</b>							
Antimony (Sb)-Dissolved			103.0		%		80-120	05-JUL-18
Arsenic (As)-Dissolved			99.0		%		80-120	05-JUL-18
Barium (Ba)-Dissolved			99.8		%		80-120	05-JUL-18
Beryllium (Be)-Dissolved			90.9		%		80-120	05-JUL-18
Boron (B)-Dissolved			90.3		%		80-120	05-JUL-18
Cadmium (Cd)-Dissolved			99.6		%		80-120	05-JUL-18
Chromium (Cr)-Dissolved			98.1		%		80-120	05-JUL-18
Cobalt (Co)-Dissolved			97.0		%		80-120	05-JUL-18
Copper (Cu)-Dissolved			95.9		%		80-120	05-JUL-18
Lead (Pb)-Dissolved			101.2		%		80-120	05-JUL-18
Molybdenum (Mo)-Dissolved			97.7		%		80-120	05-JUL-18
Nickel (Ni)-Dissolved			95.6		%		80-120	05-JUL-18
Selenium (Se)-Dissolved			94.2		%		80-120	05-JUL-18
Silver (Ag)-Dissolved			107.7		%		80-120	05-JUL-18
Sodium (Na)-Dissolved			95.7		%		80-120	05-JUL-18
Thallium (Tl)-Dissolved			100.5		%		80-120	05-JUL-18
Uranium (U)-Dissolved			104.5		%		80-120	05-JUL-18
Vanadium (V)-Dissolved			99.1		%		80-120	05-JUL-18
Zinc (Zn)-Dissolved			89.5		%		80-120	05-JUL-18
<b>WG2814225-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Boron (B)-Dissolved			<10		ug/L		10	05-JUL-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	05-JUL-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	05-JUL-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	05-JUL-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	05-JUL-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	05-JUL-18



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6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4113853</b>							
<b>WG2814225-1</b>	<b>MB</b>							
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	05-JUL-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	05-JUL-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	05-JUL-18
Sodium (Na)-Dissolved			<50		ug/L		50	05-JUL-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	05-JUL-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	05-JUL-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	05-JUL-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	05-JUL-18
<b>WG2814227-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Boron (B)-Dissolved			<10		ug/L		10	05-JUL-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	05-JUL-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	05-JUL-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	05-JUL-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	05-JUL-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	05-JUL-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	05-JUL-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	05-JUL-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	05-JUL-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	05-JUL-18
Sodium (Na)-Dissolved			<50		ug/L		50	05-JUL-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	05-JUL-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	05-JUL-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	05-JUL-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	05-JUL-18
<b>WG2814225-5</b>	<b>MS</b>	<b>WG2814225-6</b>						
Antimony (Sb)-Dissolved			104.0		%		70-130	05-JUL-18
Arsenic (As)-Dissolved			104.4		%		70-130	05-JUL-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	05-JUL-18
Beryllium (Be)-Dissolved			93.5		%		70-130	05-JUL-18
Boron (B)-Dissolved			N/A	MS-B	%		-	05-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4113853</b>							
<b>WG2814225-5 MS</b>		<b>WG2814225-6</b>						
Cadmium (Cd)-Dissolved			91.5		%		70-130	05-JUL-18
Chromium (Cr)-Dissolved			103.7		%		70-130	05-JUL-18
Cobalt (Co)-Dissolved			96.0		%		70-130	05-JUL-18
Copper (Cu)-Dissolved			88.1		%		70-130	05-JUL-18
Lead (Pb)-Dissolved			94.0		%		70-130	05-JUL-18
Molybdenum (Mo)-Dissolved			92.6		%		70-130	05-JUL-18
Nickel (Ni)-Dissolved			90.9		%		70-130	05-JUL-18
Selenium (Se)-Dissolved			92.4		%		70-130	05-JUL-18
Silver (Ag)-Dissolved			80.0		%		70-130	05-JUL-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	05-JUL-18
Thallium (Tl)-Dissolved			95.6		%		70-130	05-JUL-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	05-JUL-18
Vanadium (V)-Dissolved			110.1		%		70-130	05-JUL-18
<b>WG2814227-5 MS</b>		<b>WG2814227-6</b>						
Antimony (Sb)-Dissolved			97.6		%		70-130	05-JUL-18
Arsenic (As)-Dissolved			91.4		%		70-130	05-JUL-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	05-JUL-18
Beryllium (Be)-Dissolved			91.6		%		70-130	05-JUL-18
Boron (B)-Dissolved			N/A	MS-B	%		-	05-JUL-18
Cadmium (Cd)-Dissolved			88.3		%		70-130	05-JUL-18
Chromium (Cr)-Dissolved			93.0		%		70-130	05-JUL-18
Cobalt (Co)-Dissolved			87.6		%		70-130	05-JUL-18
Copper (Cu)-Dissolved			71.2		%		70-130	05-JUL-18
Lead (Pb)-Dissolved			82.6		%		70-130	05-JUL-18
Molybdenum (Mo)-Dissolved			N/A	MS-B	%		-	05-JUL-18
Nickel (Ni)-Dissolved			77.8		%		70-130	05-JUL-18
Selenium (Se)-Dissolved			87.4		%		70-130	05-JUL-18
Silver (Ag)-Dissolved			97.5		%		70-130	05-JUL-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	05-JUL-18
Thallium (Tl)-Dissolved			84.9		%		70-130	05-JUL-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	05-JUL-18
Vanadium (V)-Dissolved			99.4		%		70-130	05-JUL-18

**PEST-OC-511-WT**      **Water**



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Client: DS Consultants (Vaughan)  
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Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PEST-OC-511-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4115909</b>							
<b>WG2812134-2</b>	<b>LCS</b>							
Aldrin			82.2		%		50-140	09-JUL-18
a-chlordane			85.2		%		50-140	09-JUL-18
g-chlordane			92.8		%		50-140	09-JUL-18
o,p-DDD			84.8		%		50-140	09-JUL-18
pp-DDD			82.9		%		50-140	09-JUL-18
o,p-DDE			74.9		%		50-140	09-JUL-18
pp-DDE			79.4		%		50-140	09-JUL-18
op-DDT			101.0		%		50-140	09-JUL-18
pp-DDT			97.3		%		50-140	09-JUL-18
Dieldrin			99.7		%		50-140	09-JUL-18
Endosulfan I			93.5		%		50-140	09-JUL-18
Endosulfan II			101.7		%		50-140	09-JUL-18
Endrin			120.2		%		50-140	09-JUL-18
gamma-hexachlorocyclohexane			98.7		%		50-140	09-JUL-18
Heptachlor			79.9		%		50-140	09-JUL-18
Heptachlor Epoxide			104.8		%		50-140	09-JUL-18
Hexachlorobenzene			70.7		%		40-130	09-JUL-18
Hexachlorobutadiene			60.7		%		40-130	09-JUL-18
Hexachloroethane			59.9		%		40-130	09-JUL-18
Methoxychlor			139.3		%		50-140	09-JUL-18
<b>WG2812134-3</b>	<b>LCSD</b>	<b>WG2812134-2</b>						
Aldrin		82.2	95.6		%	15	50	09-JUL-18
a-chlordane		85.2	87.0		%	2.1	50	09-JUL-18
g-chlordane		92.8	93.7		%	0.9	50	09-JUL-18
o,p-DDD		84.8	85.1		%	0.3	50	09-JUL-18
pp-DDD		82.9	84.3		%	1.7	50	09-JUL-18
o,p-DDE		74.9	76.5		%	2.1	50	09-JUL-18
pp-DDE		79.4	78.8		%	0.7	50	09-JUL-18
op-DDT		101.0	104.7		%	3.6	50	09-JUL-18
pp-DDT		97.3	104.1		%	6.7	50	09-JUL-18
Dieldrin		99.7	98.1		%	1.6	50	09-JUL-18
Endosulfan I		93.5	94.1		%	0.6	50	09-JUL-18
Endosulfan II		101.7	95.8		%	6.0	50	09-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PEST-OC-511-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4115909</b>							
<b>WG2812134-3</b>	<b>LCSD</b>	<b>WG2812134-2</b>						
Endrin		120.2	124.2		%	3.3	50	09-JUL-18
gamma-hexachlorocyclohexane		98.7	96.2		%	2.6	50	09-JUL-18
Heptachlor		79.9	90.7		%	13	50	09-JUL-18
Heptachlor Epoxide		104.8	97.4		%	7.3	50	09-JUL-18
Hexachlorobenzene		70.7	81.7		%	14	50	09-JUL-18
Hexachlorobutadiene		60.7	70.1		%	14	50	09-JUL-18
Hexachloroethane		59.9	68.9		%	14	50	09-JUL-18
Methoxychlor		139.3	151.9		%	8.6	50	09-JUL-18
<b>WG2812134-1</b>	<b>MB</b>							
Aldrin			<0.010		ug/L		0.01	09-JUL-18
a-chlordane			<0.040		ug/L		0.04	09-JUL-18
g-chlordane			<0.040		ug/L		0.04	09-JUL-18
o,p-DDD			<0.030		ug/L		0.03	09-JUL-18
pp-DDD			<0.030		ug/L		0.03	09-JUL-18
o,p-DDE			<0.0080		ug/L		0.008	09-JUL-18
pp-DDE			<0.0080		ug/L		0.008	09-JUL-18
op-DDT			<0.030		ug/L		0.03	09-JUL-18
pp-DDT			<0.030		ug/L		0.03	09-JUL-18
Dieldrin			<0.050		ug/L		0.05	09-JUL-18
Endosulfan I			<0.030		ug/L		0.03	09-JUL-18
Endosulfan II			<0.030		ug/L		0.03	09-JUL-18
Endrin			<0.040		ug/L		0.04	09-JUL-18
gamma-hexachlorocyclohexane			<0.010		ug/L		0.01	09-JUL-18
Heptachlor			<0.010		ug/L		0.01	09-JUL-18
Heptachlor Epoxide			<0.010		ug/L		0.01	09-JUL-18
Hexachlorobenzene			<0.010		ug/L		0.01	09-JUL-18
Hexachlorobutadiene			<0.010		ug/L		0.01	09-JUL-18
Hexachloroethane			<0.010		ug/L		0.01	09-JUL-18
Methoxychlor			<0.050		ug/L		0.05	09-JUL-18
Surrogate: 2-Fluorobiphenyl			90.6		%		50-140	09-JUL-18
Surrogate: d14-Terphenyl			91.5		%		60-140	09-JUL-18

**PH-WT** **Water**



## Quality Control Report

Workorder: L2121927

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-WT</b>		<b>Water</b>						
<b>Batch R4110867</b>								
<b>WG2811304-20 DUP</b>		<b>WG2811304-19</b>						
pH		7.18	7.14	J	pH units	0.04	0.2	30-JUN-18
<b>WG2811304-18 LCS</b>			7.00		pH units		6.9-7.1	30-JUN-18
<b>VOC-511-HS-WT</b>		<b>Water</b>						
<b>Batch R4114165</b>								
<b>WG2810380-4 DUP</b>		<b>WG2810380-3</b>						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	06-JUL-18
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	06-JUL-18
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	06-JUL-18
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	06-JUL-18
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	06-JUL-18
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	06-JUL-18
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	06-JUL-18
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	06-JUL-18
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	06-JUL-18
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	06-JUL-18



## Quality Control Report

Workorder: L2121927

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4114165</b>							
<b>WG2810380-4</b>	<b>DUP</b>	<b>WG2810380-3</b>						
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	06-JUL-18
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	06-JUL-18
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	06-JUL-18
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	06-JUL-18
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	06-JUL-18
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	06-JUL-18
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	06-JUL-18
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	06-JUL-18
<b>WG2810380-1</b>	<b>LCS</b>							
1,1,1,2-Tetrachloroethane			108.4		%		70-130	06-JUL-18
1,1,2,2-Tetrachloroethane			112.3		%		70-130	06-JUL-18
1,1,1-Trichloroethane			110.6		%		70-130	06-JUL-18
1,1,2-Trichloroethane			115.4		%		70-130	06-JUL-18
1,1-Dichloroethane			112.8		%		70-130	06-JUL-18
1,1-Dichloroethylene			100.0		%		70-130	06-JUL-18
1,2-Dibromoethane			114.1		%		70-130	06-JUL-18
1,2-Dichlorobenzene			107.7		%		70-130	06-JUL-18
1,2-Dichloroethane			118.9		%		70-130	06-JUL-18
1,2-Dichloropropane			115.0		%		70-130	06-JUL-18
1,3-Dichlorobenzene			102.3		%		70-130	06-JUL-18
1,4-Dichlorobenzene			104.2		%		70-130	06-JUL-18
Acetone			138.9		%		60-140	06-JUL-18
Benzene			113.2		%		70-130	06-JUL-18
Bromodichloromethane			110.9		%		70-130	06-JUL-18
Bromoform			107.5		%		70-130	06-JUL-18
Bromomethane			107.6		%		60-140	06-JUL-18
Carbon tetrachloride			106.4		%		70-130	06-JUL-18
Chlorobenzene			108.3		%		70-130	06-JUL-18



## Quality Control Report

Workorder: L2121927

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4114165</b>							
<b>WG2810380-1</b>	<b>LCS</b>							
Chloroform			113.8		%		70-130	06-JUL-18
cis-1,2-Dichloroethylene			110.1		%		70-130	06-JUL-18
cis-1,3-Dichloropropene			106.4		%		70-130	06-JUL-18
Dibromochloromethane			113.5		%		70-130	06-JUL-18
Dichlorodifluoromethane			86.3		%		50-140	06-JUL-18
Ethylbenzene			99.6		%		70-130	06-JUL-18
n-Hexane			119.3		%		70-130	06-JUL-18
m+p-Xylenes			101.7		%		70-130	06-JUL-18
Methyl Ethyl Ketone			130.7		%		60-140	06-JUL-18
Methyl Isobutyl Ketone			115.9		%		60-140	06-JUL-18
Methylene Chloride			115.8		%		70-130	06-JUL-18
MTBE			109.4		%		70-130	06-JUL-18
o-Xylene			100.8		%		70-130	06-JUL-18
Styrene			99.0		%		70-130	06-JUL-18
Tetrachloroethylene			100.3		%		70-130	06-JUL-18
Toluene			106.4		%		70-130	06-JUL-18
trans-1,2-Dichloroethylene			107.6		%		70-130	06-JUL-18
trans-1,3-Dichloropropene			101.7		%		70-130	06-JUL-18
Trichloroethylene			108.3		%		70-130	06-JUL-18
Trichlorofluoromethane			110.9		%		60-140	06-JUL-18
Vinyl chloride			102.7		%		60-140	06-JUL-18
<b>WG2810380-2</b>	<b>MB</b>							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	06-JUL-18
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	06-JUL-18
1,1,1-Trichloroethane			<0.50		ug/L		0.5	06-JUL-18
1,1,2-Trichloroethane			<0.50		ug/L		0.5	06-JUL-18
1,1-Dichloroethane			<0.50		ug/L		0.5	06-JUL-18
1,1-Dichloroethylene			<0.50		ug/L		0.5	06-JUL-18
1,2-Dibromoethane			<0.20		ug/L		0.2	06-JUL-18
1,2-Dichlorobenzene			<0.50		ug/L		0.5	06-JUL-18
1,2-Dichloroethane			<0.50		ug/L		0.5	06-JUL-18
1,2-Dichloropropane			<0.50		ug/L		0.5	06-JUL-18
1,3-Dichlorobenzene			<0.50		ug/L		0.5	06-JUL-18
1,4-Dichlorobenzene			<0.50		ug/L		0.5	06-JUL-18



## Quality Control Report

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4114165</b>							
<b>WG2810380-2</b>	<b>MB</b>							
Acetone			<30		ug/L		30	06-JUL-18
Benzene			<0.50		ug/L		0.5	06-JUL-18
Bromodichloromethane			<2.0		ug/L		2	06-JUL-18
Bromoform			<5.0		ug/L		5	06-JUL-18
Bromomethane			<0.50		ug/L		0.5	06-JUL-18
Carbon tetrachloride			<0.20		ug/L		0.2	06-JUL-18
Chlorobenzene			<0.50		ug/L		0.5	06-JUL-18
Chloroform			<1.0		ug/L		1	06-JUL-18
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	06-JUL-18
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	06-JUL-18
Dibromochloromethane			<2.0		ug/L		2	06-JUL-18
Dichlorodifluoromethane			<2.0		ug/L		2	06-JUL-18
Ethylbenzene			<0.50		ug/L		0.5	06-JUL-18
n-Hexane			<0.50		ug/L		0.5	06-JUL-18
m+p-Xylenes			<0.40		ug/L		0.4	06-JUL-18
Methyl Ethyl Ketone			<20		ug/L		20	06-JUL-18
Methyl Isobutyl Ketone			<20		ug/L		20	06-JUL-18
Methylene Chloride			<5.0		ug/L		5	06-JUL-18
MTBE			<2.0		ug/L		2	06-JUL-18
o-Xylene			<0.30		ug/L		0.3	06-JUL-18
Styrene			<0.50		ug/L		0.5	06-JUL-18
Tetrachloroethylene			<0.50		ug/L		0.5	06-JUL-18
Toluene			<0.50		ug/L		0.5	06-JUL-18
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	06-JUL-18
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	06-JUL-18
Trichloroethylene			<0.50		ug/L		0.5	06-JUL-18
Trichlorofluoromethane			<5.0		ug/L		5	06-JUL-18
Vinyl chloride			<0.50		ug/L		0.5	06-JUL-18
Surrogate: 1,4-Difluorobenzene			98.0		%		70-130	06-JUL-18
Surrogate: 4-Bromofluorobenzene			95.0		%		70-130	06-JUL-18
<b>WG2810380-5</b>	<b>MS</b>	<b>WG2810380-3</b>						
1,1,1,2-Tetrachloroethane			110.2		%		50-140	06-JUL-18
1,1,2,2-Tetrachloroethane			111.4		%		50-140	06-JUL-18
1,1,1-Trichloroethane			113.5		%		50-140	06-JUL-18



## Quality Control Report

Workorder: L2121927

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>	<b>Water</b>							
<b>Batch</b>	<b>R4114165</b>							
<b>WG2810380-5 MS</b>		<b>WG2810380-3</b>						
1,1,2-Trichloroethane			112.6		%		50-140	06-JUL-18
1,1-Dichloroethane			115.5		%		50-140	06-JUL-18
1,1-Dichloroethylene			101.7		%		50-140	06-JUL-18
1,2-Dibromoethane			109.9		%		50-140	06-JUL-18
1,2-Dichlorobenzene			110.0		%		50-140	06-JUL-18
1,2-Dichloroethane			117.5		%		50-140	06-JUL-18
1,2-Dichloropropane			116.2		%		50-140	06-JUL-18
1,3-Dichlorobenzene			107.4		%		50-140	06-JUL-18
1,4-Dichlorobenzene			110.8		%		50-140	06-JUL-18
Acetone			125.8		%		50-140	06-JUL-18
Benzene			116.0		%		50-140	06-JUL-18
Bromodichloromethane			111.2		%		50-140	06-JUL-18
Bromoform			105.7		%		50-140	06-JUL-18
Bromomethane			108.1		%		50-140	06-JUL-18
Carbon tetrachloride			109.7		%		50-140	06-JUL-18
Chlorobenzene			111.3		%		50-140	06-JUL-18
Chloroform			116.3		%		50-140	06-JUL-18
cis-1,2-Dichloroethylene			111.7		%		50-140	06-JUL-18
cis-1,3-Dichloropropene			113.1		%		50-140	06-JUL-18
Dibromochloromethane			112.4		%		50-140	06-JUL-18
Dichlorodifluoromethane			79.4		%		50-140	06-JUL-18
Ethylbenzene			103.6		%		50-140	06-JUL-18
n-Hexane			115.6		%		50-140	06-JUL-18
m+p-Xylenes			106.7		%		50-140	06-JUL-18
Methyl Ethyl Ketone			115.9		%		50-140	06-JUL-18
Methyl Isobutyl Ketone			109.7		%		50-140	06-JUL-18
Methylene Chloride			114.9		%		50-140	06-JUL-18
MTBE			113.0		%		50-140	06-JUL-18
o-Xylene			104.3		%		50-140	06-JUL-18
Styrene			102.1		%		50-140	06-JUL-18
Tetrachloroethylene			106.1		%		50-140	06-JUL-18
Toluene			106.1		%		50-140	06-JUL-18
trans-1,2-Dichloroethylene			112.6		%		50-140	06-JUL-18



# Quality Control Report

Workorder: L2121927

Report Date: 09-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4114165</b>							
<b>WG2810380-5 MS</b>		<b>WG2810380-3</b>						
trans-1,3-Dichloropropene			105.6		%		50-140	06-JUL-18
Trichloroethylene			113.0		%		50-140	06-JUL-18
Trichlorofluoromethane			110.2		%		50-140	06-JUL-18
Vinyl chloride			100.4		%		50-140	06-JUL-18

# Quality Control Report

Workorder: L2121927

Report Date: 09-JUL-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

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Contact: Rick Fioravanti

## Legend:

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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:

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

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## 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.

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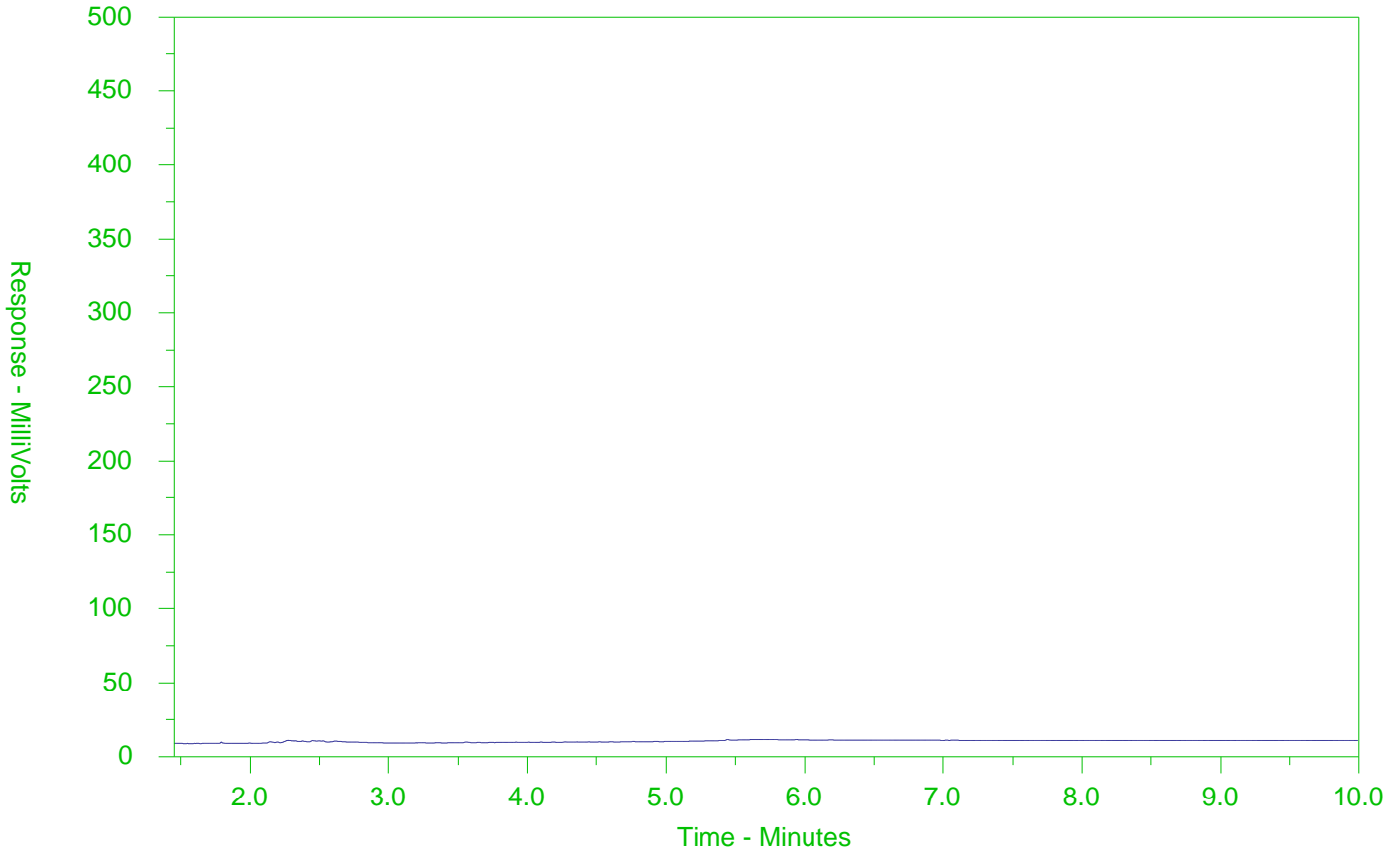
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L2121927-1  
 Client Sample ID: MW18-25



← 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.

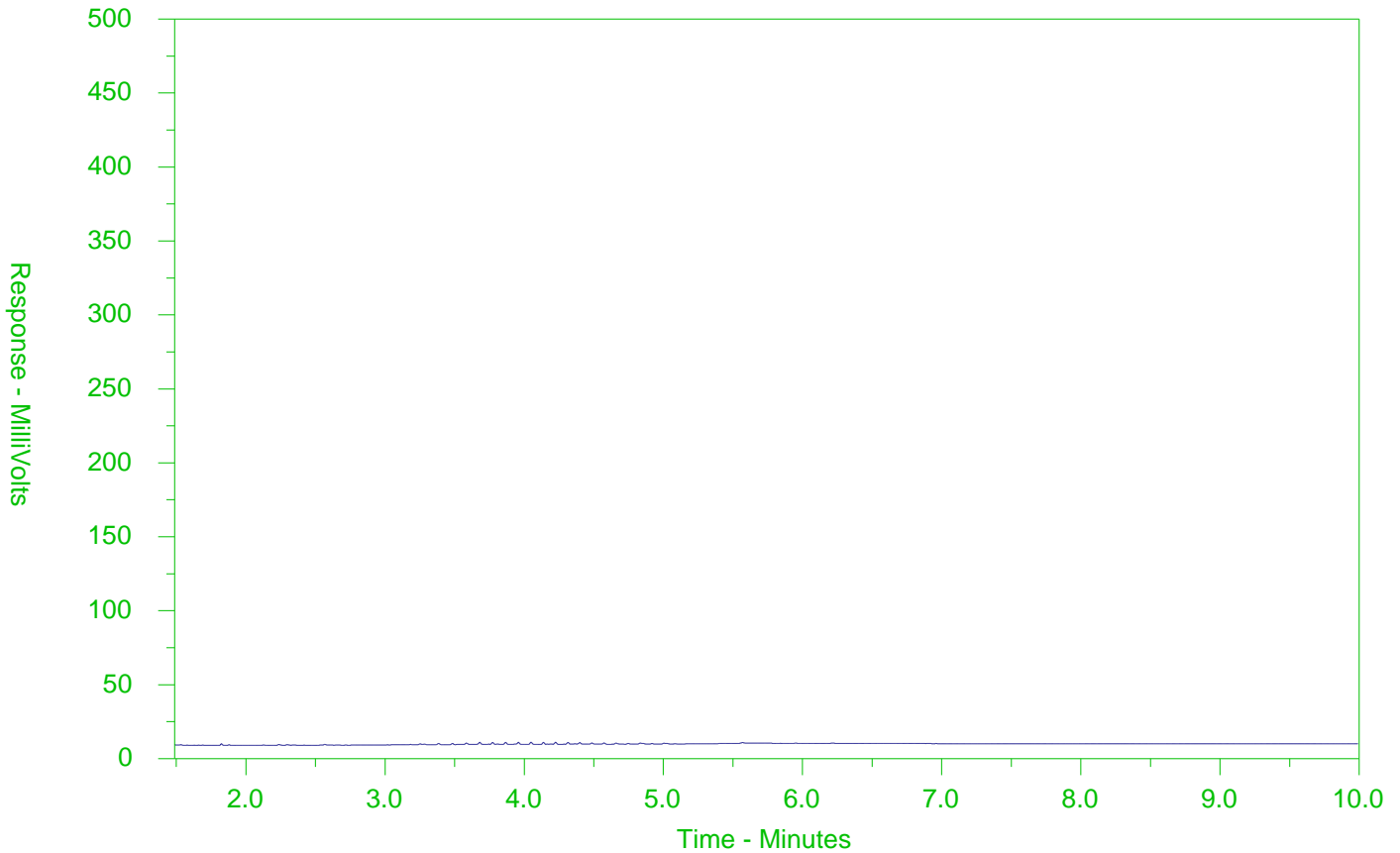
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2121927-2  
 Client Sample ID: MW18-35



← 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.

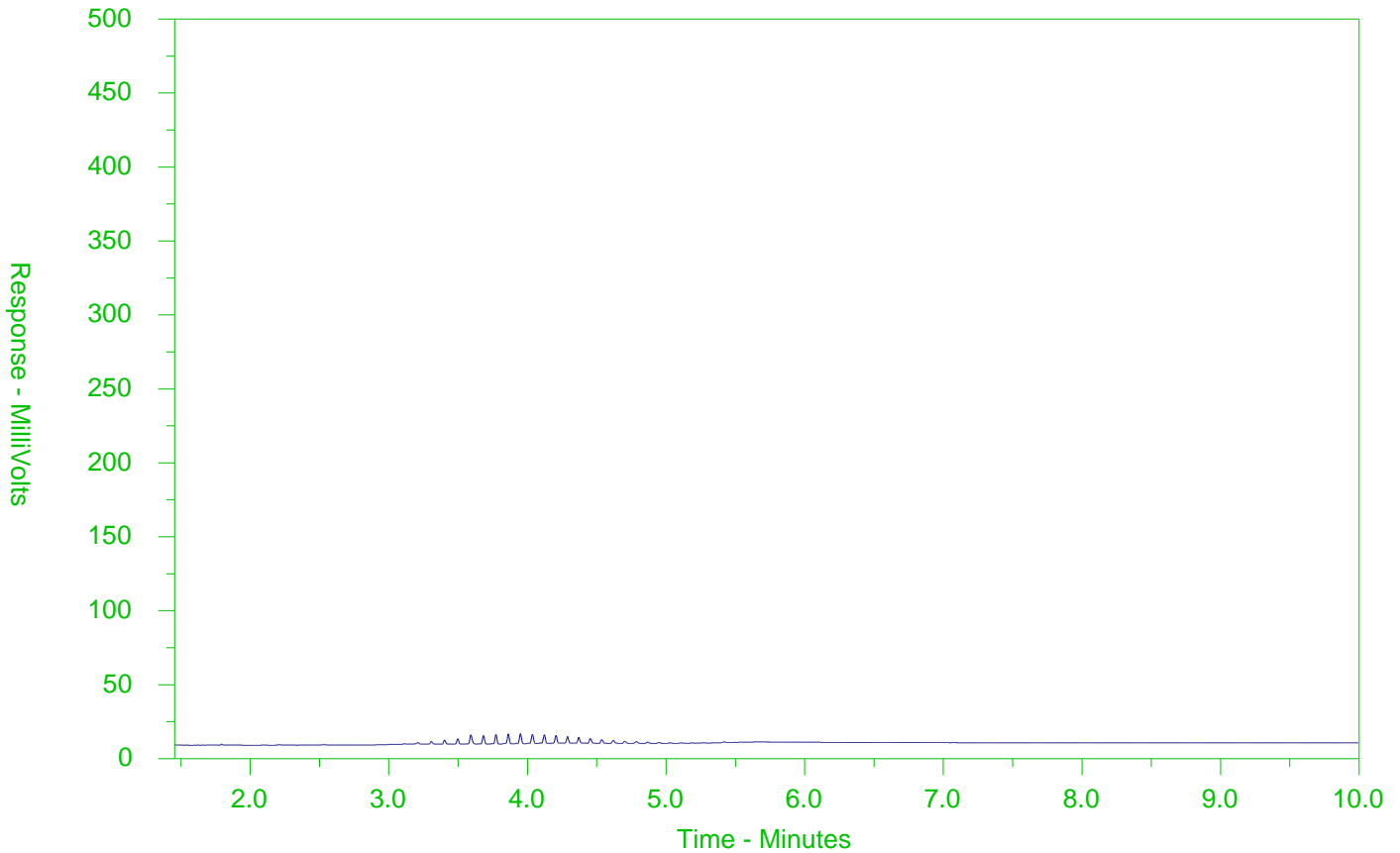
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2121927-3  
 Client Sample ID: MW18-45



← 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.

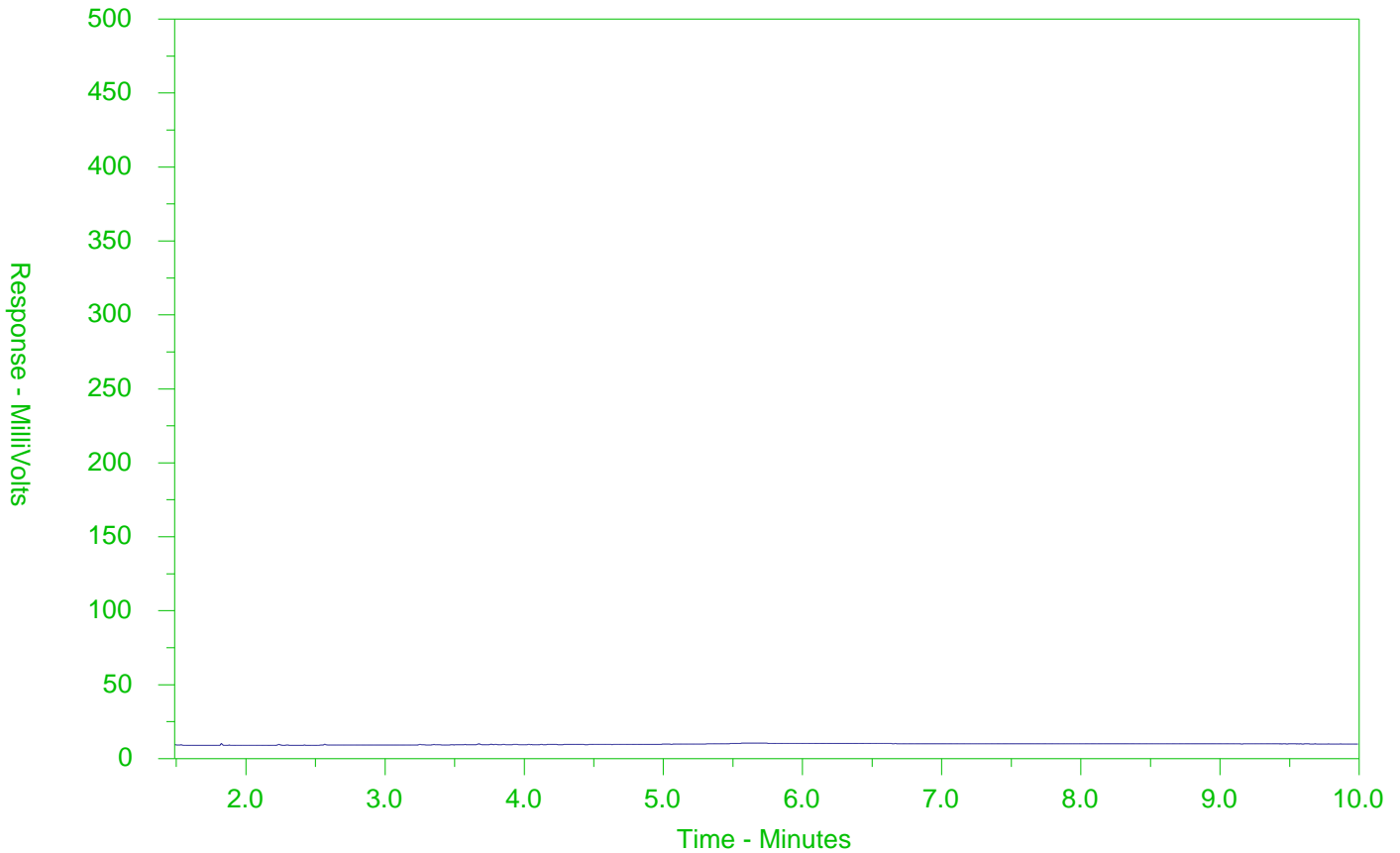
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2121927-7  
 Client Sample ID: MW18-5



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

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

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

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

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






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Vaughan ON L4H 0K8

Date Received: 05-JUL-18  
Report Date: 12-JUL-18 12:48 (MT)  
Version: FINAL

Client Phone: 905-264-9393

## Certificate of Analysis

Lab Work Order #: L2124761  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-40  
C of C Numbers: 15-575986  
Legal Site Desc:



Amanda Fazekas  
Account Manager

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## Summary of Guideline Exceedances

Guideline		Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID	Client ID					
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T8-Ground Water - All Types of Property Use</b>						
L2124761-3	MW18-3A	Dissolved Metals	Uranium (U)-Dissolved	59.7	20	ug/L
L2124761-4	MW18-5D	Dissolved Metals	Uranium (U)-Dissolved	58.8	20	ug/L
L2124761-5	MW15A-7	Dissolved Metals	Uranium (U)-Dissolved	58.1	20	ug/L

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

## Physical Tests - WATER

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID			
		#1	#2	L2124761-1	05-JUL-18	MW18-1S	L2124761-2	05-JUL-18	MW18-1D	L2124761-3	05-JUL-18	MW18-3A	L2124761-4	05-JUL-18	MW18-5D	L2124761-5	05-JUL-18	MW15A-7
Conductivity	mS/cm	-	-	1.75	2.04	1.75	1.76	1.50										
pH	pH units	-	-	7.37	7.28	7.34	7.34	7.33										

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Anions and Nutrients - WATER

Analyte	Unit	Guide Limits						
		#1	#2					
Chloride (Cl)	mg/L	790	-	215 <sup>DLHC</sup>	138 <sup>DLHC</sup>	36.1 <sup>DLHC</sup>	35.2 <sup>DLHC</sup>	27.2 <sup>DLHC</sup>

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Cyanides - WATER

Lab ID	L2124761-1	L2124761-2	L2124761-3	L2124761-4	L2124761-5
Sample Date	05-JUL-18	05-JUL-18	05-JUL-18	05-JUL-18	05-JUL-18
Sample ID	MW18-1S	MW18-1D	MW18-3A	MW18-5D	MW15A-7

Analyte	Unit	Guide Limits						
		#1	#2					
Cyanide, Weak Acid Diss	ug/L	52	-	<2.0	<2.0	<2.0	<2.0	<2.0

**Guide Limit #1: T8-Ground Water - All Types of Property Use**

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

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



# ANALYTICAL REPORT

## Dissolved Metals - WATER

Analyte	Unit	Guide Limits		Lab ID	L2124761-1	L2124761-2	L2124761-3	L2124761-4	L2124761-5
		#1	#2	Sample Date	05-JUL-18	05-JUL-18	05-JUL-18	05-JUL-18	05-JUL-18
				Sample ID	MW18-1S	MW18-1D	MW18-3A	MW18-5D	MW15A-7
Dissolved Mercury Filtration Location	-	-	LAB		LAB	LAB	LAB	LAB	LAB
Dissolved Metals Filtration Location	-	-	FIELD		FIELD	FIELD	FIELD	FIELD	FIELD
Antimony (Sb)-Dissolved	ug/L	6	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Arsenic (As)-Dissolved	ug/L	25	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Barium (Ba)-Dissolved	ug/L	1000	-	77.5 <sup>DLHC</sup>	78.2 <sup>DLHC</sup>	17.8 <sup>DLHC</sup>	18.0 <sup>DLHC</sup>	18.1 <sup>DLHC</sup>	
Beryllium (Be)-Dissolved	ug/L	4	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Boron (B)-Dissolved	ug/L	5000	-	220 <sup>DLHC</sup>	220 <sup>DLHC</sup>	450 <sup>DLHC</sup>	460 <sup>DLHC</sup>	460 <sup>DLHC</sup>	
Cadmium (Cd)-Dissolved	ug/L	2.1	-	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>
Chromium (Cr)-Dissolved	ug/L	50	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
Cobalt (Co)-Dissolved	ug/L	3.8	-	1.8 <sup>DLHC</sup>	1.9 <sup>DLHC</sup>	1.8 <sup>DLHC</sup>	1.7 <sup>DLHC</sup>	1.3 <sup>DLHC</sup>	
Copper (Cu)-Dissolved	ug/L	69	-	2.3 <sup>DLHC</sup>	2.6 <sup>DLHC</sup>	2.1 <sup>DLHC</sup>	2.2 <sup>DLHC</sup>	2.2 <sup>DLHC</sup>	
Lead (Pb)-Dissolved	ug/L	10	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Mercury (Hg)-Dissolved	ug/L	0.29	-	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>
Molybdenum (Mo)-Dissolved	ug/L	70	-	2.13 <sup>DLHC</sup>	2.17 <sup>DLHC</sup>	3.05 <sup>DLHC</sup>	3.22 <sup>DLHC</sup>	3.04 <sup>DLHC</sup>	
Nickel (Ni)-Dissolved	ug/L	100	-	6.6 <sup>DLHC</sup>	7.4 <sup>DLHC</sup>	7.1 <sup>DLHC</sup>	6.6 <sup>DLHC</sup>	6.9 <sup>DLHC</sup>	
Selenium (Se)-Dissolved	ug/L	10	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Silver (Ag)-Dissolved	ug/L	1.2	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Sodium (Na)-Dissolved	ug/L	490000	-	101000 <sup>DLHC</sup>	99600 <sup>DLHC</sup>	221000 <sup>DLHC</sup>	219000 <sup>DLHC</sup>	220000 <sup>DLHC</sup>	
Thallium (Tl)-Dissolved	ug/L	2	-	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	0.12 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>
Uranium (U)-Dissolved	ug/L	20	-	10.7 <sup>DLHC</sup>	10.5 <sup>DLHC</sup>	59.7 <sup>DLHC</sup>	58.8 <sup>DLHC</sup>	58.1 <sup>DLHC</sup>	
Vanadium (V)-Dissolved	ug/L	6.2	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
Zinc (Zn)-Dissolved	ug/L	890	-	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Speciated Metals - WATER

Analyte	Unit	Guide Limits		L2124761-1	L2124761-2	L2124761-3	L2124761-4	L2124761-5
		#1	#2					
Chromium, Hexavalent	ug/L	25	-	<0.50	<0.50	<0.50	<0.50	<0.50

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Volatile Organic Compounds - WATER

Analyte	Unit	Guide Limits				
		#1	#2			
		<b>Lab ID</b>	L2124761-1	L2124761-5	L2124761-6	
		<b>Sample Date</b>	05-JUL-18	05-JUL-18	05-JUL-18	
		<b>Sample ID</b>	MW18-1S	MW15A-7	TRIP BLANK	
Acetone	ug/L	2700	-	35 <sup>OWP</sup>	<30 <sup>OWP</sup>	<30
Benzene	ug/L	5	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Bromodichloromethane	ug/L	16	-	<2.0 <sup>OWP</sup>	<2.0 <sup>OWP</sup>	<2.0
Bromoform	ug/L	25	-	<5.0 <sup>OWP</sup>	<5.0 <sup>OWP</sup>	<5.0
Bromomethane	ug/L	0.89	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Carbon tetrachloride	ug/L	0.79	-	<0.20 <sup>OWP</sup>	<0.20 <sup>OWP</sup>	<0.20
Chlorobenzene	ug/L	30	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Dibromochloromethane	ug/L	25	-	<2.0 <sup>OWP</sup>	<2.0 <sup>OWP</sup>	<2.0
Chloroform	ug/L	2.4	-	<1.0 <sup>OWP</sup>	<1.0 <sup>OWP</sup>	<1.0
1,2-Dibromoethane	ug/L	0.2	-	<0.20 <sup>OWP</sup>	<0.20 <sup>OWP</sup>	<0.20
1,2-Dichlorobenzene	ug/L	3	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
1,3-Dichlorobenzene	ug/L	59	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
1,4-Dichlorobenzene	ug/L	1	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Dichlorodifluoromethane	ug/L	590	-	<2.0 <sup>OWP</sup>	<2.0 <sup>OWP</sup>	<2.0
1,1-Dichloroethane	ug/L	5	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
1,2-Dichloroethane	ug/L	1.6	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
1,1-Dichloroethylene	ug/L	1.6	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
cis-1,2-Dichloroethylene	ug/L	1.6	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
trans-1,2-Dichloroethylene	ug/L	1.6	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Methylene Chloride	ug/L	50	-	<5.0 <sup>OWP</sup>	<5.0 <sup>OWP</sup>	<5.0
1,2-Dichloropropane	ug/L	5	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
cis-1,3-Dichloropropene	ug/L	-	-	<0.30 <sup>OWP</sup>	<0.30 <sup>OWP</sup>	<0.30
trans-1,3-Dichloropropene	ug/L	-	-	<0.30 <sup>OWP</sup>	<0.30 <sup>OWP</sup>	<0.30
1,3-Dichloropropene (cis & trans)	ug/L	0.5	-	<0.50	<0.50	<0.50
Ethylbenzene	ug/L	2.4	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
n-Hexane	ug/L	51	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50
Methyl Ethyl Ketone	ug/L	1800	-	<20 <sup>OWP</sup>	<20 <sup>OWP</sup>	<20
Methyl Isobutyl Ketone	ug/L	640	-	<20 <sup>OWP</sup>	<20 <sup>OWP</sup>	<20
MTBE	ug/L	15	-	<2.0 <sup>OWP</sup>	<2.0 <sup>OWP</sup>	<2.0
Styrene	ug/L	5.4	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>	<0.50

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

## Volatile Organic Compounds - WATER

		Lab ID	L2124761-1	L2124761-5	L2124761-6
		Sample Date	05-JUL-18	05-JUL-18	05-JUL-18
		Sample ID	MW18-1S	MW15A-7	TRIP BLANK
		Guide Limits			
Analyte	Unit	#1	#2		
1,1,1,2-Tetrachloroethane	ug/L	1.1	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>
1,1,2,2-Tetrachloroethane	ug/L	1	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>
Tetrachloroethylene	ug/L	1.6	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>
Toluene	ug/L	22	-	<1.5 <sup>RRR</sup>	<0.50 <sup>OWP</sup>
1,1,1-Trichloroethane	ug/L	200	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>
1,1,2-Trichloroethane	ug/L	4.7	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>
Trichloroethylene	ug/L	1.6	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>
Trichlorofluoromethane	ug/L	150	-	<5.0 <sup>OWP</sup>	<5.0 <sup>OWP</sup>
Vinyl chloride	ug/L	0.5	-	<0.50 <sup>OWP</sup>	<0.50 <sup>OWP</sup>
o-Xylene	ug/L	-	-	0.39 <sup>OWP</sup>	<0.30 <sup>OWP</sup>
m+p-Xylenes	ug/L	-	-	0.74 <sup>OWP</sup>	<0.40 <sup>OWP</sup>
Xylenes (Total)	ug/L	300	-	1.13	<0.50
Surrogate: 4-Bromofluorobenzene	%	-	-	87.5	87.6
Surrogate: 1,4-Difluorobenzene	%	-	-	96.7	96.4

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Hydrocarbons - WATER

<b>Lab ID</b>	L2124761-1	L2124761-5
<b>Sample Date</b>	05-JUL-18	05-JUL-18
<b>Sample ID</b>	MW18-1S	MW15A-7

Analyte	Unit	Guide Limits			
		#1	#2	#3	#4
F1 (C6-C10)	ug/L	420	-	<25 <sup>OWP</sup>	<25 <sup>OWP</sup>
F1-BTEX	ug/L	420	-	<25	<25
F2 (C10-C16)	ug/L	150	-	<100	<100
F3 (C16-C34)	ug/L	500	-	<250	<250
F4 (C34-C50)	ug/L	500	-	<250	<250
Total Hydrocarbons (C6-C50)	ug/L	-	-	<370	<370
Chrom. to baseline at nC50		-	-	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	89.6	87.5
Surrogate: 3,4-Dichlorotoluene	%	-	-	59.0 <sup>SURR-ND</sup>	55.9 <sup>SURR-ND</sup>

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

## Organochlorine Pesticides - WATER

Analyte	Unit	Guide Limits			
		#1	#2		
		<b>Lab ID</b>	L2124761-1	L2124761-5	
		<b>Sample Date</b>	05-JUL-18	05-JUL-18	
		<b>Sample ID</b>	MW18-1S	MW15A-7	
Aldrin	ug/L	0.35	-	<0.010	<0.010
gamma-hexachlorocyclohexane	ug/L	0.95	-	<0.010	<0.010
a-chlordane	ug/L	-	-	<0.040	<0.040
Chlordane (Total)	ug/L	0.06	-	<0.057	<0.057
g-chlordane	ug/L	-	-	<0.040	<0.040
o,p-DDD	ug/L	-	-	<0.030	<0.030
pp-DDD	ug/L	-	-	<0.030	<0.030
Total DDD	ug/L	1.8	-	<0.042	<0.042
o,p-DDE	ug/L	-	-	<0.0080	<0.0080
pp-DDE	ug/L	-	-	<0.0080	<0.0080
Total DDE	ug/L	10	-	<0.011	<0.011
op-DDT	ug/L	-	-	<0.030	<0.030
pp-DDT	ug/L	-	-	<0.030	<0.030
Total DDT	ug/L	0.05	-	<0.042	<0.042
Dieldrin	ug/L	0.35	-	<0.050	<0.050
Endosulfan I	ug/L	-	-	<0.030	<0.030
Endosulfan II	ug/L	-	-	<0.030	<0.030
Endosulfan (Total)	ug/L	0.56	-	<0.042	<0.042
Endrin	ug/L	0.36	-	<0.040	<0.040
Heptachlor	ug/L	0.038	-	<0.010	<0.010
Heptachlor Epoxide	ug/L	0.038	-	<0.010	<0.010
Hexachlorobenzene	ug/L	1	-	<0.010	<0.010
Hexachlorobutadiene	ug/L	0.44	-	<0.040 <sup>RRQC</sup>	<0.040 <sup>RRQC</sup>
Hexachloroethane	ug/L	2.1	-	<0.030 <sup>RRQC</sup>	<0.030 <sup>RRQC</sup>
Methoxychlor	ug/L	0.3	-	<0.050	<0.050
Surrogate: 2-Fluorobiphenyl	%	-	-	85.3	84.1
Surrogate: d14-Terphenyl	%	-	-	84.1	88.2

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

# Reference Information

## Additional Comments for Sample Listed:

Sample Number	Matrix	Report Remarks	Sample Comment:
L2124761-1	Water	Note: RRQC: Analyte recovery in LCS/LCS-Duplicate was below ALS DQO. Detection limits have been raised. Associated samples have been qualified.	
L2124761-1	Water	Note: RRR-Detection Limit Adjusted: Instrument Sensitivity	
L2124761-5	Water	Note: RRQC: Analyte recovery in LCS/LCS-Duplicate was below ALS DQO. Detection limits have been raised. Associated samples have been qualified.	

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
SURR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.
RRQC	Refer to report remarks for information regarding this QC result.
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of

# Reference Information

sediment.

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

RRR Refer to Report Remarks for issues regarding this analysis

**Methods Listed (if applicable):**

ALS Test Code	Matrix	Test Description	Method Reference**
<b>CHLORDANE-T-CALC-WT</b>	Water	Chlordane Total sums	CALCULATION
Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.			
<b>CL-IC-N-WT</b>	Water	Chloride by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>CN-WAD-R511-WT</b>	Water	Cyanide (WAD)-O.Reg 153/04	APHA 4500CN I-Weak acid Dist Colorimet
Weak acid dissociable cyanide (WAD) is determined by undergoing a distillation procedure. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>CR-CR6-IC-R511-WT</b>	Water	Hex Chrom-O.Reg 153/04 (July 2011)	EPA 7199
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>DDD-DDE-DDT-CALC-WT</b>	Water	DDD, DDE, DDT sums	CALCULATION
Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.			
<b>EC-R511-WT</b>	Water	Conductivity-O.Reg 153/04 (July 2011)	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
<b>ENDOSULFAN-T-CALC-WT</b>	Water	Endosulfan Total sums	CALCULATION
Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.			
<b>F1-F4-511-CALC-WT</b>	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.

# Reference Information

**Methods Listed (if applicable):**

ALS Test Code	Matrix	Test Description	Method Reference**
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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.

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

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

<b>HG-D-UG/L-CVAA-WT</b>	Water	Diss. Mercury in Water by CVAAS (ug/L)	EPA 1631E (mod)
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Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

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

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

<b>PEST-OC-511-WT</b>	Water	OC Pesticides-O. Reg 153/04 (July 2011)	SW846 8270 (511)
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Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

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

<b>PH-WT</b>	Water	pH	APHA 4500 H-Electrode
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Water samples are analyzed directly by a calibrated pH meter.

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

# Reference Information

## Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
<b>VOC-1,3-DCP-CALC-WT</b>	Water	Regulation 153 VOCs	SW8260B/SW8270C
<b>VOC-511-HS-WT</b>	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260
<b>XYLENES-SUM-CALC-WT</b>	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Liquid samples are analyzed by headspace GC/MSD.

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

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:

15-575986

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
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WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
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## 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: L2124761

Report Date: 12-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4120967</b>							
<b>WG2817429-4</b>	<b>DUP</b>	<b>WG2817429-3</b>						
Chloride (Cl)		52.6	53.0		mg/L	0.7	20	09-JUL-18
<b>WG2817429-9</b>	<b>DUP</b>	<b>WG2817429-8</b>						
Chloride (Cl)		2.47	2.49		mg/L	1.0	20	09-JUL-18
<b>WG2817429-2</b>	<b>LCS</b>							
Chloride (Cl)			101.3		%		90-110	09-JUL-18
<b>WG2817429-7</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	09-JUL-18
<b>WG2817429-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	09-JUL-18
<b>WG2817429-6</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	09-JUL-18
<b>WG2817429-10</b>	<b>MS</b>	<b>WG2817429-8</b>						
Chloride (Cl)			102.4		%		75-125	09-JUL-18
<b>WG2817429-5</b>	<b>MS</b>	<b>WG2817429-3</b>						
Chloride (Cl)			97.5		%		75-125	09-JUL-18
<b>CN-WAD-R511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4116488</b>							
<b>WG2816017-3</b>	<b>DUP</b>	<b>L2124416-1</b>						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	06-JUL-18
<b>WG2816017-2</b>	<b>LCS</b>							
Cyanide, Weak Acid Diss			104.2		%		80-120	06-JUL-18
<b>WG2816017-1</b>	<b>MB</b>							
Cyanide, Weak Acid Diss			<2.0		ug/L		2	06-JUL-18
<b>WG2816017-4</b>	<b>MS</b>	<b>L2124416-1</b>						
Cyanide, Weak Acid Diss			101.4		%		75-125	06-JUL-18
<b>CR-CR6-IC-R511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4115408</b>							
<b>WG2815964-10</b>	<b>DUP</b>	<b>WG2815964-8</b>						
Chromium, Hexavalent		1.59	1.61		ug/L	1.4	20	06-JUL-18
<b>WG2815964-7</b>	<b>LCS</b>							
Chromium, Hexavalent			102.1		%		80-120	06-JUL-18
<b>WG2815964-6</b>	<b>MB</b>							
Chromium, Hexavalent			<0.50		ug/L		0.5	06-JUL-18
<b>WG2815964-9</b>	<b>MS</b>	<b>WG2815964-8</b>						
Chromium, Hexavalent			92.6		%		70-130	06-JUL-18
<b>EC-R511-WT</b>		<b>Water</b>						



# Quality Control Report

Workorder: L2124761

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-R511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4114791</b>							
<b>WG2815438-16</b>	<b>DUP</b>	<b>WG2815438-15</b>						
Conductivity		1.49	1.49		mS/cm	0.3	10	06-JUL-18
<b>WG2815438-14</b>	<b>LCS</b>							
Conductivity			97.6		%		90-110	06-JUL-18
<b>WG2815438-13</b>	<b>MB</b>							
Conductivity			<0.0030		mS/cm		0.003	06-JUL-18
<b>F1-HS-511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4122268</b>							
<b>WG2817024-4</b>	<b>DUP</b>	<b>WG2817024-3</b>						
F1 (C6-C10)		33	44		ug/L	29	30	11-JUL-18
<b>WG2817024-1</b>	<b>LCS</b>							
F1 (C6-C10)			105.1		%		80-120	11-JUL-18
<b>WG2817024-2</b>	<b>MB</b>							
F1 (C6-C10)			<25		ug/L		25	11-JUL-18
Surrogate: 3,4-Dichlorotoluene			83.6		%		60-140	11-JUL-18
<b>WG2817024-5</b>	<b>MS</b>	<b>WG2817024-3</b>						
F1 (C6-C10)			92.3		%		60-140	11-JUL-18
<b>F2-F4-511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4117887</b>							
<b>WG2816937-2</b>	<b>LCS</b>							
F2 (C10-C16)			92.4		%		70-130	09-JUL-18
F3 (C16-C34)			93.9		%		70-130	09-JUL-18
F4 (C34-C50)			94.4		%		70-130	09-JUL-18
<b>WG2816937-3</b>	<b>LCSD</b>	<b>WG2816937-2</b>						
F2 (C10-C16)		92.4	96.7		%	4.5	50	09-JUL-18
F3 (C16-C34)		93.9	93.5		%	0.5	50	09-JUL-18
F4 (C34-C50)		94.4	95.5		%	1.2	50	09-JUL-18
<b>WG2816937-1</b>	<b>MB</b>							
F2 (C10-C16)			<100		ug/L		100	09-JUL-18
F3 (C16-C34)			<250		ug/L		250	09-JUL-18
F4 (C34-C50)			<250		ug/L		250	09-JUL-18
Surrogate: 2-Bromobenzotrifluoride			61.1		%		60-140	09-JUL-18
<b>HG-D-UG/L-CVAA-WT</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2124761

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-UG/L-CVAA-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4120540</b>							
<b>WG2818393-3</b>	<b>DUP</b>	<b>L2124761-1</b>						
Mercury (Hg)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	10-JUL-18
<b>WG2818393-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.0		%		80-120	10-JUL-18
<b>WG2818393-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	10-JUL-18
<b>WG2818393-4</b>	<b>MS</b>	<b>L2124761-2</b>						
Mercury (Hg)-Dissolved			81.7		%		70-130	10-JUL-18
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4115110</b>							
<b>WG2816048-4</b>	<b>DUP</b>	<b>WG2816048-3</b>						
Antimony (Sb)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	06-JUL-18
Arsenic (As)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	06-JUL-18
Barium (Ba)-Dissolved		2.81	2.75		ug/L	2.1	20	06-JUL-18
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	06-JUL-18
Boron (B)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	06-JUL-18
Cadmium (Cd)-Dissolved		<0.0050	<0.0050	RPD-NA	ug/L	N/A	20	06-JUL-18
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-18
Cobalt (Co)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	06-JUL-18
Copper (Cu)-Dissolved		0.30	0.30		ug/L	1.3	20	06-JUL-18
Lead (Pb)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	06-JUL-18
Molybdenum (Mo)-Dissolved		0.058	0.053		ug/L	9.4	20	06-JUL-18
Nickel (Ni)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-18
Selenium (Se)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	06-JUL-18
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	06-JUL-18
Sodium (Na)-Dissolved		255	247		ug/L	3.2	20	06-JUL-18
Thallium (Tl)-Dissolved		<0.010	0.019	RPD-NA	ug/L	N/A	20	06-JUL-18
Uranium (U)-Dissolved		0.167	0.179		ug/L	6.6	20	06-JUL-18
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	06-JUL-18
Zinc (Zn)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-JUL-18
<b>WG2816048-2</b>	<b>LCS</b>							
Antimony (Sb)-Dissolved			99.4		%		80-120	06-JUL-18
Arsenic (As)-Dissolved			100.4		%		80-120	06-JUL-18
Barium (Ba)-Dissolved			99.0		%		80-120	06-JUL-18
Beryllium (Be)-Dissolved			101.4		%		80-120	06-JUL-18



## Quality Control Report

Workorder: L2124761

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4115110</b>							
<b>WG2816048-2</b>	<b>LCS</b>							
Boron (B)-Dissolved			99.7		%		80-120	06-JUL-18
Cadmium (Cd)-Dissolved			98.9		%		80-120	06-JUL-18
Chromium (Cr)-Dissolved			99.2		%		80-120	06-JUL-18
Cobalt (Co)-Dissolved			99.1		%		80-120	06-JUL-18
Copper (Cu)-Dissolved			99.3		%		80-120	06-JUL-18
Lead (Pb)-Dissolved			101.8		%		80-120	06-JUL-18
Molybdenum (Mo)-Dissolved			104.7		%		80-120	06-JUL-18
Nickel (Ni)-Dissolved			99.5		%		80-120	06-JUL-18
Selenium (Se)-Dissolved			99.95		%		80-120	06-JUL-18
Silver (Ag)-Dissolved			98.8		%		80-120	06-JUL-18
Sodium (Na)-Dissolved			98.4		%		80-120	06-JUL-18
Thallium (Tl)-Dissolved			100.3		%		80-120	06-JUL-18
Uranium (U)-Dissolved			98.0		%		80-120	06-JUL-18
Vanadium (V)-Dissolved			101.9		%		80-120	06-JUL-18
Zinc (Zn)-Dissolved			94.9		%		80-120	06-JUL-18
<b>WG2816048-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	06-JUL-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	06-JUL-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	06-JUL-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	06-JUL-18
Boron (B)-Dissolved			<10		ug/L		10	06-JUL-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	06-JUL-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	06-JUL-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	06-JUL-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	06-JUL-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	06-JUL-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	06-JUL-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	06-JUL-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	06-JUL-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	06-JUL-18
Sodium (Na)-Dissolved			<50		ug/L		50	06-JUL-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	06-JUL-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	06-JUL-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	06-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4115110</b>							
<b>WG2816048-1 MB</b>								
Zinc (Zn)-Dissolved			<1.0		ug/L		1	06-JUL-18
<b>WG2816048-5 MS</b>		<b>WG2816048-3</b>						
Antimony (Sb)-Dissolved			96.9		%		70-130	06-JUL-18
Arsenic (As)-Dissolved			104.0		%		70-130	06-JUL-18
Barium (Ba)-Dissolved			97.7		%		70-130	06-JUL-18
Beryllium (Be)-Dissolved			104.6		%		70-130	06-JUL-18
Boron (B)-Dissolved			95.3		%		70-130	06-JUL-18
Cadmium (Cd)-Dissolved			103.4		%		70-130	06-JUL-18
Chromium (Cr)-Dissolved			98.0		%		70-130	06-JUL-18
Cobalt (Co)-Dissolved			97.5		%		70-130	06-JUL-18
Copper (Cu)-Dissolved			99.0		%		70-130	06-JUL-18
Lead (Pb)-Dissolved			101.3		%		70-130	06-JUL-18
Molybdenum (Mo)-Dissolved			101.0		%		70-130	06-JUL-18
Nickel (Ni)-Dissolved			98.7		%		70-130	06-JUL-18
Selenium (Se)-Dissolved			112.3		%		70-130	06-JUL-18
Silver (Ag)-Dissolved			98.0		%		70-130	06-JUL-18
Sodium (Na)-Dissolved			94.4		%		70-130	06-JUL-18
Thallium (Tl)-Dissolved			99.3		%		70-130	06-JUL-18
Uranium (U)-Dissolved			102.1		%		70-130	06-JUL-18
Vanadium (V)-Dissolved			100.7		%		70-130	06-JUL-18
Zinc (Zn)-Dissolved			99.1		%		70-130	06-JUL-18
<b>PEST-OC-511-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4119688</b>							
<b>WG2815925-2 LCS</b>								
Aldrin			83.7		%		50-140	10-JUL-18
a-chlordane			102.2		%		50-140	10-JUL-18
g-chlordane			110.5		%		50-140	10-JUL-18
o,p-DDD			109.5		%		50-140	10-JUL-18
pp-DDD			104.7		%		50-140	10-JUL-18
o,p-DDE			104.1		%		50-140	10-JUL-18
pp-DDE			107.6		%		50-140	10-JUL-18
op-DDT			127.6		%		50-140	10-JUL-18
pp-DDT			124.1		%		50-140	10-JUL-18
Dieldrin			116.6		%		50-140	10-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PEST-OC-511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4119688</b>							
<b>WG2815925-2</b>	<b>LCS</b>							
Endosulfan I			114.3		%		50-140	10-JUL-18
Endosulfan II			108.6		%		50-140	10-JUL-18
Endrin			141.6	LCS-H	%		50-140	10-JUL-18
gamma-hexachlorocyclohexane			94.7		%		50-140	10-JUL-18
Heptachlor			83.5		%		50-140	10-JUL-18
Heptachlor Epoxide			115.8		%		50-140	10-JUL-18
Hexachlorobenzene			59.8		%		40-130	10-JUL-18
Hexachlorobutadiene			26.5	RRQC	%		40-130	10-JUL-18
Hexachloroethane			35.0	RRQC	%		40-130	10-JUL-18
Methoxychlor			152.5	LCS-H	%		50-140	10-JUL-18
COMMENTS: RRQC: Analyte recovery in LCS/LCS-Duplicate was below ALS DQO. Detection limits have been raised. Associated samples have been qualified.								
<b>WG2815925-3</b>	<b>LCS</b>							
<b>WG2815925-2</b>								
Aldrin		83.7	88.6		%	5.7	50	10-JUL-18
a-chlordane		102.2	95.6		%	6.7	50	10-JUL-18
g-chlordane		110.5	102.2		%	7.7	50	10-JUL-18
o,p-DDD		109.5	97.4		%	12	50	10-JUL-18
pp-DDD		104.7	94.0		%	11	50	10-JUL-18
o,p-DDE		104.1	94.9		%	9.3	50	10-JUL-18
pp-DDE		107.6	94.9		%	12	50	10-JUL-18
op-DDT		127.6	118.1		%	7.8	50	10-JUL-18
pp-DDT		124.1	116.3		%	6.5	50	10-JUL-18
Dieldrin		116.6	106.3		%	9.2	50	10-JUL-18
Endosulfan I		114.3	103.8		%	9.6	50	10-JUL-18
Endosulfan II		108.6	102.6		%	5.7	50	10-JUL-18
Endrin		141.6	128.5		%	9.7	50	10-JUL-18
gamma-hexachlorocyclohexane		94.7	93.5		%	1.3	50	10-JUL-18
Heptachlor		83.5	94.4		%	12	50	10-JUL-18
Heptachlor Epoxide		115.8	105.2		%	9.6	50	10-JUL-18
Hexachlorobenzene		59.8	74.8		%	22	50	10-JUL-18
Hexachlorobutadiene		26.5	45.4	RRQC	%	53	50	10-JUL-18
Hexachloroethane		35.0	53.1	RRQC	%	41	50	10-JUL-18
Methoxychlor		152.5	140.5		%	8.2	50	10-JUL-18
COMMENTS: RRQC: Analyte recovery in LCS/LCS-Duplicate was below ALS DQO. Detection limits have been raised. Associated samples								



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PEST-OC-511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4119688</b>							
<b>WG2815925-1</b>	<b>MB</b>							
Aldrin			<0.010		ug/L		0.01	10-JUL-18
a-chlordane			<0.040		ug/L		0.04	10-JUL-18
g-chlordane			<0.040		ug/L		0.04	10-JUL-18
o,p-DDD			<0.030		ug/L		0.03	10-JUL-18
pp-DDD			<0.030		ug/L		0.03	10-JUL-18
o,p-DDE			<0.0080		ug/L		0.008	10-JUL-18
pp-DDE			<0.0080		ug/L		0.008	10-JUL-18
op-DDT			<0.030		ug/L		0.03	10-JUL-18
pp-DDT			<0.030		ug/L		0.03	10-JUL-18
Dieldrin			<0.050		ug/L		0.05	10-JUL-18
Endosulfan I			<0.030		ug/L		0.03	10-JUL-18
Endosulfan II			<0.030		ug/L		0.03	10-JUL-18
Endrin			<0.040		ug/L		0.04	10-JUL-18
gamma-hexachlorocyclohexane			<0.010		ug/L		0.01	10-JUL-18
Heptachlor			<0.010		ug/L		0.01	10-JUL-18
Heptachlor Epoxide			<0.010		ug/L		0.01	10-JUL-18
Hexachlorobenzene			<0.010		ug/L		0.01	10-JUL-18
Hexachlorobutadiene			<0.010		ug/L		0.01	10-JUL-18
Hexachloroethane			<0.010		ug/L		0.01	10-JUL-18
Methoxychlor			<0.050		ug/L		0.05	10-JUL-18
Surrogate: 2-Fluorobiphenyl			81.4		%		50-140	10-JUL-18
Surrogate: d14-Terphenyl			93.5		%		60-140	10-JUL-18
<b>PH-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4114791</b>							
<b>WG2815438-16</b>	<b>DUP</b>	<b>WG2815438-15</b>						
pH		7.23	7.25	J	pH units	0.01	0.2	06-JUL-18
<b>WG2815438-14</b>	<b>LCS</b>							
pH			7.00		pH units		6.9-7.1	06-JUL-18
<b>VOC-511-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4122268</b>							
<b>WG2817024-4</b>	<b>DUP</b>	<b>WG2817024-3</b>						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
1,1,1-Trichloroethane		14.6	13.4		ug/L	8.6	30	11-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4122268</b>							
<b>WG2817024-4</b>	<b>DUP</b>	<b>WG2817024-3</b>						
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
1,1-Dichloroethane		207	195		ug/L	6.0	30	11-JUL-18
1,1-Dichloroethylene		3.17	2.92		ug/L	8.2	30	11-JUL-18
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	11-JUL-18
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
Acetone		6500	5900		ug/L	9.8	30	12-JUL-18
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	11-JUL-18
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	11-JUL-18
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	11-JUL-18
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	11-JUL-18
cis-1,2-Dichloroethylene		<1.5	<1.5	RPD-NA	ug/L	N/A	30	11-JUL-18
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	11-JUL-18
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	11-JUL-18
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	11-JUL-18
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
m+p-Xylenes		0.56	0.60		ug/L	6.9	30	11-JUL-18
Methyl Ethyl Ketone		245	263		ug/L	7.0	30	11-JUL-18
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	11-JUL-18
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	11-JUL-18
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	11-JUL-18
o-Xylene		0.88	0.95		ug/L	7.7	30	11-JUL-18
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
trans-1,2-Dichloroethylene		<0.50	<0.50		ug/L			11-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4122268</b>							
<b>WG2817024-4</b>	<b>DUP</b>	<b>WG2817024-3</b>						
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	11-JUL-18
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	11-JUL-18
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	11-JUL-18
Vinyl chloride		0.73	0.70		ug/L	4.2	30	11-JUL-18
<b>WG2817024-1</b>	<b>LCS</b>							
1,1,1,2-Tetrachloroethane			103.5		%		70-130	11-JUL-18
1,1,2,2-Tetrachloroethane			103.8		%		70-130	11-JUL-18
1,1,1-Trichloroethane			108.2		%		70-130	11-JUL-18
1,1,2-Trichloroethane			111.9		%		70-130	11-JUL-18
1,1-Dichloroethane			98.3		%		70-130	11-JUL-18
1,1-Dichloroethylene			108.8		%		70-130	11-JUL-18
1,2-Dibromoethane			105.9		%		70-130	11-JUL-18
1,2-Dichlorobenzene			107.9		%		70-130	11-JUL-18
1,2-Dichloroethane			113.2		%		70-130	11-JUL-18
1,2-Dichloropropane			119.2		%		70-130	11-JUL-18
1,3-Dichlorobenzene			107.5		%		70-130	11-JUL-18
1,4-Dichlorobenzene			108.4		%		70-130	11-JUL-18
Acetone			118.9		%		60-140	11-JUL-18
Benzene			117.5		%		70-130	11-JUL-18
Bromodichloromethane			106.0		%		70-130	11-JUL-18
Bromoform			90.5		%		70-130	11-JUL-18
Bromomethane			110.6		%		60-140	11-JUL-18
Carbon tetrachloride			103.2		%		70-130	11-JUL-18
Chlorobenzene			109.8		%		70-130	11-JUL-18
Chloroform			112.7		%		70-130	11-JUL-18
cis-1,2-Dichloroethylene			110.2		%		70-130	11-JUL-18
cis-1,3-Dichloropropene			112.1		%		70-130	11-JUL-18
Dibromochloromethane			102.5		%		70-130	11-JUL-18
Dichlorodifluoromethane			99.8		%		50-140	11-JUL-18
Ethylbenzene			112.0		%		70-130	11-JUL-18
n-Hexane			135.5	MES	%		70-130	11-JUL-18
m+p-Xylenes			113.3		%		70-130	11-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4122268</b>							
<b>WG2817024-1</b>	<b>LCS</b>							
Methyl Ethyl Ketone			105.7		%		60-140	11-JUL-18
Methyl Isobutyl Ketone			100.4		%		60-140	11-JUL-18
Methylene Chloride			111.1		%		70-130	11-JUL-18
MTBE			110.2		%		70-130	11-JUL-18
o-Xylene			110.4		%		70-130	11-JUL-18
Styrene			105.2		%		70-130	11-JUL-18
Tetrachloroethylene			103.4		%		70-130	11-JUL-18
Toluene			114.3		%		70-130	11-JUL-18
trans-1,2-Dichloroethylene			121.4		%		70-130	11-JUL-18
trans-1,3-Dichloropropene			111.8		%		70-130	11-JUL-18
Trichloroethylene			106.1		%		70-130	11-JUL-18
Trichlorofluoromethane			113.2		%		60-140	11-JUL-18
Vinyl chloride			117.9		%		60-140	11-JUL-18
<b>WG2817024-2</b>	<b>MB</b>							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	11-JUL-18
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	11-JUL-18
1,1,1-Trichloroethane			<0.50		ug/L		0.5	11-JUL-18
1,1,2-Trichloroethane			<0.50		ug/L		0.5	11-JUL-18
1,1-Dichloroethane			<0.50		ug/L		0.5	11-JUL-18
1,1-Dichloroethylene			<0.50		ug/L		0.5	11-JUL-18
1,2-Dibromoethane			<0.20		ug/L		0.2	11-JUL-18
1,2-Dichlorobenzene			<0.50		ug/L		0.5	11-JUL-18
1,2-Dichloroethane			<0.50		ug/L		0.5	11-JUL-18
1,2-Dichloropropane			<0.50		ug/L		0.5	11-JUL-18
1,3-Dichlorobenzene			<0.50		ug/L		0.5	11-JUL-18
1,4-Dichlorobenzene			<0.50		ug/L		0.5	11-JUL-18
Acetone			<30		ug/L		30	11-JUL-18
Benzene			<0.50		ug/L		0.5	11-JUL-18
Bromodichloromethane			<2.0		ug/L		2	11-JUL-18
Bromoform			<5.0		ug/L		5	11-JUL-18
Bromomethane			<0.50		ug/L		0.5	11-JUL-18
Carbon tetrachloride			<0.20		ug/L		0.2	11-JUL-18
Chlorobenzene			<0.50		ug/L		0.5	11-JUL-18
Chloroform			<1.0		ug/L		1	11-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4122268</b>							
<b>WG2817024-2 MB</b>								
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	11-JUL-18
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	11-JUL-18
Dibromochloromethane			<2.0		ug/L		2	11-JUL-18
Dichlorodifluoromethane			<2.0		ug/L		2	11-JUL-18
Ethylbenzene			<0.50		ug/L		0.5	11-JUL-18
n-Hexane			<0.50		ug/L		0.5	11-JUL-18
m+p-Xylenes			<0.40		ug/L		0.4	11-JUL-18
Methyl Ethyl Ketone			<20		ug/L		20	11-JUL-18
Methyl Isobutyl Ketone			<20		ug/L		20	11-JUL-18
Methylene Chloride			<5.0		ug/L		5	11-JUL-18
MTBE			<2.0		ug/L		2	11-JUL-18
o-Xylene			<0.30		ug/L		0.3	11-JUL-18
Styrene			<0.50		ug/L		0.5	11-JUL-18
Tetrachloroethylene			<0.50		ug/L		0.5	11-JUL-18
Toluene			<0.50		ug/L		0.5	11-JUL-18
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	11-JUL-18
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	11-JUL-18
Trichloroethylene			<0.50		ug/L		0.5	11-JUL-18
Trichlorofluoromethane			<5.0		ug/L		5	11-JUL-18
Vinyl chloride			<0.50		ug/L		0.5	11-JUL-18
Surrogate: 1,4-Difluorobenzene			96.7		%		70-130	11-JUL-18
Surrogate: 4-Bromofluorobenzene			88.0		%		70-130	11-JUL-18
<b>WG2817024-5 MS</b>		<b>WG2817024-3</b>						
1,1,1,2-Tetrachloroethane			105.7		%		50-140	11-JUL-18
1,1,1,2-Tetrachloroethane			104.1		%		50-140	11-JUL-18
1,1,1-Trichloroethane			105.9		%		50-140	11-JUL-18
1,1,2-Trichloroethane			114.2		%		50-140	11-JUL-18
1,1-Dichloroethane			N/A	MS-B	%		-	11-JUL-18
1,1-Dichloroethylene			105.0		%		50-140	11-JUL-18
1,2-Dibromoethane			107.4		%		50-140	11-JUL-18
1,2-Dichlorobenzene			108.1		%		50-140	11-JUL-18
1,2-Dichloroethane			114.7		%		50-140	11-JUL-18
1,2-Dichloropropane			120.6		%		50-140	11-JUL-18
1,3-Dichlorobenzene			106.8		%		50-140	11-JUL-18



## Quality Control Report

Workorder: L2124761

Report Date: 12-JUL-18

Page 12 of 13

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-511-HS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4122268</b>							
<b>WG2817024-5 MS</b>		<b>WG2817024-3</b>						
1,4-Dichlorobenzene			106.9		%		50-140	11-JUL-18
Acetone			N/A	MS-B	%		-	11-JUL-18
Benzene			117.7		%		50-140	11-JUL-18
Bromodichloromethane			108.2		%		50-140	11-JUL-18
Bromoform			92.3		%		50-140	11-JUL-18
Bromomethane			106.9		%		50-140	11-JUL-18
Carbon tetrachloride			102.1		%		50-140	11-JUL-18
Chlorobenzene			110.4		%		50-140	11-JUL-18
Chloroform			113.8		%		50-140	11-JUL-18
cis-1,2-Dichloroethylene			110.0		%		50-140	11-JUL-18
cis-1,3-Dichloropropene			110.7		%		50-140	11-JUL-18
Dibromochloromethane			104.2		%		50-140	11-JUL-18
Dichlorodifluoromethane			91.3		%		50-140	11-JUL-18
Ethylbenzene			112.5		%		50-140	11-JUL-18
n-Hexane			128.3		%		50-140	11-JUL-18
m+p-Xylenes			112.9		%		50-140	11-JUL-18
Methyl Ethyl Ketone			N/A	MS-B	%		-	11-JUL-18
Methyl Isobutyl Ketone			103.2		%		50-140	11-JUL-18
Methylene Chloride			110.8		%		50-140	11-JUL-18
MTBE			109.4		%		50-140	11-JUL-18
o-Xylene			111.5		%		50-140	11-JUL-18
Styrene			104.3		%		50-140	11-JUL-18
Tetrachloroethylene			100.5		%		50-140	11-JUL-18
Toluene			115.0		%		50-140	11-JUL-18
trans-1,2-Dichloroethylene			117.9		%		50-140	11-JUL-18
trans-1,3-Dichloropropene			110.8		%		50-140	11-JUL-18
Trichloroethylene			104.9		%		50-140	11-JUL-18
Trichlorofluoromethane			108.6		%		50-140	11-JUL-18
Vinyl chloride			111.8		%		50-140	11-JUL-18

# Quality Control Report

Workorder: L2124761

Report Date: 12-JUL-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Page 13 of 13

Contact: Rick Fioravanti

## Legend:

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

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

---

## 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.

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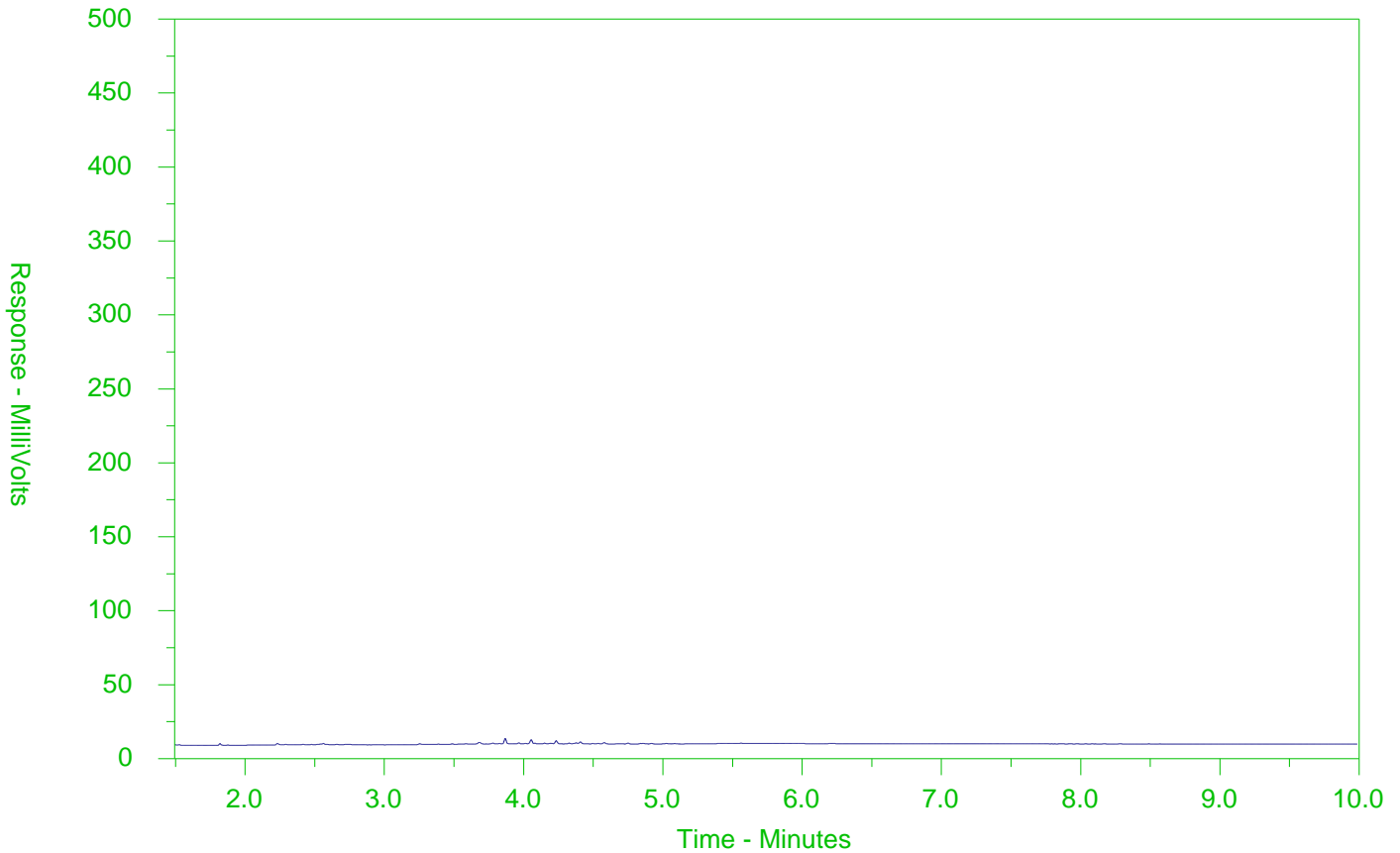
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L2124761-1  
 Client Sample ID: MW18-1S



← 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.

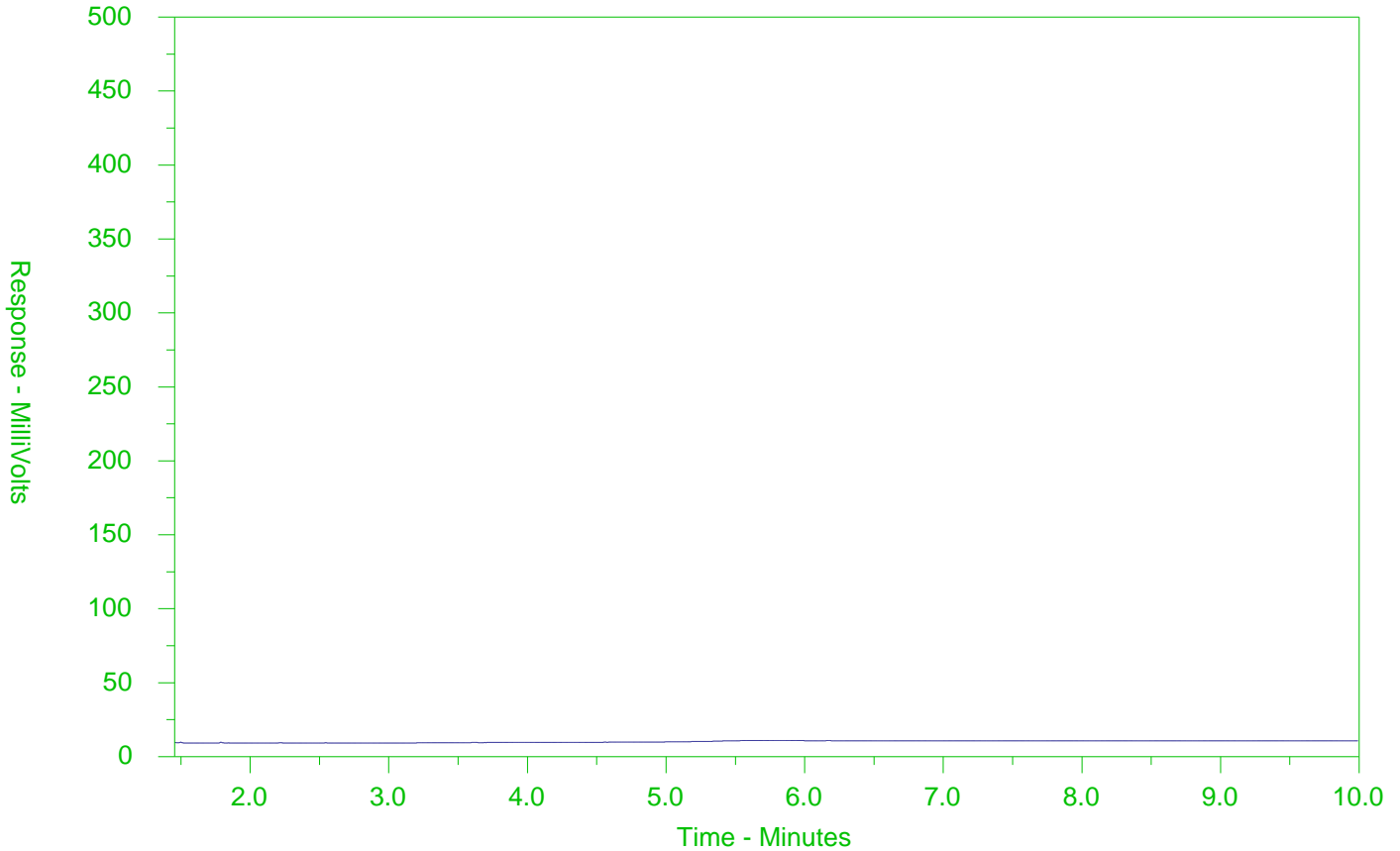
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2124761-5  
 Client Sample ID: MW15A-7



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

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

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

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

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



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		TATS with your AM - surcharges will apply																																																																																	
Company: <u>D.S. Condon/Hall Ltd.</u>		Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular [R] <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																																																	
Contact: <u>Rich Fioravanti</u>		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		4 day [P4] <input type="checkbox"/> 1 Business day [E1] <input type="checkbox"/>																																																																																	
Phone: <u>(905)-280-9299</u>		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		3 day [P3] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E0] <input type="checkbox"/>																																																																																	
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2] <input type="checkbox"/>																																																																																	
Street: <u>6271 Hwy 7, Unit 16</u>		Email 1 or Fax: <u>Rich.Fioravanti@dsconhall.ca</u>		Date and Time Required for all E&P TATS: _____ 00:00:00-yy mm min																																																																																	
City/Province: <u>Vaughan, ON</u>		Email 2: <u>Sean.Ellison@dsconhall.ca</u>		For tests that can not be performed according to the service level selected, you will be contacted.																																																																																	
Postal Code: <u>7</u>		Email 3: _____		<b>Analysis Request</b>																																																																																	
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Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<table border="1" style="width:100%; height:100%; border-collapse: collapse;"> <tr> <td colspan="7">Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below</td> <td rowspan="10" style="writing-mode: vertical-rl; text-orientation: mixed;">Number of Containers</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below							Number of Containers																																																																								
Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below							Number of Containers																																																																														
Company:		Email 1 or Fax:		<u>M+I</u> <u>PHCS</u> <u>VOCs</u> <u>OCP</u>																																																																																	
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<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																																																																																			
ALS Account # / Quote #:		A/E/Cost Center: _____ PO# _____																																																																																			
Job #: <u>18-549-40</u>		Major/Minor Code: _____ Routing Code: _____																																																																																			
PO / AFE:		Requisitioner: _____																																																																																			
LSD:		Location: _____																																																																																			
ALS Lab Work-Order # (lab use only) <u>L2124761</u>		ALS Contact: _____ Sampler: _____																																																																																			
ALS Sample # (lab use only)		Sample Identification and/or Coordinates (This description will appear on the report)				Date (dd-mm-yy)		Time (hh:mm)		Sample Type																																																																											
		<u>MW18-15</u>				<u>5-24-18</u>		<u>PM</u>		<u>GW</u>																																																																											
		<u>MW18-1d</u>		↓		↓		↓																																																																													
		<u>MW18-3A</u>		↓		↓		↓																																																																													
		<u>MW18-5d</u>		↓		↓		↓																																																																													
		<u>MW18A-7</u>		↓		↓		↓																																																																													
<b>Drinking Water (DW) Samples (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																																																																															
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<u>O.Reg 153/04 Table 8</u>				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																															
Are samples for human drinking water use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO						Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																															
						Cooling Initiated <input type="checkbox"/>		INITIAL COOLER TEMPERATURES °C																																																																													
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<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																																																																															
Released by: <u>Sean Ellison</u> Date: <u>July 5/2018</u> Time: <u>8:50pm</u>		Received by: <u>[Signature]</u> Date: <u>July 5/18</u> Time: <u>1:50</u>				Received by: <u>[Signature]</u> Date: <u>July 5</u> Time: <u>17:45</u>																																																																															

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2016 REVISED

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.



DS Consultants (Vaughan)  
ATTN: Rick Fioravanti  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 27-JUL-18  
Report Date: 31-JUL-18 11:05 (MT)  
Version: FINAL

Client Phone: 905-264-9393

## Certificate of Analysis

**Lab Work Order #:** L2137342  
**Project P.O. #:** NOT SUBMITTED  
**Job Reference:** 18-549-40  
**C of C Numbers:**  
**Legal Site Desc:**

Amanda Fazekas  
Account Manager

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

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## Summary of Guideline Exceedances

Guideline		Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID	Client ID					
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T8-Ground Water - All Types of Property Use</b>						
L2137342-1	MW18-2D	Anions and Nutrients	Chloride (Cl)	1050	790	mg/L
		Dissolved Metals	Sodium (Na)-Dissolved	630000	490000	ug/L
L2137342-2	MW18-4S	Anions and Nutrients	Chloride (Cl)	3960	790	mg/L
		Dissolved Metals	Sodium (Na)-Dissolved	1800000	490000	ug/L
L2137342-3	MW18-3D	Anions and Nutrients	Chloride (Cl)	8670	790	mg/L
		Dissolved Metals	Antimony (Sb)-Dissolved	<10	6	ug/L
			Beryllium (Be)-Dissolved	<10	4	ug/L
			Cobalt (Co)-Dissolved	<10	3.8	ug/L
			Silver (Ag)-Dissolved	<5.0	1.2	ug/L
			Sodium (Na)-Dissolved	3430000	490000	ug/L
			Vanadium (V)-Dissolved	<50	6.2	ug/L
L2137342-4	MW18-4D	Anions and Nutrients	Chloride (Cl)	2380	790	mg/L
		Dissolved Metals	Sodium (Na)-Dissolved	1320000	490000	ug/L
L2137342-5	MW18-3S	Anions and Nutrients	Chloride (Cl)	922	790	mg/L
		Dissolved Metals	Sodium (Na)-Dissolved	642000	490000	ug/L

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

# ANALYTICAL REPORT

## Anions and Nutrients - WATER

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	
		#1	#2	L2137342-1	26-JUL-18	MW18-2D	L2137342-2	26-JUL-18	MW18-4S	L2137342-3	26-JUL-18	MW18-3D	L2137342-4	26-JUL-18	MW18-4D	L2137342-5
Chloride (Cl)	mg/L	790	-	1050 <sup>DLDS</sup>	3960 <sup>DLDS</sup>	8670 <sup>DLDS</sup>	2380 <sup>DLDS</sup>	922 <sup>DLDS</sup>								

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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



## ANALYTICAL REPORT

## Dissolved Metals - WATER

Analyte	Unit	Guide Limits		L2137342-1		L2137342-2		L2137342-3		L2137342-4		L2137342-5	
		#1	#2	Sample Date	Sample ID	Sample Date	Sample ID	Sample Date	Sample ID	Sample Date	Sample ID	Sample Date	Sample ID
Dissolved Metals Filtration Location	-	-	-	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
Antimony (Sb)-Dissolved	ug/L	6	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Arsenic (As)-Dissolved	ug/L	25	-	5.6 <sup>DLHC</sup>	1.0 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	1.3 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Barium (Ba)-Dissolved	ug/L	1000	-	12.6 <sup>DLHC</sup>	16.0 <sup>DLHC</sup>	74 <sup>DLHC</sup>	37.8 <sup>DLHC</sup>	37.8 <sup>DLHC</sup>	37.8 <sup>DLHC</sup>	37.8 <sup>DLHC</sup>	37.8 <sup>DLHC</sup>	39.9 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Beryllium (Be)-Dissolved	ug/L	4	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Boron (B)-Dissolved	ug/L	5000	-	2810 <sup>DLHC</sup>	3010 <sup>DLHC</sup>	4500 <sup>DLHC</sup>	2610 <sup>DLHC</sup>	2610 <sup>DLHC</sup>	2610 <sup>DLHC</sup>	2610 <sup>DLHC</sup>	2610 <sup>DLHC</sup>	2090 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Cadmium (Cd)-Dissolved	ug/L	2.1	-	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	0.088 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Chromium (Cr)-Dissolved	ug/L	50	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<50 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Cobalt (Co)-Dissolved	ug/L	3.8	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	2.1 <sup>DLHC</sup>	2.1 <sup>DLHC</sup>	2.1 <sup>DLHC</sup>	2.1 <sup>DLHC</sup>	2.1 <sup>DLHC</sup>	1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Copper (Cu)-Dissolved	ug/L	69	-	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<20 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Lead (Pb)-Dissolved	ug/L	10	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Molybdenum (Mo)-Dissolved	ug/L	70	-	6.81 <sup>DLHC</sup>	11.2 <sup>DLHC</sup>	10.8 <sup>DLHC</sup>	13.1 <sup>DLHC</sup>	13.1 <sup>DLHC</sup>	13.1 <sup>DLHC</sup>	13.1 <sup>DLHC</sup>	13.1 <sup>DLHC</sup>	7.41 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Nickel (Ni)-Dissolved	ug/L	100	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<50 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Selenium (Se)-Dissolved	ug/L	10	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Silver (Ag)-Dissolved	ug/L	1.2	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Sodium (Na)-Dissolved	ug/L	490000	-	630000 <sup>DLHC</sup>	1800000 <sup>DLHC</sup>	3430000 <sup>DLHC</sup>	1320000 <sup>DLHC</sup>	1320000 <sup>DLHC</sup>	1320000 <sup>DLHC</sup>	1320000 <sup>DLHC</sup>	1320000 <sup>DLHC</sup>	642000 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Thallium (Tl)-Dissolved	ug/L	2	-	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Uranium (U)-Dissolved	ug/L	20	-	0.48 <sup>DLHC</sup>	0.23 <sup>DLHC</sup>	1.2 <sup>DLHC</sup>	3.02 <sup>DLHC</sup>	3.02 <sup>DLHC</sup>	3.02 <sup>DLHC</sup>	3.02 <sup>DLHC</sup>	3.02 <sup>DLHC</sup>	10.8 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Vanadium (V)-Dissolved	ug/L	6.2	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<50 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Zinc (Zn)-Dissolved	ug/L	890	-	<10 <sup>DLHC</sup>	10 <sup>DLHC</sup>	<100 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	11 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>

## Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

# Reference Information

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

## Methods Listed (if applicable):

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

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

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

**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).

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

## Chain of Custody Numbers:

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

Laboratory Definition Code	Laboratory Location
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: L2137342

Report Date: 31-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4147348</b>							
<b>WG2835224-14</b>	<b>DUP</b>	<b>WG2835224-13</b>						
Chloride (Cl)		18.7	18.7		mg/L	0.2	20	28-JUL-18
<b>WG2835224-12</b>	<b>LCS</b>							
Chloride (Cl)			96.4		%		90-110	28-JUL-18
<b>WG2835224-11</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-JUL-18
<b>WG2835224-15</b>	<b>MS</b>	<b>WG2835224-13</b>						
Chloride (Cl)			96.8		%		75-125	28-JUL-18
<b>MET-D-UG/L-MS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4148088</b>							
<b>WG2835807-4</b>	<b>DUP</b>	<b>WG2835807-3</b>						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Barium (Ba)-Dissolved		15.9	16.1		ug/L	1.3	20	30-JUL-18
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Boron (B)-Dissolved		<100	<100	RPD-NA	ug/L	N/A	20	30-JUL-18
Cadmium (Cd)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	30-JUL-18
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Cobalt (Co)-Dissolved		3.5	3.5		ug/L	0.3	20	30-JUL-18
Copper (Cu)-Dissolved		<2.0	<2.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	30-JUL-18
Molybdenum (Mo)-Dissolved		0.89	0.94		ug/L	5.7	20	30-JUL-18
Nickel (Ni)-Dissolved		7.2	6.9		ug/L	4.2	20	30-JUL-18
Selenium (Se)-Dissolved		1.16	1.24		ug/L	7.0	20	30-JUL-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	30-JUL-18
Sodium (Na)-Dissolved		7710	7680		ug/L	0.4	20	30-JUL-18
Thallium (Tl)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	30-JUL-18
Uranium (U)-Dissolved		1.14	1.14		ug/L	0.1	20	30-JUL-18
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Zinc (Zn)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	30-JUL-18
<b>WG2836480-4</b>	<b>DUP</b>	<b>WG2836480-3</b>						
Antimony (Sb)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	30-JUL-18
Arsenic (As)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	30-JUL-18
Barium (Ba)-Dissolved		74	76		ug/L	3.3	20	30-JUL-18
Beryllium (Be)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	30-JUL-18



## Quality Control Report

Workorder: L2137342

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4148088</b>							
<b>WG2836480-4</b>	<b>DUP</b>	<b>WG2836480-3</b>						
Boron (B)-Dissolved		4500	4700		ug/L	3.6	20	30-JUL-18
Cadmium (Cd)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	30-JUL-18
Chromium (Cr)-Dissolved		<50	<50	RPD-NA	ug/L	N/A	20	30-JUL-18
Cobalt (Co)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	30-JUL-18
Copper (Cu)-Dissolved		<20	<20	RPD-NA	ug/L	N/A	20	30-JUL-18
Lead (Pb)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Molybdenum (Mo)-Dissolved		10.8	10.2		ug/L	6.1	20	30-JUL-18
Nickel (Ni)-Dissolved		<50	<50	RPD-NA	ug/L	N/A	20	30-JUL-18
Selenium (Se)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Silver (Ag)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Sodium (Na)-Dissolved		3430000	3540000		ug/L	3.1	20	30-JUL-18
Thallium (Tl)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	30-JUL-18
Uranium (U)-Dissolved		1.2	1.0		ug/L	16	20	30-JUL-18
Vanadium (V)-Dissolved		<50	<50	RPD-NA	ug/L	N/A	20	30-JUL-18
Zinc (Zn)-Dissolved		<100	<100	RPD-NA	ug/L	N/A	20	30-JUL-18
<b>WG2835807-2</b>	<b>LCS</b>							
Antimony (Sb)-Dissolved			98.9		%		80-120	30-JUL-18
Arsenic (As)-Dissolved			103.8		%		80-120	30-JUL-18
Barium (Ba)-Dissolved			104.6		%		80-120	30-JUL-18
Beryllium (Be)-Dissolved			101.1		%		80-120	30-JUL-18
Boron (B)-Dissolved			97.0		%		80-120	30-JUL-18
Cadmium (Cd)-Dissolved			99.7		%		80-120	30-JUL-18
Chromium (Cr)-Dissolved			99.8		%		80-120	30-JUL-18
Cobalt (Co)-Dissolved			100.9		%		80-120	30-JUL-18
Copper (Cu)-Dissolved			101.5		%		80-120	30-JUL-18
Lead (Pb)-Dissolved			101.3		%		80-120	30-JUL-18
Molybdenum (Mo)-Dissolved			100.2		%		80-120	30-JUL-18
Nickel (Ni)-Dissolved			101.7		%		80-120	30-JUL-18
Selenium (Se)-Dissolved			98.2		%		80-120	30-JUL-18
Silver (Ag)-Dissolved			104.0		%		80-120	30-JUL-18
Sodium (Na)-Dissolved			101.8		%		80-120	30-JUL-18
Thallium (Tl)-Dissolved			101.8		%		80-120	30-JUL-18
Uranium (U)-Dissolved			102.3		%		80-120	30-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4148088</b>							
<b>WG2835807-2 LCS</b>								
	Vanadium (V)-Dissolved		105.1		%		80-120	30-JUL-18
	Zinc (Zn)-Dissolved		97.7		%		80-120	30-JUL-18
<b>WG2836480-2 LCS</b>								
	Antimony (Sb)-Dissolved		100.3		%		80-120	30-JUL-18
	Arsenic (As)-Dissolved		104.5		%		80-120	30-JUL-18
	Barium (Ba)-Dissolved		107.1		%		80-120	30-JUL-18
	Beryllium (Be)-Dissolved		102.9		%		80-120	30-JUL-18
	Boron (B)-Dissolved		100.0		%		80-120	30-JUL-18
	Cadmium (Cd)-Dissolved		102.3		%		80-120	30-JUL-18
	Chromium (Cr)-Dissolved		99.2		%		80-120	30-JUL-18
	Cobalt (Co)-Dissolved		101.3		%		80-120	30-JUL-18
	Copper (Cu)-Dissolved		101.9		%		80-120	30-JUL-18
	Lead (Pb)-Dissolved		103.4		%		80-120	30-JUL-18
	Molybdenum (Mo)-Dissolved		102.5		%		80-120	30-JUL-18
	Nickel (Ni)-Dissolved		101.2		%		80-120	30-JUL-18
	Selenium (Se)-Dissolved		98.9		%		80-120	30-JUL-18
	Silver (Ag)-Dissolved		101.4		%		80-120	30-JUL-18
	Sodium (Na)-Dissolved		103.5		%		80-120	30-JUL-18
	Thallium (Tl)-Dissolved		101.2		%		80-120	30-JUL-18
	Uranium (U)-Dissolved		102.8		%		80-120	30-JUL-18
	Vanadium (V)-Dissolved		106.0		%		80-120	30-JUL-18
	Zinc (Zn)-Dissolved		99.1		%		80-120	30-JUL-18
<b>WG2835807-1 MB</b>								
	Antimony (Sb)-Dissolved		<0.10		ug/L		0.1	30-JUL-18
	Arsenic (As)-Dissolved		<0.10		ug/L		0.1	30-JUL-18
	Barium (Ba)-Dissolved		<0.10		ug/L		0.1	30-JUL-18
	Beryllium (Be)-Dissolved		<0.10		ug/L		0.1	30-JUL-18
	Boron (B)-Dissolved		<10		ug/L		10	30-JUL-18
	Cadmium (Cd)-Dissolved		<0.0050		ug/L		0.005	30-JUL-18
	Chromium (Cr)-Dissolved		<0.50		ug/L		0.5	30-JUL-18
	Cobalt (Co)-Dissolved		<0.10		ug/L		0.1	30-JUL-18
	Copper (Cu)-Dissolved		<0.20		ug/L		0.2	30-JUL-18
	Lead (Pb)-Dissolved		<0.050		ug/L		0.05	30-JUL-18
	Molybdenum (Mo)-Dissolved		<0.050		ug/L		0.05	30-JUL-18



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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4148088</b>							
<b>WG2835807-1</b>	<b>MB</b>							
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	30-JUL-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	30-JUL-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	30-JUL-18
Sodium (Na)-Dissolved			<50		ug/L		50	30-JUL-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	30-JUL-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	30-JUL-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	30-JUL-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	30-JUL-18
<b>WG2836480-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	30-JUL-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	30-JUL-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	30-JUL-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	30-JUL-18
Boron (B)-Dissolved			<10		ug/L		10	30-JUL-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	30-JUL-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	30-JUL-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	30-JUL-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	30-JUL-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	30-JUL-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	30-JUL-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	30-JUL-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	30-JUL-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	30-JUL-18
Sodium (Na)-Dissolved			<50		ug/L		50	30-JUL-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	30-JUL-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	30-JUL-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	30-JUL-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	30-JUL-18
<b>WG2835807-5</b>	<b>MS</b>	<b>WG2835807-3</b>						
Antimony (Sb)-Dissolved			93.0		%		70-130	30-JUL-18
Arsenic (As)-Dissolved			99.5		%		70-130	30-JUL-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	30-JUL-18
Beryllium (Be)-Dissolved			95.9		%		70-130	30-JUL-18
Cadmium (Cd)-Dissolved			98.7		%		70-130	30-JUL-18



## Quality Control Report

Workorder: L2137342

Report Date: 31-JUL-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4148088</b>							
<b>WG2835807-5 MS</b>		<b>WG2835807-3</b>						
Chromium (Cr)-Dissolved			96.4		%		70-130	30-JUL-18
Cobalt (Co)-Dissolved			71.2		%		70-130	30-JUL-18
Copper (Cu)-Dissolved			93.8		%		70-130	30-JUL-18
Lead (Pb)-Dissolved			96.1		%		70-130	30-JUL-18
Molybdenum (Mo)-Dissolved			88.4		%		70-130	30-JUL-18
Selenium (Se)-Dissolved			93.7		%		70-130	30-JUL-18
Silver (Ag)-Dissolved			97.5		%		70-130	30-JUL-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	30-JUL-18
Thallium (Tl)-Dissolved			96.6		%		70-130	30-JUL-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	30-JUL-18
Vanadium (V)-Dissolved			100.5		%		70-130	30-JUL-18
Zinc (Zn)-Dissolved			82.8		%		70-130	30-JUL-18
<b>WG2836480-5 MS</b>		<b>WG2836480-6</b>						
Antimony (Sb)-Dissolved			88.4		%		70-130	30-JUL-18
Arsenic (As)-Dissolved			96.2		%		70-130	30-JUL-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	30-JUL-18
Beryllium (Be)-Dissolved			94.4		%		70-130	30-JUL-18
Boron (B)-Dissolved			N/A	MS-B	%		-	30-JUL-18
Cadmium (Cd)-Dissolved			93.0		%		70-130	30-JUL-18
Chromium (Cr)-Dissolved			93.9		%		70-130	30-JUL-18
Cobalt (Co)-Dissolved			85.7		%		70-130	30-JUL-18
Copper (Cu)-Dissolved			81.9		%		70-130	30-JUL-18
Lead (Pb)-Dissolved			94.2		%		70-130	30-JUL-18
Nickel (Ni)-Dissolved			77.2		%		70-130	30-JUL-18
Selenium (Se)-Dissolved			95.0		%		70-130	30-JUL-18
Silver (Ag)-Dissolved			75.6		%		70-130	30-JUL-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	30-JUL-18
Thallium (Tl)-Dissolved			93.9		%		70-130	30-JUL-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	30-JUL-18
Vanadium (V)-Dissolved			99.3		%		70-130	30-JUL-18

# Quality Control Report

Workorder: L2137342

Report Date: 31-JUL-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Page 6 of 6

Contact: Rick Fioravanti

## Legend:

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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:

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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.

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## 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.

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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.






DS Consultants (Vaughan)  
ATTN: RICK FIORAVANTI  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 21-SEP-18  
Report Date: 01-OCT-18 14:16 (MT)  
Version: FINAL

Client Phone: 647-237-5110

## Certificate of Analysis

Lab Work Order #: L2169104  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-40  
C of C Numbers: 17-616291  
Legal Site Desc:



Amanda Fazekas  
Account Manager

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ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2169104-1 BH18-2D2 Sampled By: CLIENT on 19-SEP-18 @ 12:30 Matrix: WATER							
<b>Anions and Nutrients</b>							
Chloride (Cl)	2780	DLHC	10	mg/L		25-SEP-18	R4243635
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	5.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	145	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	1630	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	1.7	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	3.9	DLHC	2.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	19.0	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	0.77	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	941000	DLHC	500	ug/L	24-SEP-18	24-SEP-18	R4238407
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	8.10	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	32	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
L2169104-2 BH18-2D Sampled By: CLIENT on 19-SEP-18 @ 13:30 Matrix: WATER							
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	3.6	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	13.4	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	2760	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	6.75	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	566000	DLHC	500	ug/L	24-SEP-18	24-SEP-18	R4238407

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2169104-2 BH18-2D Sampled By: CLIENT on 19-SEP-18 @ 13:30 Matrix: WATER							
<b>Dissolved Metals</b>							
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	0.85	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	16	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
L2169104-3 BH18-3D2 Sampled By: CLIENT on 19-SEP-18 Matrix: WATER							
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	70	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Beryllium (Be)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	5300	DLHC	1000	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<50	DLHC	50	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	<20	DLHC	20	ug/L	24-SEP-18	24-SEP-18	R4238407
Lead (Pb)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	10.7	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Nickel (Ni)-Dissolved	<50	DLHC	50	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	3320000	DLHC	5000	ug/L	24-SEP-18	24-SEP-18	R4238407
Thallium (Tl)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<50	DLHC	50	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	<100	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
L2169104-4 BH18-3D Sampled By: CLIENT on 19-SEP-18 @ 15:10 Matrix: WATER							
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	2.3	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	193	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	1300	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	24-SEP-18	24-SEP-18	R4238407

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2169104-4 BH18-3D Sampled By: CLIENT on 19-SEP-18 @ 15:10 Matrix: WATER							
<b>Dissolved Metals</b>							
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	19.8	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	0.98	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	982000	DLHC	500	ug/L	24-SEP-18	24-SEP-18	R4238407
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	15.9	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
L2169104-5 BH18-4D2 Sampled By: CLIENT on 19-SEP-18 @ 17:00 Matrix: WATER							
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	296	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Beryllium (Be)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	3800	DLHC	1000	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<50	DLHC	50	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	<20	DLHC	20	ug/L	24-SEP-18	24-SEP-18	R4238407
Lead (Pb)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	31.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Nickel (Ni)-Dissolved	<50	DLHC	50	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	4480000	DLHC	5000	ug/L	24-SEP-18	24-SEP-18	R4238407
Thallium (Tl)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	3.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<50	DLHC	50	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	<100	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
L2169104-6 BH18-4D Sampled By: CLIENT on 19-SEP-18 @ 16:20 Matrix: WATER							
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	3.5	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	20.8	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2169104-6 BH18-4D Sampled By: CLIENT on 19-SEP-18 @ 16:20 Matrix: WATER							
<b>Dissolved Metals</b>							
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	2660	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	10.5	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	1420000	DLHC	5000	ug/L	24-SEP-18	24-SEP-18	R4238407
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	0.50	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
L2169104-7 BH18-6 Sampled By: CLIENT on 19-SEP-18 @ 11:30 Matrix: WATER							
<b>Anions and Nutrients</b>							
Chloride (Cl)	3920	DLHC	10	mg/L		25-SEP-18	R4243635
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	4.2	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	46.7	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	3690	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	3.3	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	18.4	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	0.81	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	1770000	DLHC	5000	ug/L	24-SEP-18	24-SEP-18	R4238407
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	9.33	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2169104-7 BH18-6 Sampled By: CLIENT on 19-SEP-18 @ 11:30 Matrix: WATER							
<b>Dissolved Metals</b>							
L2169104-8 BH15A-7 Sampled By: CLIENT on 19-SEP-18 @ 17:30 Matrix: WATER							
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	2.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	24.3	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	4190	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	3.4	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	17.3	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	955000	DLHC	500	ug/L	24-SEP-18	24-SEP-18	R4238407
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	5.37	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407
L2169104-9 QAQC1 Sampled By: CLIENT on 19-SEP-18 Matrix: WATER							
<b>Anions and Nutrients</b>							
Chloride (Cl)	2320	DLHC	10	mg/L		25-SEP-18	R4243635
<b>Dissolved Metals</b>							
Dissolved Metals Filtration Location	FIELD					24-SEP-18	R4236447
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Arsenic (As)-Dissolved	2.6	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Barium (Ba)-Dissolved	186	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Boron (B)-Dissolved	1260	DLHC	100	ug/L	24-SEP-18	24-SEP-18	R4238407
Cadmium (Cd)-Dissolved	<0.050	DLHC	0.050	ug/L	24-SEP-18	24-SEP-18	R4238407
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Cobalt (Co)-Dissolved	<1.0	DLHC	1.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Copper (Cu)-Dissolved	3.8	DLHC	2.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Molybdenum (Mo)-Dissolved	20.4	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2169104-9 QAQC1 Sampled By: CLIENT on 19-SEP-18 Matrix: WATER							
<b>Dissolved Metals</b>							
Nickel (Ni)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Selenium (Se)-Dissolved	1.10	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	24-SEP-18	24-SEP-18	R4238407
Sodium (Na)-Dissolved	1100000	DLHC	5000	ug/L	24-SEP-18	24-SEP-18	R4238407
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Uranium (U)-Dissolved	17.1	DLHC	0.10	ug/L	24-SEP-18	24-SEP-18	R4238407
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	24-SEP-18	24-SEP-18	R4238407
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	24-SEP-18	24-SEP-18	R4238407

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

## Reference Information

**QC Samples with Qualifiers & Comments:**

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2169104-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2169104-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2169104-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L2169104-1, -2, -3, -4, -5, -6, -7, -8, -9

**Sample Parameter Qualifier key listed:**

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-WT	Water	Chloride by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	EPA 300.1 (mod)
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8
The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			

\*\* 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:**

17-616291

**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

Workorder: L2169104

Report Date: 01-OCT-18

Page 1 of 4

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: RICK FIORAVANTI

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4243635</b>							
<b>WG2886436-15</b>	<b>DUP</b>	<b>L2168615-3</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	25-SEP-18
<b>WG2886436-20</b>	<b>DUP</b>	<b>L2169118-1</b>						
Chloride (Cl)		3.83	3.83		mg/L	0.1	20	25-SEP-18
<b>WG2886436-12</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	25-SEP-18
<b>WG2886436-17</b>	<b>LCS</b>							
Chloride (Cl)			102.0		%		90-110	25-SEP-18
<b>WG2886436-11</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	25-SEP-18
<b>WG2886436-16</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	25-SEP-18
<b>WG2886436-14</b>	<b>MS</b>	<b>L2168615-3</b>						
Chloride (Cl)			104.4		%		75-125	25-SEP-18
<b>WG2886436-19</b>	<b>MS</b>	<b>L2169118-1</b>						
Chloride (Cl)			102.9		%		75-125	25-SEP-18
<b>MET-D-UG/L-MS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4238407</b>							
<b>WG2885106-4</b>	<b>DUP</b>	<b>WG2885106-3</b>						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	24-SEP-18
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	24-SEP-18
Barium (Ba)-Dissolved		123	120		ug/L	2.7	20	24-SEP-18
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	24-SEP-18
Boron (B)-Dissolved		<100	<100	RPD-NA	ug/L	N/A	20	24-SEP-18
Cadmium (Cd)-Dissolved		0.120	0.121		ug/L	0.7	20	24-SEP-18
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	24-SEP-18
Cobalt (Co)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	24-SEP-18
Copper (Cu)-Dissolved		2.7	2.4		ug/L	10	20	24-SEP-18
Lead (Pb)-Dissolved		2.95	2.95		ug/L	0.1	20	24-SEP-18
Molybdenum (Mo)-Dissolved		2.30	2.32		ug/L	0.9	20	24-SEP-18
Nickel (Ni)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	24-SEP-18
Selenium (Se)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	24-SEP-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	24-SEP-18
Sodium (Na)-Dissolved		54100	53700		ug/L	0.7	20	24-SEP-18
Thallium (Tl)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	24-SEP-18
Uranium (U)-Dissolved		1.71	1.73		ug/L	1.2	20	24-SEP-18



## Quality Control Report

Workorder: L2169104

Report Date: 01-OCT-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: RICK FIORAVANTI

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4238407</b>							
<b>WG2885106-4</b>	<b>DUP</b>	<b>WG2885106-3</b>						
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	24-SEP-18
Zinc (Zn)-Dissolved		68	66		ug/L	2.1	20	24-SEP-18
<b>WG2885106-2</b>	<b>LCS</b>							
Antimony (Sb)-Dissolved			95.7		%		80-120	24-SEP-18
Arsenic (As)-Dissolved			92.7		%		80-120	24-SEP-18
Barium (Ba)-Dissolved			92.9		%		80-120	24-SEP-18
Beryllium (Be)-Dissolved			92.7		%		80-120	24-SEP-18
Boron (B)-Dissolved			89.5		%		80-120	24-SEP-18
Cadmium (Cd)-Dissolved			93.6		%		80-120	24-SEP-18
Chromium (Cr)-Dissolved			90.6		%		80-120	24-SEP-18
Cobalt (Co)-Dissolved			92.4		%		80-120	24-SEP-18
Copper (Cu)-Dissolved			91.5		%		80-120	24-SEP-18
Lead (Pb)-Dissolved			94.3		%		80-120	24-SEP-18
Molybdenum (Mo)-Dissolved			93.6		%		80-120	24-SEP-18
Nickel (Ni)-Dissolved			92.5		%		80-120	24-SEP-18
Selenium (Se)-Dissolved			95.3		%		80-120	24-SEP-18
Silver (Ag)-Dissolved			94.7		%		80-120	24-SEP-18
Sodium (Na)-Dissolved			91.1		%		80-120	24-SEP-18
Thallium (Tl)-Dissolved			99.6		%		80-120	24-SEP-18
Uranium (U)-Dissolved			97.4		%		80-120	24-SEP-18
Vanadium (V)-Dissolved			93.1		%		80-120	24-SEP-18
Zinc (Zn)-Dissolved			89.8		%		80-120	24-SEP-18
<b>WG2885106-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	24-SEP-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	24-SEP-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	24-SEP-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	24-SEP-18
Boron (B)-Dissolved			<10		ug/L		10	24-SEP-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	24-SEP-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	24-SEP-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	24-SEP-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	24-SEP-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	24-SEP-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	24-SEP-18



## Quality Control Report

Workorder: L2169104

Report Date: 01-OCT-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: RICK FIORAVANTI

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4238407</b>							
<b>WG2885106-1 MB</b>								
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	24-SEP-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	24-SEP-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	24-SEP-18
Sodium (Na)-Dissolved			<50		ug/L		50	24-SEP-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	24-SEP-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	24-SEP-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	24-SEP-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	24-SEP-18
<b>WG2885106-5 MS</b>		<b>WG2885106-6</b>						
Antimony (Sb)-Dissolved			86.6		%		70-130	24-SEP-18
Arsenic (As)-Dissolved			89.1		%		70-130	24-SEP-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	24-SEP-18
Beryllium (Be)-Dissolved			93.0		%		70-130	24-SEP-18
Cadmium (Cd)-Dissolved			90.0		%		70-130	24-SEP-18
Molybdenum (Mo)-Dissolved			79.3		%		70-130	24-SEP-18
Selenium (Se)-Dissolved			93.6		%		70-130	24-SEP-18
Silver (Ag)-Dissolved			94.8		%		70-130	24-SEP-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	24-SEP-18
Thallium (Tl)-Dissolved			93.5		%		70-130	24-SEP-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	24-SEP-18
Zinc (Zn)-Dissolved			N/A	MS-B	%		-	24-SEP-18

# Quality Control Report

Workorder: L2169104

Report Date: 01-OCT-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Page 4 of 4

Contact: RICK FIORAVANTI

## Legend:

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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:

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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.

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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.






DS Consultants (Vaughan)  
ATTN: Rick Fiorvanti  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 30-AUG-18  
Report Date: 07-SEP-18 14:18 (MT)  
Version: FINAL

Client Phone: 647-237-5110

## Certificate of Analysis

Lab Work Order #: L2156519  
Project P.O. #: NOT SUBMITTED  
Job Reference: 16-549-40  
C of C Numbers: 17-615272  
Legal Site Desc:



Amanda Fazekas  
Account Manager

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ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2156519-1 BH15A-7 Sampled By: TONNER on 29-AUG-18 @ 10:30 Matrix: WATER <b>Anions and Nutrients</b> Chloride (Cl)	1640	DLHC	10	mg/L		04-SEP-18	R4202690
L2156519-2 BH18-2D Sampled By: TONNER on 29-AUG-18 @ 16:30 Matrix: WATER <b>Anions and Nutrients</b> Chloride (Cl)	1090	DLHC	10	mg/L		04-SEP-18	R4202690
L2156519-3 BH18-3D Sampled By: TONNER on 29-AUG-18 @ 15:00 Matrix: WATER <b>Anions and Nutrients</b> Chloride (Cl)	9150	DLHC	50	mg/L		04-SEP-18	R4202690
L2156519-4 BH18-3D2 Sampled By: TONNER on 29-AUG-18 @ 15:30 Matrix: WATER <b>Anions and Nutrients</b> Chloride (Cl)	133		0.50	mg/L		04-SEP-18	R4202690
L2156519-5 BH18-4D Sampled By: TONNER on 29-AUG-18 @ 12:30 Matrix: WATER <b>Anions and Nutrients</b> Chloride (Cl)	2720	DLHC	10	mg/L		04-SEP-18	R4202690
L2156519-6 BH18-4D2 Sampled By: TONNER on 29-AUG-18 @ 13:30 Matrix: WATER <b>Anions and Nutrients</b> Chloride (Cl)	12800	DLHC	50	mg/L		04-SEP-18	R4202690

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

## Reference Information

**QC Samples with Qualifiers & Comments:**

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Chloride (Cl)	MS-B	L2156519-1, -2, -3, -4, -5, -6

**Sample Parameter Qualifier key listed:**

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			

\*\* 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:**

17-615272

**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

Workorder: L2156519

Report Date: 07-SEP-18

Page 1 of 2

Client: DS Consultants (Vaughan)  
 6221 Highway 7 Unit 16  
 Vaughan ON L4H 0K8

Contact: Rick Fiorvanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4202690</b>							
<b>WG2867730-14</b>	<b>DUP</b>	<b>L2156444-3</b>						
Chloride (Cl)		103	103		mg/L	0.1	20	04-SEP-18
<b>WG2867730-12</b>	<b>LCS</b>							
Chloride (Cl)			101.5		%		90-110	04-SEP-18
<b>WG2867730-11</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	04-SEP-18
<b>WG2867730-15</b>	<b>MS</b>	<b>L2156444-3</b>						
Chloride (Cl)			N/A	MS-B	%		-	04-SEP-18

# Quality Control Report

Workorder: L2156519

Report Date: 07-SEP-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Page 2 of 2

Contact: Rick Fiorvanti

## Legend:

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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:

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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.

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## 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.

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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

Canada Toll Free: 1 800 688 9878



L2156519-COFC

COC Number: 17 - 615272

Page of

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>												
Company: DS Consultants		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply												
Contact: Rick Fioravanti		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>		3 day [P3-25%] <input type="checkbox"/>		2 day [P2-50%] <input type="checkbox"/>		1 Business day [E-100%] <input type="checkbox"/>				Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply) <input type="checkbox"/>		
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			Date and Time Required for all E&P TATs: dd-mm-yy hh:mm												
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			For tests that can not be performed according to the service level selected, you will be contacted.												
Street: 2901 Hwy 7, Unit 12		Email 1 or Fax: rick.fioravanti@dsconsultants.ca			<b>Analysis Request</b>												
City/Province: Vaughan ON		Email 2: tonner.leanhardt@dsconsultants.ca			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below												
Postal Code: L4H 0K8		Email 3:			SAMPLES ON HOLD												
Invoice To: Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>			Sample is hazardous (please provide further details)												
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			NUMBER OF CONTAINERS												
Company:		Email 1 or Fax: jennifer.montreese@dsconsultants.ca															
Contact:		Email 2:															
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>															
ALS Account # / Quote #:		AFE/Cost Center:			PO#												
Job #: 16-547-40		Major/Minor Code:			Routing Code:												
PO / AFE:		Requisitioner:															
LSD:		Location:															
ALS Lab Work Order # (lab use only): L2156519 31A		ALS Contact:			Sampler: Towner												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Metals	Na	Cl										
1	BH15A-7	27-08-18	10:30	Water	X	X	X										
2	BH 18-2D		4:30			X	X										
3	BH 18-3D		3:00		X	X	X										
4	BH 18-3DQ		3:30			X	X										
5	BH 18-4D		10:30			X	X										
6	BH 18-4D2		1:30			X	X										
<b>Drinking Water (DW) Samples (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO					Frozen <input type="checkbox"/>					SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>							
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO					Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/>					Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>							
					Cooling Initiated <input type="checkbox"/>					INITIAL COOLER TEMPERATURES °C							
										FINAL COOLER TEMPERATURES °C							
					1.7					2.7							
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>												
Released by: Towner Leanhardt		Received by: BF			Date: Aug 30, 2018					Date: Aug 30, 2018							
Time: 2:24		Time: 14:25			Time: 6:00												

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

AUG 2018




DS Consultants (Vaughan)  
ATTN: Rick Fioravanti  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 18-OCT-18  
Report Date: 25-OCT-18 06:31 (MT)  
Version: FINAL

Client Phone: 905-264-9393

## Certificate of Analysis

Lab Work Order #: L2183471  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-40  
C of C Numbers: 17-615053  
Legal Site Desc:



Amanda Fazekas  
Account Manager

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

ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## Summary of Guideline Exceedances

Guideline		Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID							
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T8-Ground Water - All Types of Property Use</b>							
L2183471-1		BH15 A-7	Dissolved Metals	Sodium (Na)-Dissolved	1060000	490000	ug/L
L2183471-2		QAQC	Dissolved Metals	Sodium (Na)-Dissolved	1090000	490000	ug/L

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

## Dissolved Metals - WATER

Analyte	Unit	Guide Limits		FIELD	
		#1	#2		
Dissolved Metals Filtration Location	-	-	-	FIELD	FIELD
Antimony (Sb)-Dissolved	ug/L	6	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Arsenic (As)-Dissolved	ug/L	25	-	1.6 <sup>DLHC</sup>	1.9 <sup>DLHC</sup>
Barium (Ba)-Dissolved	ug/L	1000	-	25.0 <sup>DLHC</sup>	24.9 <sup>DLHC</sup>
Beryllium (Be)-Dissolved	ug/L	4	-	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>
Boron (B)-Dissolved	ug/L	5000	-	4440 <sup>DLHC</sup>	4290 <sup>DLHC</sup>
Cadmium (Cd)-Dissolved	ug/L	2.1	-	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>
Chromium (Cr)-Dissolved	ug/L	50	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
Cobalt (Co)-Dissolved	ug/L	3.8	-	3.4 <sup>DLHC</sup>	3.7 <sup>DLHC</sup>
Copper (Cu)-Dissolved	ug/L	69	-	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>
Lead (Pb)-Dissolved	ug/L	10	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Molybdenum (Mo)-Dissolved	ug/L	70	-	16.7 <sup>DLHC</sup>	18.2 <sup>DLHC</sup>
Nickel (Ni)-Dissolved	ug/L	100	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
Selenium (Se)-Dissolved	ug/L	10	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Silver (Ag)-Dissolved	ug/L	1.2	-	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
Sodium (Na)-Dissolved	ug/L	490000	-	1060000 <sup>DLHC</sup>	1090000 <sup>DLHC</sup>
Thallium (Tl)-Dissolved	ug/L	2	-	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>
Uranium (U)-Dissolved	ug/L	20	-	5.56 <sup>DLHC</sup>	5.46 <sup>DLHC</sup>
Vanadium (V)-Dissolved	ug/L	6.2	-	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
Zinc (Zn)-Dissolved	ug/L	890	-	15 <sup>DLHC</sup>	<10 <sup>DLHC</sup>

### Guide Limit #1: T8-Ground Water - All Types of Property Use

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

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

# Reference Information

## Qualifiers for Individual Parameters Listed:

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

## Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
<b>MET-D-UG/L-MS-WT</b>	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).

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

## Chain of Custody Numbers:

17-615053

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

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

## GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

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



## Quality Control Report

Workorder: L2183471

Report Date: 25-OCT-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4289213</b>							
<b>WG2908021-4</b>	<b>DUP</b>	<b>WG2908021-3</b>						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-OCT-18
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-OCT-18
Barium (Ba)-Dissolved		180	179		ug/L	0.7	20	19-OCT-18
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	19-OCT-18
Boron (B)-Dissolved		280	280		ug/L	0.0	20	19-OCT-18
Cadmium (Cd)-Dissolved		0.109	0.112		ug/L	2.2	20	19-OCT-18
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-OCT-18
Cobalt (Co)-Dissolved		20.1	20.4		ug/L	1.6	20	19-OCT-18
Copper (Cu)-Dissolved		3.1	3.1		ug/L	1.3	20	19-OCT-18
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	19-OCT-18
Molybdenum (Mo)-Dissolved		3.82	3.79		ug/L	1.0	20	19-OCT-18
Nickel (Ni)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-OCT-18
Selenium (Se)-Dissolved		1.96	1.97		ug/L	0.8	20	19-OCT-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	19-OCT-18
Sodium (Na)-Dissolved		1350000	1320000		ug/L	1.8	20	19-OCT-18
Thallium (Tl)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	19-OCT-18
Uranium (U)-Dissolved		2.26	2.32		ug/L	2.7	20	19-OCT-18
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	19-OCT-18
Zinc (Zn)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	19-OCT-18
<b>WG2908021-2</b>	<b>LCS</b>							
Antimony (Sb)-Dissolved			99.5		%		80-120	19-OCT-18
Arsenic (As)-Dissolved			96.2		%		80-120	19-OCT-18
Barium (Ba)-Dissolved			97.7		%		80-120	19-OCT-18
Beryllium (Be)-Dissolved			103.9		%		80-120	19-OCT-18
Boron (B)-Dissolved			99.8		%		80-120	19-OCT-18
Cadmium (Cd)-Dissolved			96.6		%		80-120	19-OCT-18
Chromium (Cr)-Dissolved			97.6		%		80-120	19-OCT-18
Cobalt (Co)-Dissolved			98.6		%		80-120	19-OCT-18
Copper (Cu)-Dissolved			98.0		%		80-120	19-OCT-18
Lead (Pb)-Dissolved			96.9		%		80-120	19-OCT-18
Molybdenum (Mo)-Dissolved			94.1		%		80-120	19-OCT-18
Nickel (Ni)-Dissolved			98.2		%		80-120	19-OCT-18
Selenium (Se)-Dissolved			98.1		%		80-120	19-OCT-18



## Quality Control Report

Workorder: L2183471

Report Date: 25-OCT-18

Page 2 of 4

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4289213</b>							
<b>WG2908021-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			98.4		%		80-120	19-OCT-18
Sodium (Na)-Dissolved			101.8		%		80-120	19-OCT-18
Thallium (Tl)-Dissolved			93.4		%		80-120	19-OCT-18
Uranium (U)-Dissolved			98.6		%		80-120	19-OCT-18
Vanadium (V)-Dissolved			99.3		%		80-120	19-OCT-18
Zinc (Zn)-Dissolved			91.4		%		80-120	19-OCT-18
<b>WG2908021-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	19-OCT-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	19-OCT-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	19-OCT-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	19-OCT-18
Boron (B)-Dissolved			<10		ug/L		10	19-OCT-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	19-OCT-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	19-OCT-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	19-OCT-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	19-OCT-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	19-OCT-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	19-OCT-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	19-OCT-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	19-OCT-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	19-OCT-18
Sodium (Na)-Dissolved			<50		ug/L		50	19-OCT-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	19-OCT-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	19-OCT-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	19-OCT-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	19-OCT-18
<b>WG2908021-5</b>	<b>MS</b>	<b>WG2908021-6</b>						
Antimony (Sb)-Dissolved			91.3		%		70-130	19-OCT-18
Arsenic (As)-Dissolved			94.2		%		70-130	19-OCT-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	19-OCT-18
Beryllium (Be)-Dissolved			98.1		%		70-130	19-OCT-18
Boron (B)-Dissolved			N/A	MS-B	%		-	19-OCT-18
Cadmium (Cd)-Dissolved			93.1		%		70-130	19-OCT-18
Chromium (Cr)-Dissolved			83.1		%		70-130	19-OCT-18



## Quality Control Report

Workorder: L2183471

Report Date: 25-OCT-18

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Client: DS Consultants (Vaughan)  
 6221 Highway 7 Unit 16  
 Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4289213</b>							
<b>WG2908021-5 MS</b>		<b>WG2908021-6</b>						
Cobalt (Co)-Dissolved			93.3		%		70-130	19-OCT-18
Lead (Pb)-Dissolved			87.6		%		70-130	19-OCT-18
Molybdenum (Mo)-Dissolved			81.6		%		70-130	19-OCT-18
Nickel (Ni)-Dissolved			90.8		%		70-130	19-OCT-18
Selenium (Se)-Dissolved			93.6		%		70-130	19-OCT-18
Silver (Ag)-Dissolved			89.5		%		70-130	19-OCT-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	19-OCT-18
Thallium (Tl)-Dissolved			89.3		%		70-130	19-OCT-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	19-OCT-18
Vanadium (V)-Dissolved			95.9		%		70-130	19-OCT-18

# Quality Control Report

Workorder: L2183471

Report Date: 25-OCT-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Page 4 of 4

Contact: Rick Fioravanti

## Legend:

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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:

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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.

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## 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.

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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.





DS Consultants (Vaughan)  
ATTN: Martin Gedeon  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 29-MAR-18  
Report Date: 03-APR-18 07:04 (MT)  
Version: FINAL REV. 2

Client Phone: 416-264-9393

## Certificate of Analysis

Lab Work Order #: L2073904  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-20  
C of C Numbers: 17-630053  
Legal Site Desc:

Comments: 03-APR-18 Report type revision to compare to Table 2 and Table 3 as per client request. -  
A.Fazekas

Amanda Fazekas  
Account Manager

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

ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927  
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## Summary of Guideline Exceedances

Guideline		Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID							
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T2-Ground Water (Coarse Soil)-All Types of Property Use</b>							
L2073904-1		15A-5	Anions and Nutrients	Chloride (Cl)	1390	790	mg/L
			Dissolved Metals	Sodium (Na)-Dissolved	878000	490000	ug/L
L2073904-2		15A-6	Anions and Nutrients	Chloride (Cl)	1160	790	mg/L
			Dissolved Metals	Sodium (Na)-Dissolved	597000	490000	ug/L
L2073904-3		15A-7	Anions and Nutrients	Chloride (Cl)	1440	790	mg/L
			Dissolved Metals	Cobalt (Co)-Dissolved	3.9	3.8	ug/L
				Sodium (Na)-Dissolved	1020000	490000	ug/L
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)</b>							
(No parameter exceedances)							

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

## Physical Tests - WATER

	Lab ID				
		L2073904-1	L2073904-2	L2073904-3	
	Sample Date	29-MAR-18	29-MAR-18	29-MAR-18	
	Sample ID	15A-5	15A-6	15A-7	
Guide Limits					
Analyte	Unit	#1	#2		
Conductivity	mS/cm	-	-	6.38	5.87    6.81
pH	pH units	-	-	7.50	7.58    7.41

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

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

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

Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

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

## Anions and Nutrients - WATER

Analyte	Unit	Guide Limits				
		#1		#2		
		790	2300	1390 <sup>DLHC</sup>	1160 <sup>DLHC</sup>	1440 <sup>DLHC</sup>
Chloride (Cl)	mg/L			1390 <sup>DLHC</sup>	1160 <sup>DLHC</sup>	1440 <sup>DLHC</sup>

**Guide Limit #1: T2-Ground Water (Coarse Soil)-All Types of Property Use**  
**Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**

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

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

## Cyanides - WATER

Lab ID	L2073904-1	L2073904-2	L2073904-3
Sample Date	29-MAR-18	29-MAR-18	29-MAR-18
Sample ID	15A-5	15A-6	15A-7

Analyte	Unit	Guide Limits		
		#1	#2	
Cyanide, Weak Acid Diss	ug/L	66	66	<2.0
				<2.0
				<2.0

**Guide Limit #1: T2-Ground Water (Coarse Soil)-All Types of Property Use**  
**Guide Limit #2: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse)**

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

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

## Dissolved Metals - WATER

Analyte	Unit	Guide Limits		Lab ID	L2073904-1	L2073904-2	L2073904-3
		#1	#2	Sample Date	29-MAR-18	29-MAR-18	29-MAR-18
				Sample ID	15A-5	15A-6	15A-7
Dissolved Mercury Filtration Location	-	-		FIELD	FIELD	FIELD	
Dissolved Metals Filtration Location	-	-		FIELD	FIELD	FIELD	
Antimony (Sb)-Dissolved	ug/L	6	20000	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	
Arsenic (As)-Dissolved	ug/L	25	1900	4.3 <sup>DLHC</sup>	<1.0 <sup>DLHC</sup>	1.4 <sup>DLHC</sup>	
Barium (Ba)-Dissolved	ug/L	1000	29000	13.9 <sup>DLHC</sup>	37.8 <sup>DLHC</sup>	32.8 <sup>DLHC</sup>	
Beryllium (Be)-Dissolved	ug/L	4	67	<0.5 <sup>DLMDL</sup>	<0.5 <sup>DLMDL</sup>	<0.5 <sup>DLMDL</sup>	
Boron (B)-Dissolved	ug/L	5000	45000	2580 <sup>DLHC</sup>	1560 <sup>DLHC</sup>	4250 <sup>DLHC</sup>	
Cadmium (Cd)-Dissolved	ug/L	2.7	2.7	<0.050 <sup>DLHC</sup>	0.083 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	
Chromium (Cr)-Dissolved	ug/L	50	810	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	
Cobalt (Co)-Dissolved	ug/L	3.8	66	<1.0 <sup>DLHC</sup>	2.7 <sup>DLHC</sup>	3.9 <sup>DLHC</sup>	
Copper (Cu)-Dissolved	ug/L	87	87	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	<2.0 <sup>DLHC</sup>	
Lead (Pb)-Dissolved	ug/L	10	25	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	
Mercury (Hg)-Dissolved	ug/L	0.29	0.29	<0.010	<0.010	<0.010	
Molybdenum (Mo)-Dissolved	ug/L	70	9200	0.58 <sup>DLHC</sup>	11.0 <sup>DLHC</sup>	19.0 <sup>DLHC</sup>	
Nickel (Ni)-Dissolved	ug/L	100	490	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	
Selenium (Se)-Dissolved	ug/L	10	63	9.92 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	
Silver (Ag)-Dissolved	ug/L	1.5	1.5	<0.30 <sup>DLMDL</sup>	<0.30 <sup>DLMDL</sup>	<0.30 <sup>DLMDL</sup>	
Sodium (Na)-Dissolved	ug/L	490000	2300000	878000 <sup>DLHC</sup>	597000 <sup>DLHC</sup>	1020000 <sup>DLHC</sup>	
Thallium (Tl)-Dissolved	ug/L	2	510	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	
Uranium (U)-Dissolved	ug/L	20	420	0.85 <sup>DLHC</sup>	10.7 <sup>DLHC</sup>	6.34 <sup>DLHC</sup>	
Vanadium (V)-Dissolved	ug/L	6.2	250	<3.9 <sup>DLMDL</sup>	<3.9 <sup>DLMDL</sup>	<3.9 <sup>DLMDL</sup>	
Zinc (Zn)-Dissolved	ug/L	1100	1100	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	<10 <sup>DLHC</sup>	

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

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

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

  Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

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

## Speciated Metals - WATER

			Lab ID	L2073904-1	L2073904-2	L2073904-3
			Sample Date	29-MAR-18	29-MAR-18	29-MAR-18
			Sample ID	15A-5	15A-6	15A-7
Analyte	Unit	Guide Limits				
		#1	#2			
Chromium, Hexavalent	ug/L	25	140	<1.0	<1.0	<1.0

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

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

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

Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

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

# Reference Information

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLMDL	Reported detection limit is at or near the Method Detection Limit (MDL). Measurement uncertainty is high at this level.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

## Methods Listed (if applicable):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-WT** Water pH APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

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

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

# Reference Information

Chain of Custody Numbers:

17-630053

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

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

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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



## Quality Control Report

Workorder: L2073904

Report Date: 03-APR-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Martin Gedeon

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4002148</b>							
<b>WG2743122-4</b>	<b>DUP</b>	<b>WG2743122-3</b>						
Chloride (Cl)		36.6	36.6		mg/L	0.1	20	31-MAR-18
<b>WG2743122-2</b>	<b>LCS</b>							
Chloride (Cl)			100.4		%		90-110	31-MAR-18
<b>WG2743122-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	31-MAR-18
<b>WG2743122-5</b>	<b>MS</b>	<b>WG2743122-3</b>						
Chloride (Cl)			100.0		%		75-125	31-MAR-18
<b>CN-WAD-R511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4001627</b>							
<b>WG2743252-3</b>	<b>DUP</b>	<b>L2073904-1</b>						
Cyanide, Weak Acid Diss		<2.0	<2.0	RPD-NA	ug/L	N/A	20	02-APR-18
<b>WG2743252-2</b>	<b>LCS</b>							
Cyanide, Weak Acid Diss			101.3		%		80-120	02-APR-18
<b>WG2743252-1</b>	<b>MB</b>							
Cyanide, Weak Acid Diss			<2.0		ug/L		2	02-APR-18
<b>WG2743252-4</b>	<b>MS</b>	<b>L2073904-1</b>						
Cyanide, Weak Acid Diss			97.6		%		70-130	02-APR-18
<b>CR-CR6-IC-R511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4001588</b>							
<b>WG2743315-3</b>	<b>DUP</b>	<b>L2073904-1</b>						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	02-APR-18
<b>WG2743315-2</b>	<b>LCS</b>							
Chromium, Hexavalent			98.2		%		80-120	02-APR-18
<b>WG2743315-1</b>	<b>MB</b>							
Chromium, Hexavalent			<1.0		ug/L		1	02-APR-18
<b>WG2743315-4</b>	<b>MS</b>	<b>L2073904-1</b>						
Chromium, Hexavalent			97.2		%		70-130	02-APR-18
<b>EC-R511-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4001518</b>							
<b>WG2743146-4</b>	<b>DUP</b>	<b>WG2743146-3</b>						
Conductivity		1.70	1.71		mS/cm	0.5	10	02-APR-18
<b>WG2743146-2</b>	<b>LCS</b>							
Conductivity			99.5		%		90-110	02-APR-18
<b>WG2743146-1</b>	<b>MB</b>							
Conductivity			<0.0030		mS/cm		0.003	02-APR-18
<b>HG-D-UG/L-CVAA-WT</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2073904

Report Date: 03-APR-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Martin Gedeon

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-UG/L-CVAA-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4001852</b>							
<b>WG2742654-4</b>	<b>DUP</b>	<b>WG2742654-3</b>						
Mercury (Hg)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	02-APR-18
<b>WG2742654-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			110.0		%		80-120	02-APR-18
<b>WG2742654-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	02-APR-18
<b>WG2742654-6</b>	<b>MS</b>	<b>WG2742654-5</b>						
Mercury (Hg)-Dissolved			99.7		%		70-130	02-APR-18
<b>MET-D-UG/L-MS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R4000430</b>							
<b>WG2742443-4</b>	<b>DUP</b>	<b>WG2742443-3</b>						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	29-MAR-18
Arsenic (As)-Dissolved		4.3	4.2		ug/L	1.2	20	29-MAR-18
Barium (Ba)-Dissolved		13.9	13.2		ug/L	5.3	20	29-MAR-18
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	29-MAR-18
Boron (B)-Dissolved		2580	2600		ug/L	0.6	20	29-MAR-18
Cadmium (Cd)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	29-MAR-18
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	29-MAR-18
Cobalt (Co)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	29-MAR-18
Copper (Cu)-Dissolved		<2.0	<2.0	RPD-NA	ug/L	N/A	20	29-MAR-18
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	29-MAR-18
Molybdenum (Mo)-Dissolved		0.58	0.54		ug/L	7.3	20	29-MAR-18
Nickel (Ni)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	29-MAR-18
Selenium (Se)-Dissolved		9.92	8.64		ug/L	14	20	29-MAR-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	29-MAR-18
Sodium (Na)-Dissolved		878000	854000		ug/L	2.8	20	29-MAR-18
Thallium (Tl)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	29-MAR-18
Uranium (U)-Dissolved		0.85	0.81		ug/L	5.0	20	29-MAR-18
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	29-MAR-18
Zinc (Zn)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	29-MAR-18
<b>WG2742443-2</b>	<b>LCS</b>							
Antimony (Sb)-Dissolved			101.3		%		80-120	29-MAR-18
Arsenic (As)-Dissolved			98.0		%		80-120	29-MAR-18
Barium (Ba)-Dissolved			100.3		%		80-120	29-MAR-18
Beryllium (Be)-Dissolved			100.1		%		80-120	29-MAR-18



## Quality Control Report

Workorder: L2073904

Report Date: 03-APR-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Martin Gedeon

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4000430</b>							
<b>WG2742443-2</b>	<b>LCS</b>							
Boron (B)-Dissolved			97.8		%		80-120	29-MAR-18
Cadmium (Cd)-Dissolved			99.6		%		80-120	29-MAR-18
Chromium (Cr)-Dissolved			99.2		%		80-120	29-MAR-18
Cobalt (Co)-Dissolved			97.7		%		80-120	29-MAR-18
Copper (Cu)-Dissolved			97.1		%		80-120	29-MAR-18
Lead (Pb)-Dissolved			102.5		%		80-120	29-MAR-18
Molybdenum (Mo)-Dissolved			102.6		%		80-120	29-MAR-18
Nickel (Ni)-Dissolved			97.3		%		80-120	29-MAR-18
Selenium (Se)-Dissolved			98.5		%		80-120	29-MAR-18
Silver (Ag)-Dissolved			105.2		%		80-120	29-MAR-18
Sodium (Na)-Dissolved			102.8		%		80-120	29-MAR-18
Thallium (Tl)-Dissolved			102.2		%		80-120	29-MAR-18
Uranium (U)-Dissolved			103.9		%		80-120	29-MAR-18
Vanadium (V)-Dissolved			100.6		%		80-120	29-MAR-18
Zinc (Zn)-Dissolved			89.4		%		80-120	29-MAR-18
<b>WG2742443-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	29-MAR-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	29-MAR-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	29-MAR-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	29-MAR-18
Boron (B)-Dissolved			<10		ug/L		10	29-MAR-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	29-MAR-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	29-MAR-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	29-MAR-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	29-MAR-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	29-MAR-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	29-MAR-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	29-MAR-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	29-MAR-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	29-MAR-18
Sodium (Na)-Dissolved			<500		ug/L		500	29-MAR-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	29-MAR-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	29-MAR-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	29-MAR-18



## Quality Control Report

Workorder: L2073904

Report Date: 03-APR-18

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Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Martin Gedeon

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-UG/L-MS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4000430</b>							
<b>WG2742443-1</b>	<b>MB</b>							
Zinc (Zn)-Dissolved			<1.0		ug/L		1	29-MAR-18
<b>WG2742443-5</b>	<b>MS</b>	<b>WG2742443-6</b>						
Antimony (Sb)-Dissolved			94.1		%		70-130	29-MAR-18
Arsenic (As)-Dissolved			95.2		%		70-130	29-MAR-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	29-MAR-18
Beryllium (Be)-Dissolved			94.0		%		70-130	29-MAR-18
Boron (B)-Dissolved			N/A	MS-B	%		-	29-MAR-18
Cadmium (Cd)-Dissolved			92.0		%		70-130	29-MAR-18
Chromium (Cr)-Dissolved			93.0		%		70-130	29-MAR-18
Cobalt (Co)-Dissolved			73.0		%		70-130	29-MAR-18
Copper (Cu)-Dissolved			77.6		%		70-130	29-MAR-18
Lead (Pb)-Dissolved			91.3		%		70-130	29-MAR-18
Nickel (Ni)-Dissolved			86.8		%		70-130	29-MAR-18
Selenium (Se)-Dissolved			95.1		%		70-130	29-MAR-18
Silver (Ag)-Dissolved			92.9		%		70-130	29-MAR-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	29-MAR-18
Thallium (Tl)-Dissolved			91.9		%		70-130	29-MAR-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	29-MAR-18
Vanadium (V)-Dissolved			98.1		%		70-130	29-MAR-18
Zinc (Zn)-Dissolved			79.2		%		70-130	29-MAR-18
<b>PH-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4001518</b>							
<b>WG2743146-4</b>	<b>DUP</b>	<b>WG2743146-3</b>						
pH		7.71	7.71	J	pH units	0.01	0.2	02-APR-18
<b>WG2743146-2</b>	<b>LCS</b>							
pH			6.98		pH units		6.9-7.1	02-APR-18

# Quality Control Report

Workorder: L2073904

Report Date: 03-APR-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Page 5 of 5

Contact: Martin Gedeon

## Legend:

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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:

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

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## 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.

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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.





Your Project #: 18-549-100  
Site Location: BRESSA  
Your C.O.C. #: 122602

**Attention: Rick Fioravanti**

DS Consultants Limited  
6221 Highway 7, Unit 16  
Vaughan, ON  
CANADA L4H 0K8

**Report Date: 2019/02/26**  
Report #: R5607611  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B946449**  
**Received: 2019/02/21, 14:57**

Sample Matrix: Water  
# Samples Received: 10

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Dissolved Metals by ICPMS	1	N/A	2019/02/22	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS	9	N/A	2019/02/25	CAM SOP-00447	EPA 6020B m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Ashton Gibson, Project Manager  
Email: AGibson@maxxam.ca  
Phone# (905) 817-5700

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**O.REG 153 DISSOLVED ICPMS METALS (WATER)**

Maxxam ID			JAP122	JAP123	JAP124		JAP125		JAP126		
Sampling Date			2019/02/21 09:00	2019/02/21 09:00	2019/02/21 10:00		2019/02/21 10:00		2019/02/21 11:00		
COC Number			122602	122602	122602		122602		122602		
	UNITS	Criteria	MW18-4S	MW18-4D	MW18-3S	RDL	MW18-3D	RDL	MW18-2S	RDL	QC Batch

Metals											
Dissolved Antimony (Sb)	ug/L	6.0	<2.5	<2.5	<2.5	2.5	<2.5	2.5	<0.50	0.50	5985508
Dissolved Arsenic (As)	ug/L	25	<5.0	<5.0	6.6	5.0	<5.0	5.0	19	1.0	5985508
Dissolved Barium (Ba)	ug/L	1000	13	24	25	10	58	10	20	2.0	5985508
Dissolved Beryllium (Be)	ug/L	4.0	<2.5	<2.5	<2.5	2.5	<2.5	2.5	<0.50	0.50	5985508
Dissolved Boron (B)	ug/L	5000	2800	2800	1900	50	4200	50	1200	10	5985508
Dissolved Cadmium (Cd)	ug/L	2.1	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.10	0.10	5985508
Dissolved Chromium (Cr)	ug/L	50	<25	<25	<25	25	<25	25	<5.0	5.0	5985508
Dissolved Cobalt (Co)	ug/L	3.8	<2.5	<2.5	2.8	2.5	<2.5	2.5	1.1	0.50	5985508
Dissolved Copper (Cu)	ug/L	69	<5.0	6.9	<5.0	5.0	5.5	5.0	2.5	1.0	5985508
Dissolved Lead (Pb)	ug/L	10	<2.5	<2.5	<2.5	2.5	<2.5	2.5	<0.50	0.50	5985508
Dissolved Molybdenum (Mo)	ug/L	70	5.6	11	6.2	2.5	11	2.5	4.8	0.50	5985508
Dissolved Nickel (Ni)	ug/L	100	<5.0	<5.0	<5.0	5.0	<5.0	5.0	3.3	1.0	5985508
Dissolved Selenium (Se)	ug/L	10	<10	<10	<10	10	<10	10	<2.0	2.0	5985508
Dissolved Silver (Ag)	ug/L	1.2	<0.50	<0.50	<0.50	0.50	<0.50	0.50	<0.10	0.10	5985508
Dissolved Sodium (Na)	ug/L	490000	<b>1900000</b>	<b>1400000</b>	<b>600000</b>	500	<b>3500000</b>	1000	280000	100	5985508
Dissolved Thallium (Tl)	ug/L	2.0	<0.25	<0.25	<0.25	0.25	<0.25	0.25	<0.050	0.050	5985508
Dissolved Uranium (U)	ug/L	20	<0.50	0.81	9.2	0.50	0.89	0.50	8.3	0.10	5985508
Dissolved Vanadium (V)	ug/L	6.2	<2.5	<2.5	<2.5	2.5	<2.5	2.5	<0.50	0.50	5985508
Dissolved Zinc (Zn)	ug/L	890	<25	<25	<25	25	<25	25	6.1	5.0	5985508

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels
RDL = Reportable Detection Limit	
QC Batch = Quality Control Batch	
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)	
Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition	
Ground Water - All Types of Property Use	

**O.REG 153 DISSOLVED ICPMS METALS (WATER)**

Maxxam ID			JAP127		JAP128		JAP129	JAP129		
Sampling Date			2019/02/21 11:00		2019/02/21 12:00		2019/02/21 12:30	2019/02/21 12:30		
COC Number			122602		122602		122602	122602		
	UNITS	Criteria	MW18-2D	RDL	BH15A-5	RDL	BH15A-7	BH15A-7 Lab-Dup	RDL	QC Batch

<b>Metals</b>										
Dissolved Antimony (Sb)	ug/L	6.0	<0.50	0.50	<2.5	2.5	0.84	<0.50	0.50	5985508
Dissolved Arsenic (As)	ug/L	25	5.5	1.0	5.9	5.0	<1.0	<1.0	1.0	5985508
Dissolved Barium (Ba)	ug/L	1000	13	2.0	<10	10	25	27	2.0	5985508
Dissolved Beryllium (Be)	ug/L	4.0	<0.50	0.50	<2.5	2.5	<0.50	<0.50	0.50	5985508
Dissolved Boron (B)	ug/L	5000	2800	10	3200	50	4400	4000	10	5985508
Dissolved Cadmium (Cd)	ug/L	2.1	<0.10	0.10	<0.50	0.50	<0.10	<0.10	0.10	5985508
Dissolved Chromium (Cr)	ug/L	50	<5.0	5.0	<25	25	<5.0	<5.0	5.0	5985508
Dissolved Cobalt (Co)	ug/L	3.8	<0.50	0.50	<2.5	2.5	0.62	0.60	0.50	5985508
Dissolved Copper (Cu)	ug/L	69	1.8	1.0	<5.0	5.0	4.9	5.0	1.0	5985508
Dissolved Lead (Pb)	ug/L	10	<0.50	0.50	<2.5	2.5	<0.50	<0.50	0.50	5985508
Dissolved Molybdenum (Mo)	ug/L	70	7.2	0.50	8.1	2.5	20	19	0.50	5985508
Dissolved Nickel (Ni)	ug/L	100	<1.0	1.0	<5.0	5.0	3.2	3.3	1.0	5985508
Dissolved Selenium (Se)	ug/L	10	<2.0	2.0	<10	10	<2.0	<2.0	2.0	5985508
Dissolved Silver (Ag)	ug/L	1.2	<0.10	0.10	<0.50	0.50	<0.10	<0.10	0.10	5985508
Dissolved Sodium (Na)	ug/L	490000	<b>660000</b>	500	<b>950000</b>	500	<b>1000000</b>	<b>1100000</b>	500	5985508
Dissolved Thallium (Tl)	ug/L	2.0	<0.050	0.050	<0.25	0.25	<0.050	<0.050	0.050	5985508
Dissolved Uranium (U)	ug/L	20	0.71	0.10	0.65	0.50	5.6	5.8	0.10	5985508
Dissolved Vanadium (V)	ug/L	6.2	<0.50	0.50	<2.5	2.5	<0.50	<0.50	0.50	5985508
Dissolved Zinc (Zn)	ug/L	890	6.4	5.0	<25	25	9.5	9.6	5.0	5985508

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels
RDL = Reportable Detection Limit	
QC Batch = Quality Control Batch	
Lab-Dup = Laboratory Initiated Duplicate	
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)	
Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition	
Ground Water - All Types of Property Use	

**O.REG 153 DISSOLVED ICPMS METALS (WATER)**

Maxxam ID			JAP130		JAP131		
Sampling Date			2019/02/21 13:00		2019/02/21		
COC Number			122602		122602		
	UNITS	Criteria	MW18-5D	RDL	DUP-1	RDL	QC Batch
<b>Metals</b>							
Dissolved Antimony (Sb)	ug/L	6.0	<2.5	2.5	<2.5	2.5	5985508
Dissolved Arsenic (As)	ug/L	25	9.2	5.0	<5.0	5.0	5985508
Dissolved Barium (Ba)	ug/L	1000	52	10	22	10	5985508
Dissolved Beryllium (Be)	ug/L	4.0	<2.5	2.5	<2.5	2.5	5985508
Dissolved Boron (B)	ug/L	5000	4900	50	2500	50	5985508
Dissolved Cadmium (Cd)	ug/L	2.1	<0.50	0.50	<0.50	0.50	5985508
Dissolved Chromium (Cr)	ug/L	50	<25	25	<25	25	5985508
Dissolved Cobalt (Co)	ug/L	3.8	2.7	2.5	<2.5	2.5	5985508
Dissolved Copper (Cu)	ug/L	69	<5.0	5.0	<5.0	5.0	5985508
Dissolved Lead (Pb)	ug/L	10	<2.5	2.5	<2.5	2.5	5985508
Dissolved Molybdenum (Mo)	ug/L	70	19	2.5	9.7	2.5	5985508
Dissolved Nickel (Ni)	ug/L	100	<5.0	5.0	<5.0	5.0	5985508
Dissolved Selenium (Se)	ug/L	10	<10	10	<10	10	5985508
Dissolved Silver (Ag)	ug/L	1.2	<0.50	0.50	<0.50	0.50	5985508
Dissolved Sodium (Na)	ug/L	490000	<b>3400000</b>	1000	<b>1300000</b>	500	5985508
Dissolved Thallium (Tl)	ug/L	2.0	<0.25	0.25	<0.25	0.25	5985508
Dissolved Uranium (U)	ug/L	20	18	0.50	0.77	0.50	5985508
Dissolved Vanadium (V)	ug/L	6.2	<2.5	2.5	<2.5	2.5	5985508
Dissolved Zinc (Zn)	ug/L	890	<25	25	<25	25	5985508
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)							
Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition							
Ground Water - All Types of Property Use							

**TEST SUMMARY**

**Maxxam ID:** JAP122  
**Sample ID:** MW18-4S  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**Maxxam ID:** JAP123  
**Sample ID:** MW18-4D  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**Maxxam ID:** JAP124  
**Sample ID:** MW18-3S  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**Maxxam ID:** JAP125  
**Sample ID:** MW18-3D  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**Maxxam ID:** JAP126  
**Sample ID:** MW18-2S  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/22	Arefa Dabhad

**Maxxam ID:** JAP127  
**Sample ID:** MW18-2D  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**Maxxam ID:** JAP128  
**Sample ID:** BH15A-5  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**TEST SUMMARY**

**Maxxam ID:** JAP129  
**Sample ID:** BH15A-7  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**Maxxam ID:** JAP129 Dup  
**Sample ID:** BH15A-7  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**Maxxam ID:** JAP130  
**Sample ID:** MW18-5D  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

**Maxxam ID:** JAP131  
**Sample ID:** DUP-1  
**Matrix:** Water

**Collected:** 2019/02/21  
**Shipped:**  
**Received:** 2019/02/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	5985508	N/A	2019/02/25	Arefa Dabhad

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C
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Revised Report[2019/02/22]: sample IDs revised.

Sample JAP122 [MW18-4S] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample JAP123 [MW18-4D] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample JAP124 [MW18-3S] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample JAP125 [MW18-3D] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample JAP128 [BH15A-5] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample JAP130 [MW18-5D] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample JAP131 [DUP-1] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5985508	Dissolved Antimony (Sb)	2019/02/25	110	80 - 120	106	80 - 120	<0.50	ug/L	NC	20
5985508	Dissolved Arsenic (As)	2019/02/25	99	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
5985508	Dissolved Barium (Ba)	2019/02/25	104	80 - 120	102	80 - 120	<2.0	ug/L	5.3	20
5985508	Dissolved Beryllium (Be)	2019/02/25	95	80 - 120	104	80 - 120	<0.50	ug/L	NC	20
5985508	Dissolved Boron (B)	2019/02/25	NC	80 - 120	100	80 - 120	<10	ug/L	8.9	20
5985508	Dissolved Cadmium (Cd)	2019/02/25	103	80 - 120	103	80 - 120	<0.10	ug/L	NC	20
5985508	Dissolved Chromium (Cr)	2019/02/25	97	80 - 120	95	80 - 120	<5.0	ug/L	NC	20
5985508	Dissolved Cobalt (Co)	2019/02/25	97	80 - 120	99	80 - 120	<0.50	ug/L	3.6	20
5985508	Dissolved Copper (Cu)	2019/02/25	105	80 - 120	102	80 - 120	<1.0	ug/L	2.2	20
5985508	Dissolved Lead (Pb)	2019/02/25	93	80 - 120	97	80 - 120	<0.50	ug/L	NC	20
5985508	Dissolved Molybdenum (Mo)	2019/02/25	112	80 - 120	104	80 - 120	<0.50	ug/L	1.2	20
5985508	Dissolved Nickel (Ni)	2019/02/25	94	80 - 120	97	80 - 120	<1.0	ug/L	1.5	20
5985508	Dissolved Selenium (Se)	2019/02/25	101	80 - 120	99	80 - 120	<2.0	ug/L	NC	20
5985508	Dissolved Silver (Ag)	2019/02/25	85	80 - 120	97	80 - 120	<0.10	ug/L	NC	20
5985508	Dissolved Sodium (Na)	2019/02/25	NC	80 - 120	96	80 - 120	<100	ug/L	2.1	20
5985508	Dissolved Thallium (Tl)	2019/02/25	96	80 - 120	100	80 - 120	<0.050	ug/L	NC	20
5985508	Dissolved Uranium (U)	2019/02/25	95	80 - 120	97	80 - 120	<0.10	ug/L	3.7	20
5985508	Dissolved Vanadium (V)	2019/02/25	101	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
5985508	Dissolved Zinc (Zn)	2019/02/25	94	80 - 120	100	80 - 120	<5.0	ug/L	1.6	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.



Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

---

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**Exceedence Summary Table – Reg153/04 T8-GW**

**Result Exceedences**

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
MW18-4S	JAP122-01	Dissolved Sodium (Na)	490000	1900000	500	ug/L
MW18-4D	JAP123-01	Dissolved Sodium (Na)	490000	1400000	500	ug/L
MW18-3S	JAP124-01	Dissolved Sodium (Na)	490000	600000	500	ug/L
MW18-3D	JAP125-01	Dissolved Sodium (Na)	490000	3500000	1000	ug/L
MW18-2D	JAP127-01	Dissolved Sodium (Na)	490000	660000	500	ug/L
BH15A-5	JAP128-01	Dissolved Sodium (Na)	490000	950000	500	ug/L
BH15A-7	JAP129-01	Dissolved Sodium (Na)	490000	1000000	500	ug/L
BH15A-7	JAP129-01-Lab Dup	Dissolved Sodium (Na)	490000	1100000	500	ug/L
MW18-5D	JAP130-01	Dissolved Sodium (Na)	490000	3400000	1000	ug/L
DUP-1	JAP131-01	Dissolved Sodium (Na)	490000	1300000	500	ug/L

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.



DS Consultants (Vaughan)  
ATTN: Rick Fioravanti  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 13-AUG-18  
Report Date: 20-AUG-18 11:42 (MT)  
Version: FINAL

Client Phone: 905-264-9393

## Certificate of Analysis

Lab Work Order #: L2145643  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-40  
C of C Numbers: 17-615270, 17-615652, 17-615682, 17-622355  
Legal Site Desc:

Amanda Fazekas  
Account Manager

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

ADDRESS: 95 West Beaver Creek Road, Unit 1, Richmond Hill, ON L4B 1H2 Canada | Phone: +1 905 881 9887 | Fax: +1 905 881 8062  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## Summary of Guideline Exceedances

Guideline		Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID	Client ID					
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use</b>						
L2145643-11	FL3A	Metals	Boron (B), Hot Water Ext.	2.47	1.5	ug/g
		Hydrocarbons	F2 (C10-C16)	20	10	ug/g
L2145643-12	SW3S	Physical Tests	Conductivity	0.759	0.7	mS/cm
		Metals	Boron (B), Hot Water Ext.	2.46	1.5	ug/g
		Hydrocarbons	F2 (C10-C16)	13	10	ug/g
L2145643-13	SW3N	Physical Tests	Conductivity	0.881	0.7	mS/cm
		Metals	Boron (B), Hot Water Ext.	2.41	1.5	ug/g
		Hydrocarbons	F2 (C10-C16)	11	10	ug/g
L2145643-14	SW3E	Physical Tests	Conductivity	0.826	0.7	mS/cm
		Metals	Boron (B), Hot Water Ext.	2.63	1.5	ug/g
		Hydrocarbons	F2 (C10-C16)	15	10	ug/g
L2145643-15	SW3W	Physical Tests	Conductivity	0.764	0.7	mS/cm
		Metals	Boron (B), Hot Water Ext.	2.42	1.5	ug/g
		Hydrocarbons	F2 (C10-C16)	12	10	ug/g
L2145643-32	QAQC3	Metals	Boron (B), Hot Water Ext.	2.53	1.5	ug/g
		Hydrocarbons	F2 (C10-C16)	11	10	ug/g
L2145643-37	FL3B	Physical Tests	Conductivity	0.753	0.7	mS/cm
		Metals	Boron (B), Hot Water Ext.	2.59	1.5	ug/g
		Hydrocarbons	F2 (C10-C16)	13	10	ug/g







## Physical Tests - SOIL

**Lab ID** L2145643-39  
**Sample Date** 09-AUG-18  
**Sample ID** FL5B

**Guide Limits**  
**Unit #1 #2**

Analyte	Unit	#1	#2	
Conductivity	mS/cm	0.7	-	0.321
% Moisture	%	-	-	

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# ANALYTICAL REPORT

## Cyanides - SOIL

Analyte	Unit	Guide Limits									
		#1	#2								
Cyanide, Weak Acid Diss	ug/g	0.051	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

**Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

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



# ANALYTICAL REPORT

## Metals - SOIL

Analyte	Unit	Guide Limits						
		#1	#2					
Boron (B), Hot Water Ext.	ug/g	1.5	-	0.28	2.53	0.39	2.59	0.55

**Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

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

## Hydrocarbons - SOIL

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	L2145643-1	L2145643-2	L2145643-3	L2145643-4	L2145643-5	L2145643-11	L2145643-12	L2145643-13	L2145643-14
		#1	#2												
F2 (C10-C16)	ug/g	10	-		09-AUG-18	FL1A	<10	<10	<10	<10	<10	20	13	11	15
F3 (C16-C34)	ug/g	240	-		09-AUG-18	SW1S	<50	<50	<50	<50	<50	58	<50	<50	55
F4 (C34-C50)	ug/g	120	-		09-AUG-18	SW1N	<50	<50	<50	<50	<50	<50	<50	<50	<50
Chrom. to baseline at nC50		-	-		09-AUG-18	SW1E	YES	YES	YES	YES	YES	YES	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-		09-AUG-18	SW1W	88.2	90.6	87.4	90.0	82.9	92.4	91.6	90.0	92.0

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

## Hydrocarbons - SOIL

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID			
		#1	#2	L2145643-15	09-AUG-18	SW3W	L2145643-30	09-AUG-18	QAQC1	L2145643-32	09-AUG-18	QAQC3	L2145643-35	09-AUG-18	FL1B	L2145643-37	09-AUG-18	FL3B
F2 (C10-C16)	ug/g	10	-	12	<10	11	<10	13										
F3 (C16-C34)	ug/g	240	-	<50	<50	<50	<50	54										
F4 (C34-C50)	ug/g	120	-	<50	<50	<50	<50	<50										
Chrom. to baseline at nC50		-	-	YES	YES	YES	YES	YES										
Surrogate: 2-Bromobenzotrifluoride	%	-	-	90.0	87.5	94.1	102.2	94.0										

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# Reference Information

**Methods Listed (if applicable):**

ALS Test Code	Matrix	Test Description	Method Reference**
<b>B-HWS-R511-WT</b>	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B
<p>A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.</p> <p>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).</p>			
<b>CN-WAD-R511-WT</b>	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD
<p>The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.</p> <p>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).</p>			
<b>EC-WT</b>	Soil	Conductivity (EC)	MOEE E3138
<p>A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.</p> <p>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).</p>			
<b>F1-F4-511-CALC-WT</b>	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S
<p>Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.</p> <p>Hydrocarbon results are expressed on a dry weight basis.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:</p> <ol style="list-style-type: none"> <li>1. All extraction and analysis holding times were met.</li> <li>2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.</li> <li>3. Linearity of gasoline response within 15% throughout the calibration range.</li> </ol> <p>Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:</p> <ol style="list-style-type: none"> <li>1. All extraction and analysis holding times were met.</li> <li>2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.</li> <li>3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.</li> <li>4. Linearity of diesel or motor oil response within 15% throughout the calibration range.</li> </ol>			
<b>F2-F4-511-WT</b>	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1

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

Notes:

1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.

# Reference Information

## Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
		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).	
<b>MOISTURE-WT</b>	Soil	% Moisture	Gravimetric: Oven Dried

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

## Chain of Custody Numbers:

17-615270                      17-615652                      17-615682                      17-622355

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

Laboratory Definition Code      Laboratory Location

WT                                      ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

## GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
mg/kg wwt - milligrams per kilogram based on wet weight of sample  
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

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



## Quality Control Report

Workorder: L2145643

Report Date: 20-AUG-18

Page 1 of 4

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>B-HWS-R511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4172007</b>							
<b>WG2850527-4</b>	<b>DUP</b>	<b>L2145643-38</b>						
Boron (B), Hot Water Ext.		0.55	0.49		ug/g	13	30	16-AUG-18
<b>WG2850527-2</b>	<b>IRM</b>	<b>HOTB-SAL_SOIL5</b>						
Boron (B), Hot Water Ext.			94.3		%		70-130	16-AUG-18
<b>WG2850527-3</b>	<b>LCS</b>							
Boron (B), Hot Water Ext.			110.9		%		70-130	16-AUG-18
<b>WG2850527-1</b>	<b>MB</b>							
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	16-AUG-18
<b>CN-WAD-R511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4172468</b>							
<b>WG2848665-3</b>	<b>DUP</b>	<b>L2145109-4</b>						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	15-AUG-18
<b>WG2848665-2</b>	<b>LCS</b>							
Cyanide, Weak Acid Diss			96.3		%		80-120	15-AUG-18
<b>WG2848665-1</b>	<b>MB</b>							
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	15-AUG-18
<b>WG2848665-4</b>	<b>MS</b>	<b>L2145109-4</b>						
Cyanide, Weak Acid Diss			106.3		%		70-130	15-AUG-18
<b>EC-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4173637</b>							
<b>WG2850567-8</b>	<b>DUP</b>	<b>L2145739-1</b>						
Conductivity		0.276	0.257		mS/cm	7.1	20	16-AUG-18
<b>WG2850984-1</b>	<b>LCS</b>							
Conductivity			98.8		%		90-110	16-AUG-18
<b>WG2850567-5</b>	<b>MB</b>							
Conductivity			<0.0040		mS/cm		0.004	16-AUG-18
<b>F2-F4-511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4171811</b>							
<b>WG2848960-3</b>	<b>DUP</b>	<b>WG2848960-5</b>						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	16-AUG-18
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	16-AUG-18
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	16-AUG-18
<b>WG2848960-2</b>	<b>LCS</b>							
F2 (C10-C16)			109.6		%		80-120	16-AUG-18
F3 (C16-C34)			105.4		%		80-120	16-AUG-18
F4 (C34-C50)			112.4		%		80-120	16-AUG-18
<b>WG2848960-1</b>	<b>MB</b>							



# Quality Control Report

Workorder: L2145643

Report Date: 20-AUG-18

Page 2 of 4

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F2-F4-511-WT</b>		<b>Soil</b>						
<b>Batch R4171811</b>								
<b>WG2848960-1</b>	<b>MB</b>							
F2 (C10-C16)			<10		ug/g		10	15-AUG-18
F3 (C16-C34)			<50		ug/g		50	15-AUG-18
F4 (C34-C50)			<50		ug/g		50	15-AUG-18
Surrogate: 2-Bromobenzotrifluoride			81.5		%		60-140	15-AUG-18
<b>WG2848960-4</b>	<b>MS</b>	<b>WG2848960-5</b>						
F2 (C10-C16)			107.6		%		60-140	15-AUG-18
F3 (C16-C34)			109.0		%		60-140	15-AUG-18
F4 (C34-C50)			97.8		%		60-140	15-AUG-18
<b>Batch R4171876</b>								
<b>WG2848659-3</b>	<b>DUP</b>	<b>WG2848659-5</b>						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	15-AUG-18
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	15-AUG-18
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	15-AUG-18
<b>WG2848659-2</b>	<b>LCS</b>							
F2 (C10-C16)			101.9		%		80-120	15-AUG-18
F3 (C16-C34)			103.7		%		80-120	15-AUG-18
F4 (C34-C50)			103.6		%		80-120	15-AUG-18
<b>WG2848659-1</b>	<b>MB</b>							
F2 (C10-C16)			<10		ug/g		10	15-AUG-18
F3 (C16-C34)			<50		ug/g		50	15-AUG-18
F4 (C34-C50)			<50		ug/g		50	15-AUG-18
Surrogate: 2-Bromobenzotrifluoride			92.8		%		60-140	15-AUG-18
<b>WG2848659-4</b>	<b>MS</b>	<b>WG2848659-5</b>						
F2 (C10-C16)			107.3		%		60-140	15-AUG-18
F3 (C16-C34)			108.0		%		60-140	15-AUG-18
F4 (C34-C50)			109.2		%		60-140	15-AUG-18
<b>MOISTURE-WT</b>		<b>Soil</b>						
<b>Batch R4169447</b>								
<b>WG2848808-3</b>	<b>DUP</b>	<b>L2146005-1</b>						
% Moisture		2.87	2.58		%	11	20	15-AUG-18
<b>WG2848808-2</b>	<b>LCS</b>							
% Moisture			99.9		%		90-110	15-AUG-18
<b>WG2848808-1</b>	<b>MB</b>							
% Moisture			<0.10		%		0.1	15-AUG-18



# Quality Control Report

Workorder: L2145643

Report Date: 20-AUG-18

Page 3 of 4

Client: DS Consultants (Vaughan)  
 6221 Highway 7 Unit 16  
 Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MOISTURE-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4169457</b>							
<b>WG2848703-3</b>	<b>DUP</b>	<b>L2144156-1</b>						
% Moisture		3.98	3.66		%	8.4	20	15-AUG-18
<b>WG2848703-2</b>	<b>LCS</b>							
% Moisture			99.9		%		90-110	15-AUG-18
<b>WG2848703-1</b>	<b>MB</b>							
% Moisture			<0.10		%		0.1	15-AUG-18

# Quality Control Report

Workorder: L2145643

Report Date: 20-AUG-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Page 4 of 4

Contact: Rick Fioravanti

## Legend:

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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.

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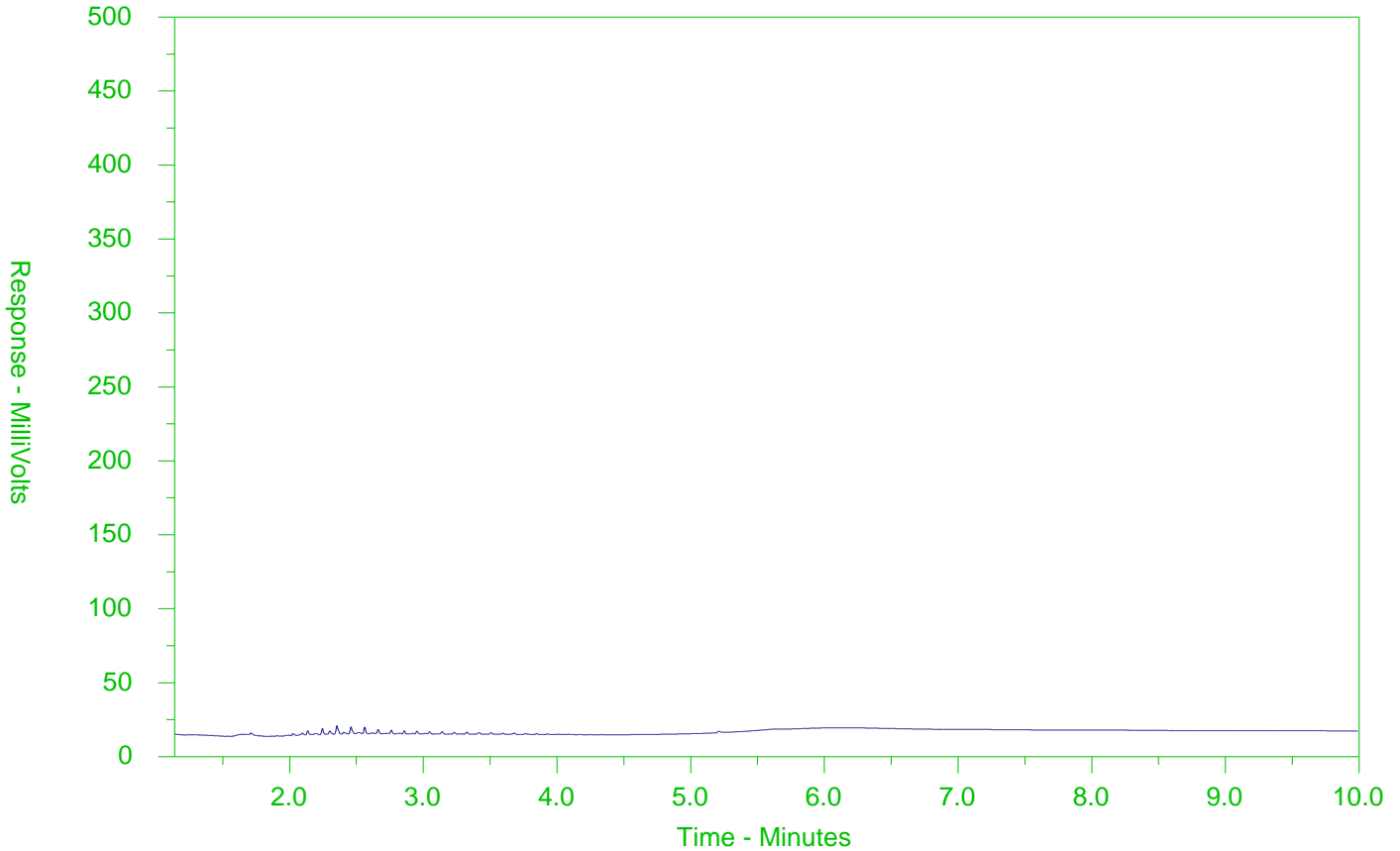
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L2145643-1  
 Client Sample ID: FL1A



← 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.

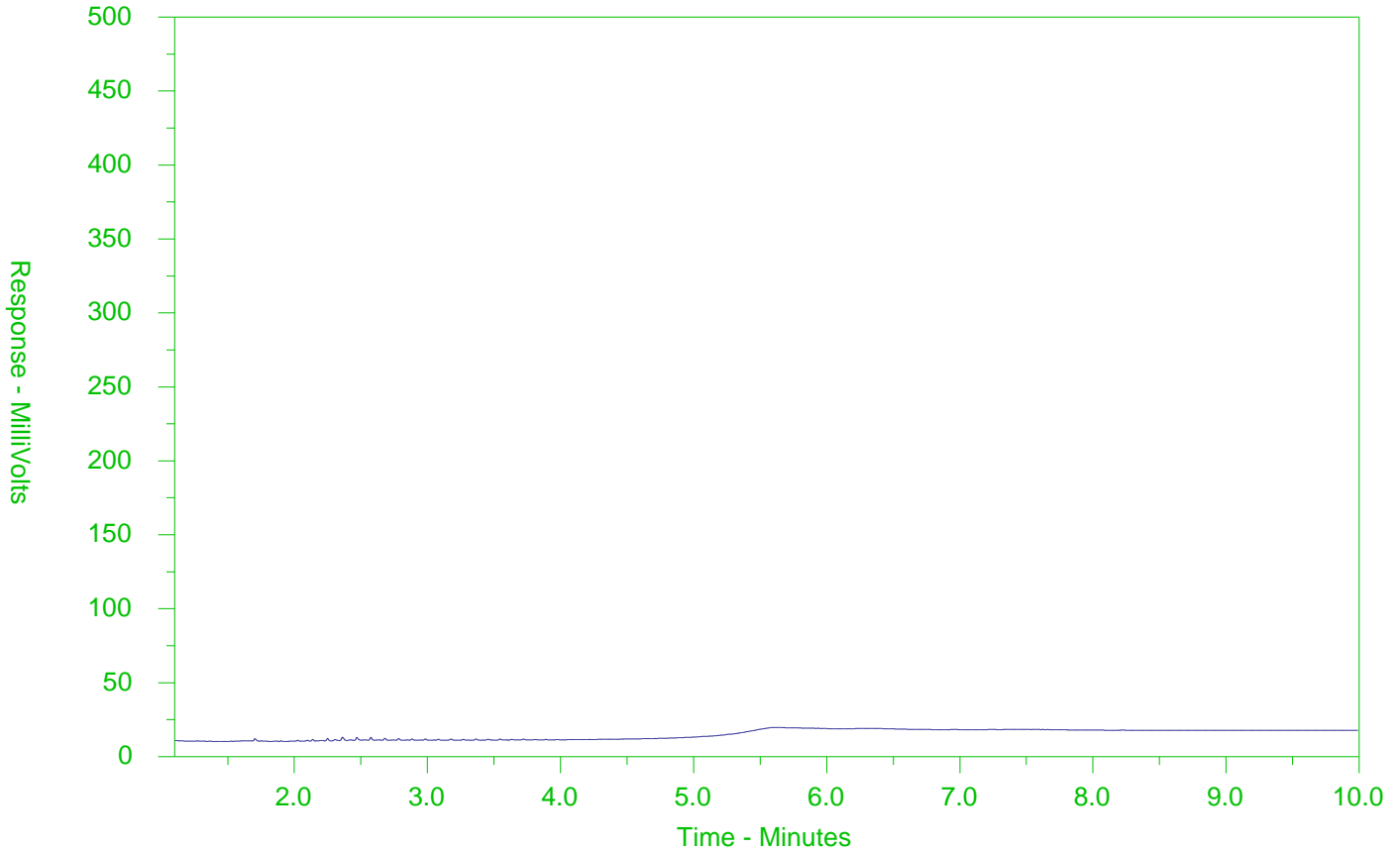
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-2  
 Client Sample ID: SW1S



← 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.

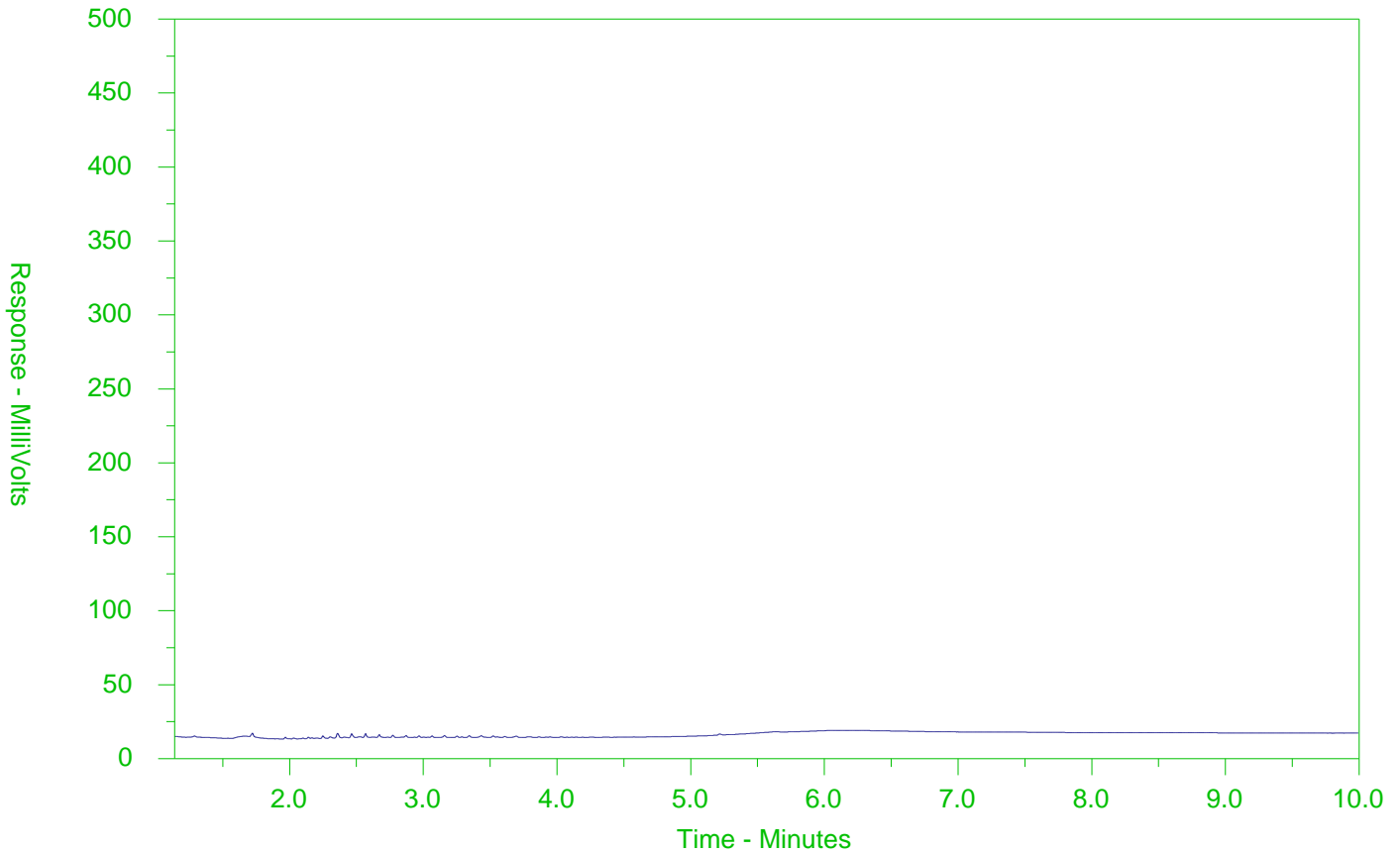
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-3  
 Client Sample ID: SW1N



← 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.

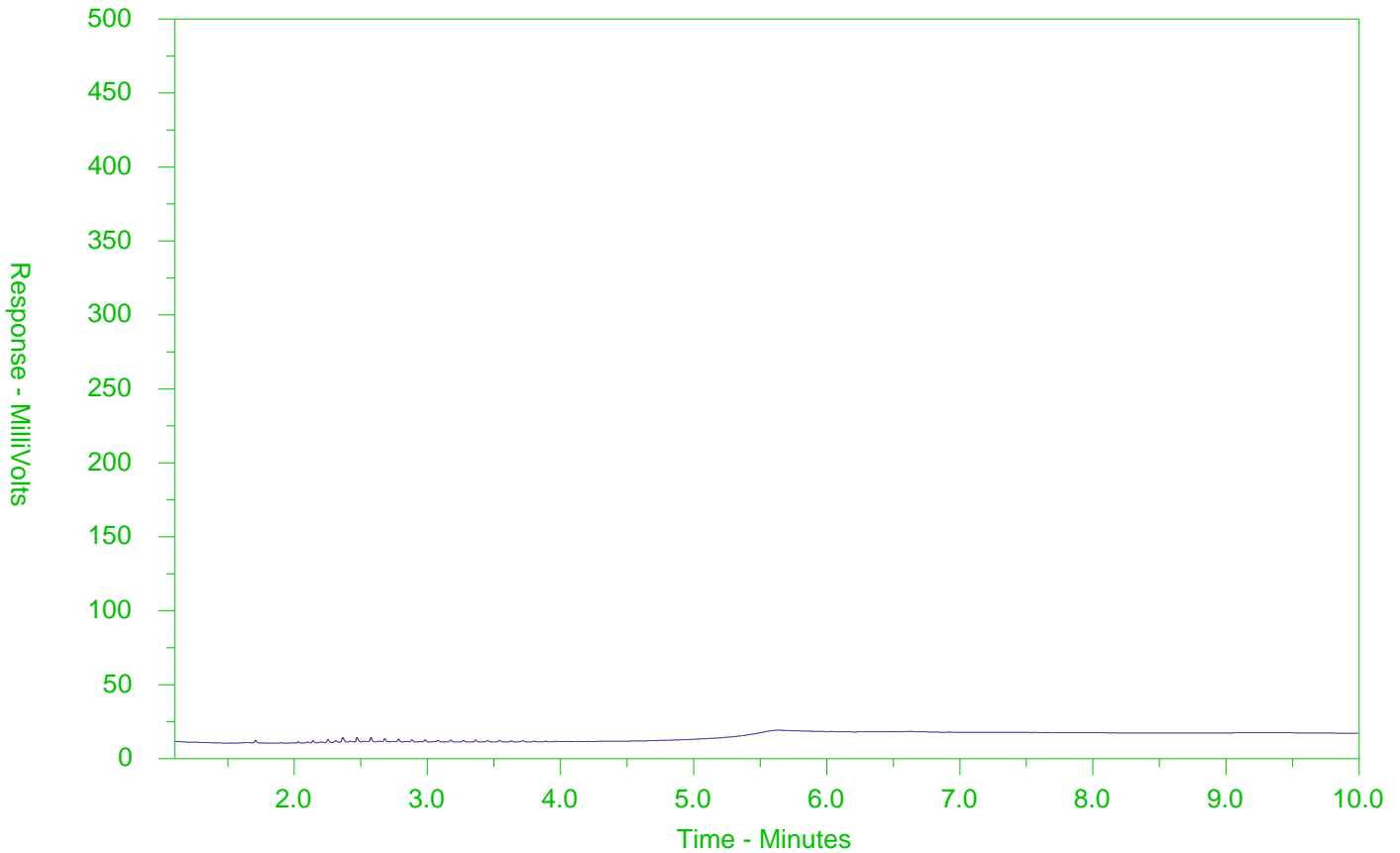
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-4  
 Client Sample ID: SW1E



← 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.

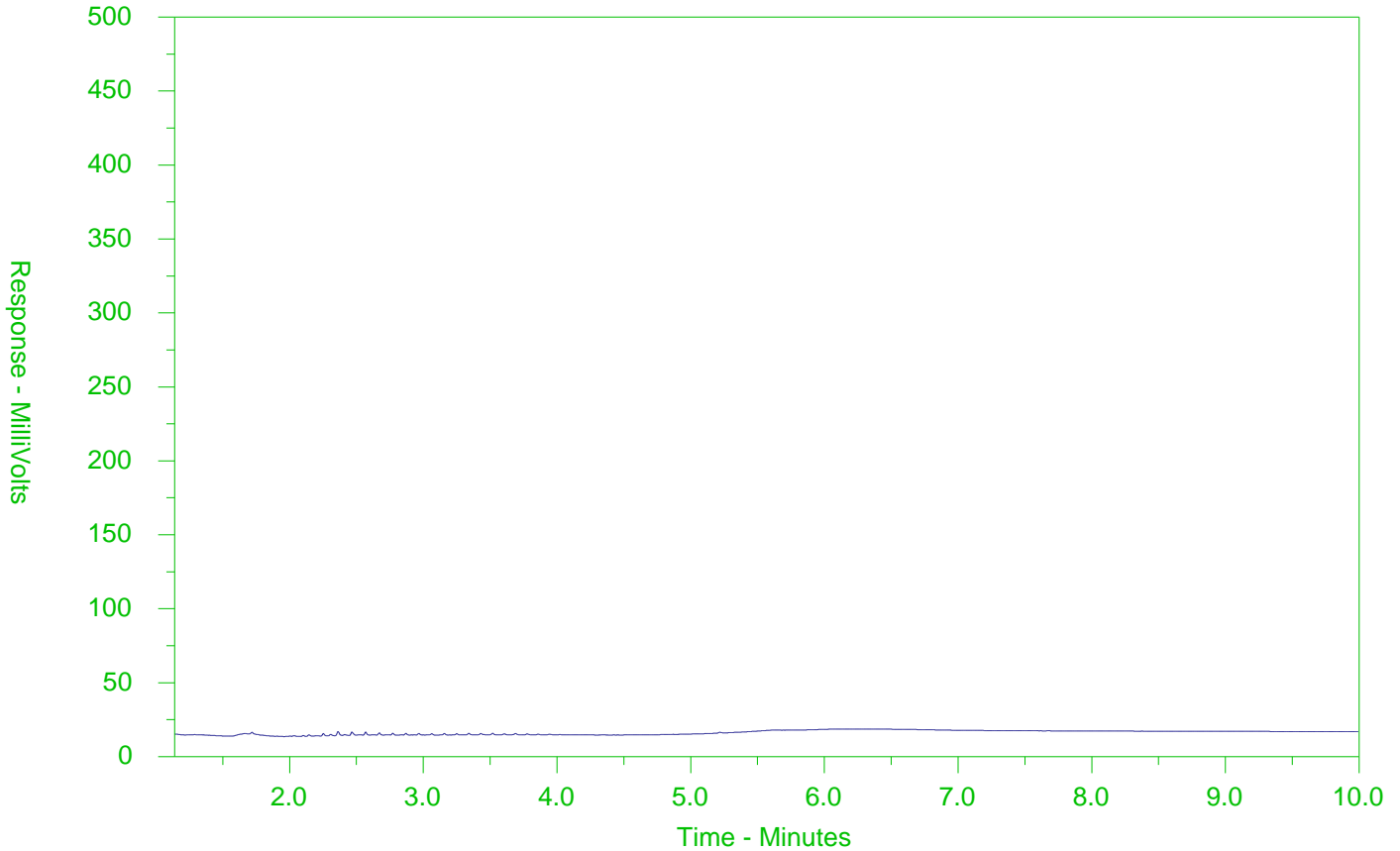
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-5  
 Client Sample ID: SW1W



← 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.

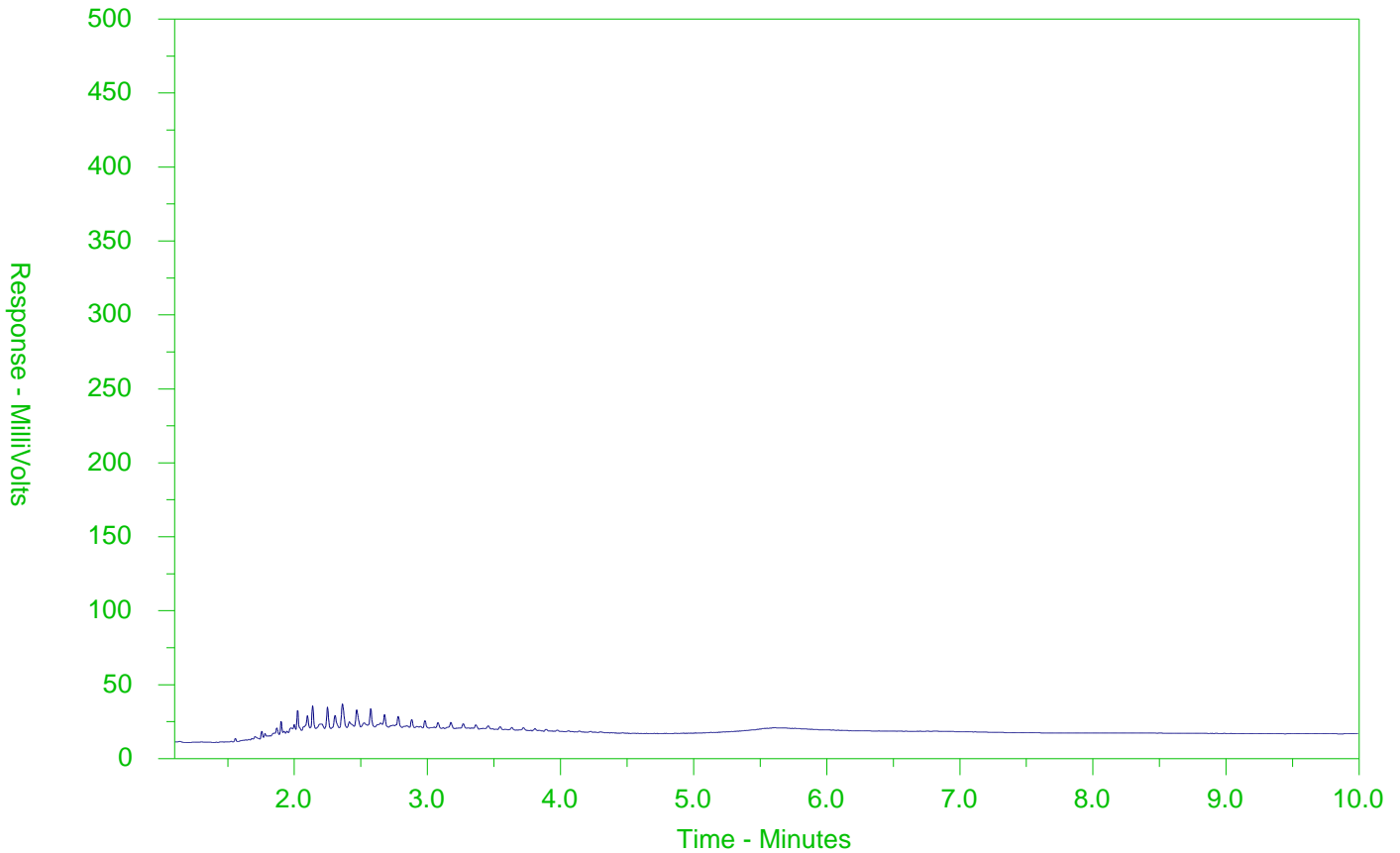
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-11  
 Client Sample ID: FL3A



← 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.

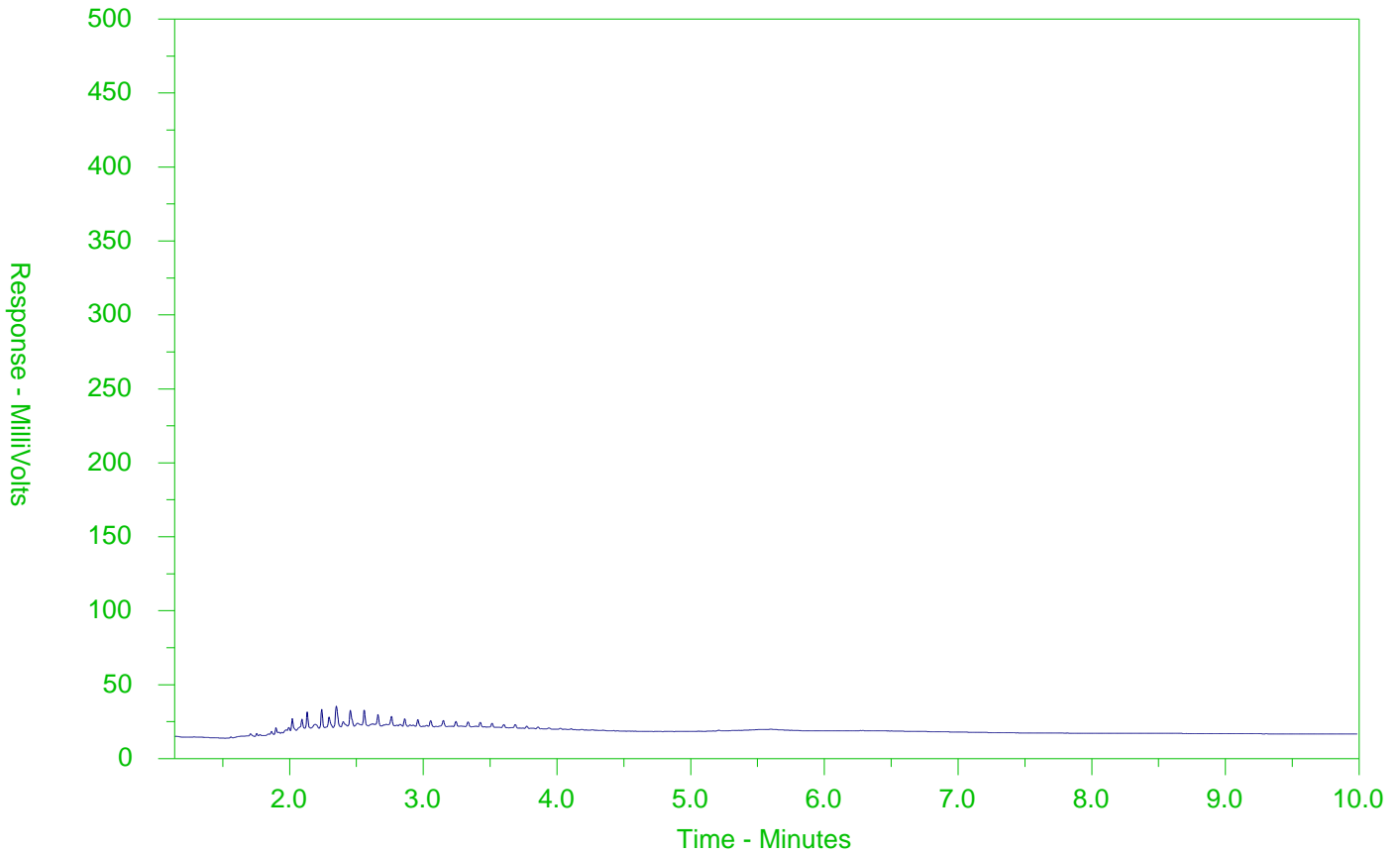
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-12  
 Client Sample ID: SW3S



← 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.

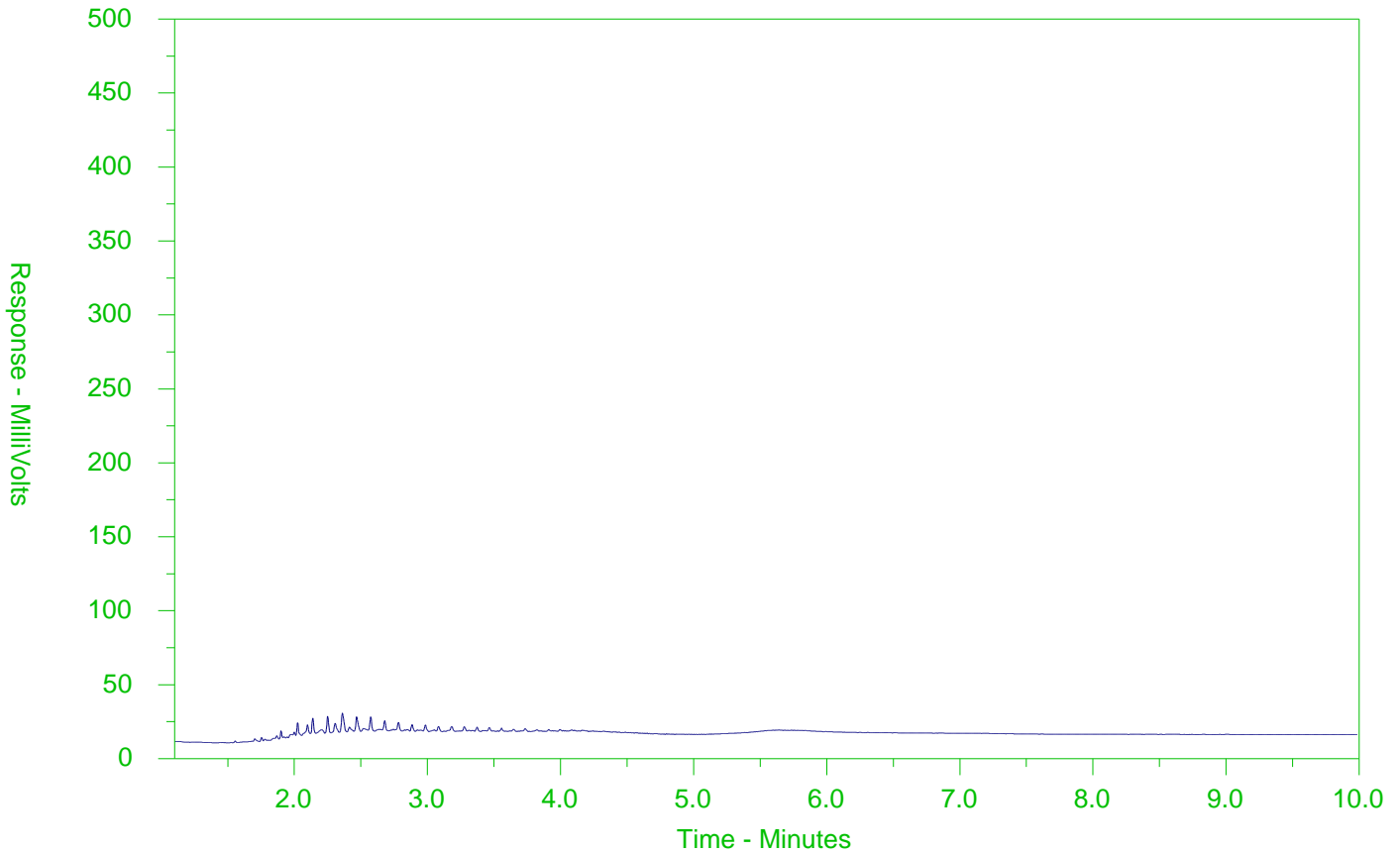
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-13  
 Client Sample ID: SW3N



← 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.

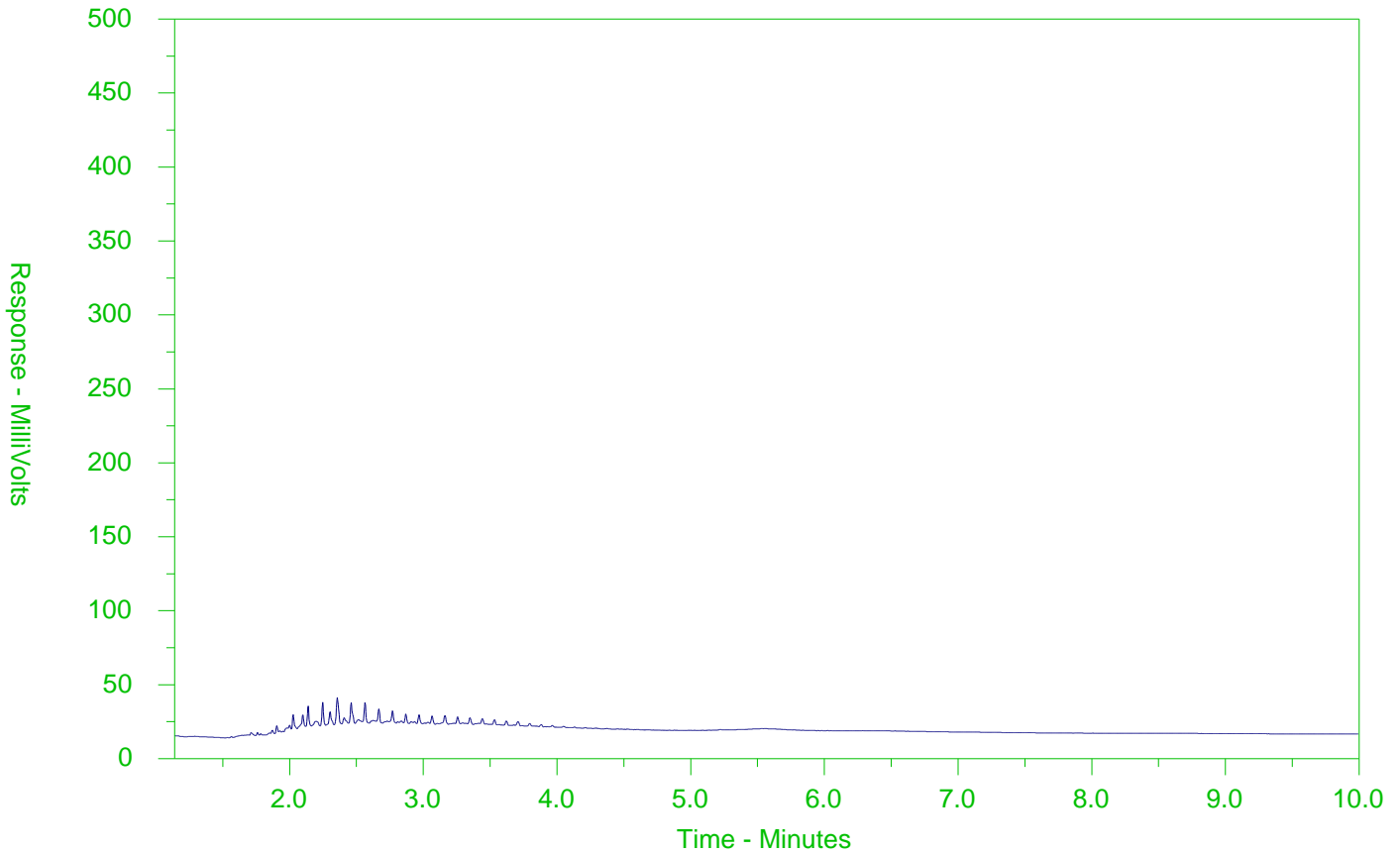
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-14  
 Client Sample ID: SW3E



← 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.

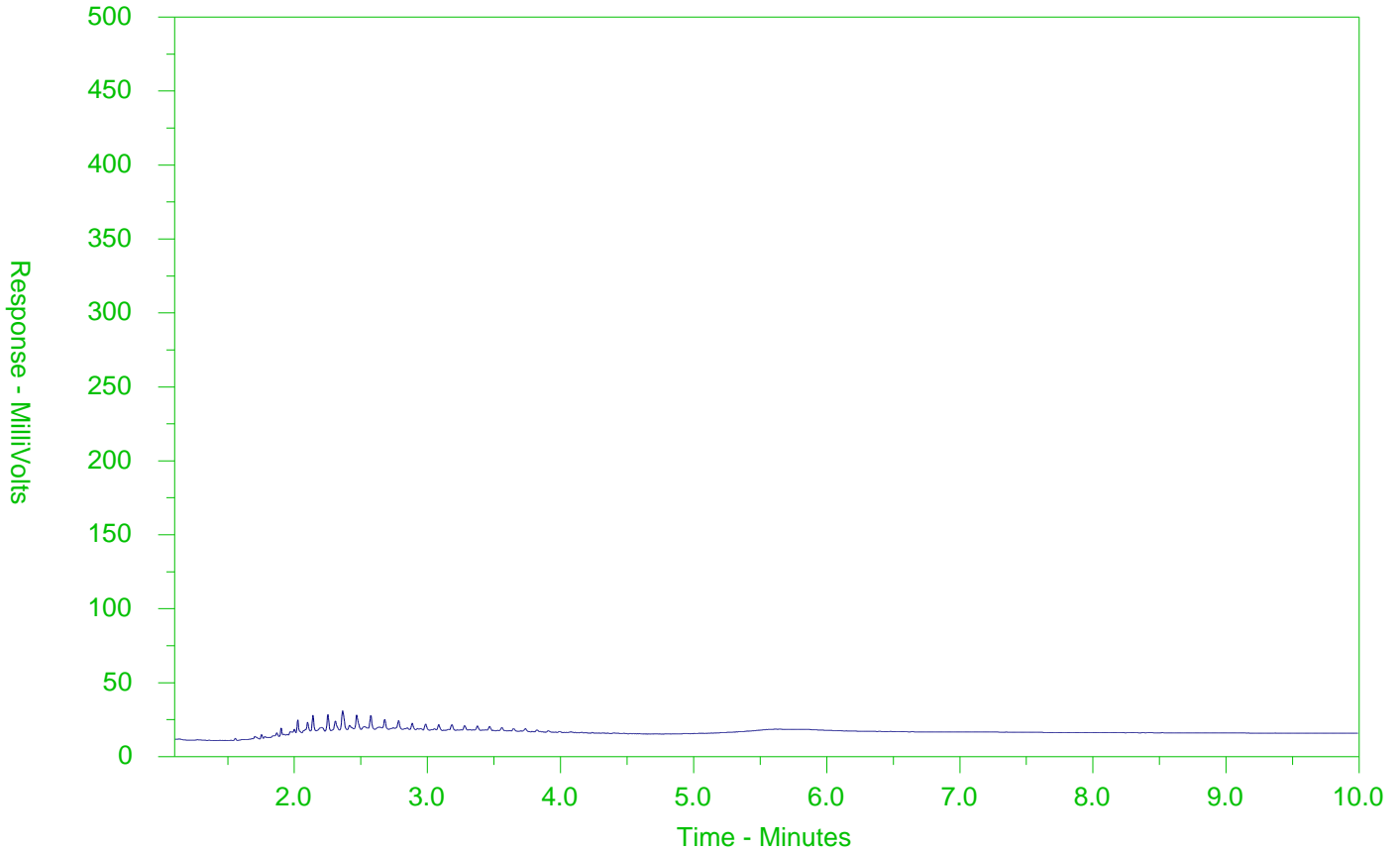
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-15  
 Client Sample ID: SW3W



← 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.

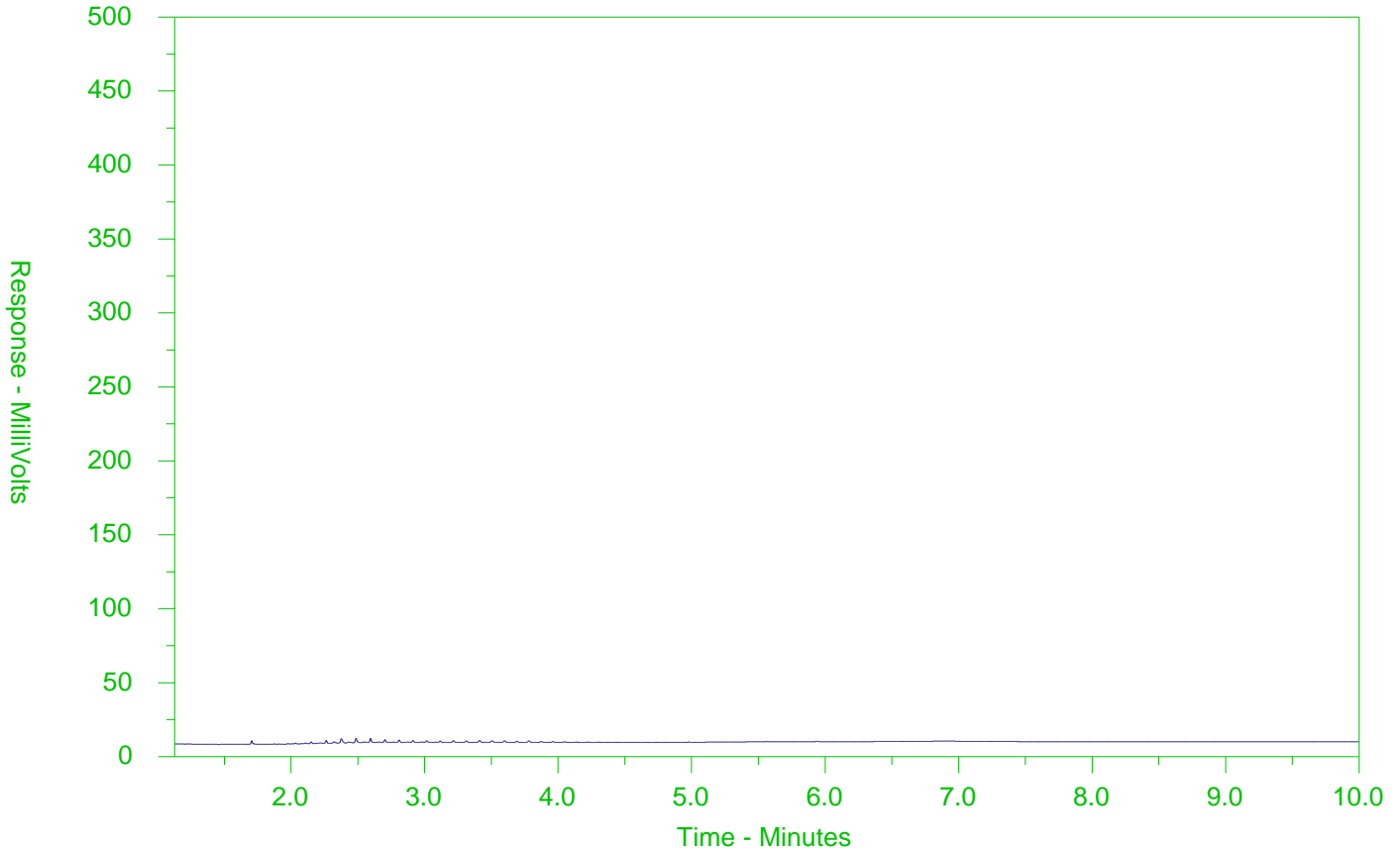
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-30  
 Client Sample ID: QAQC1



← 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.

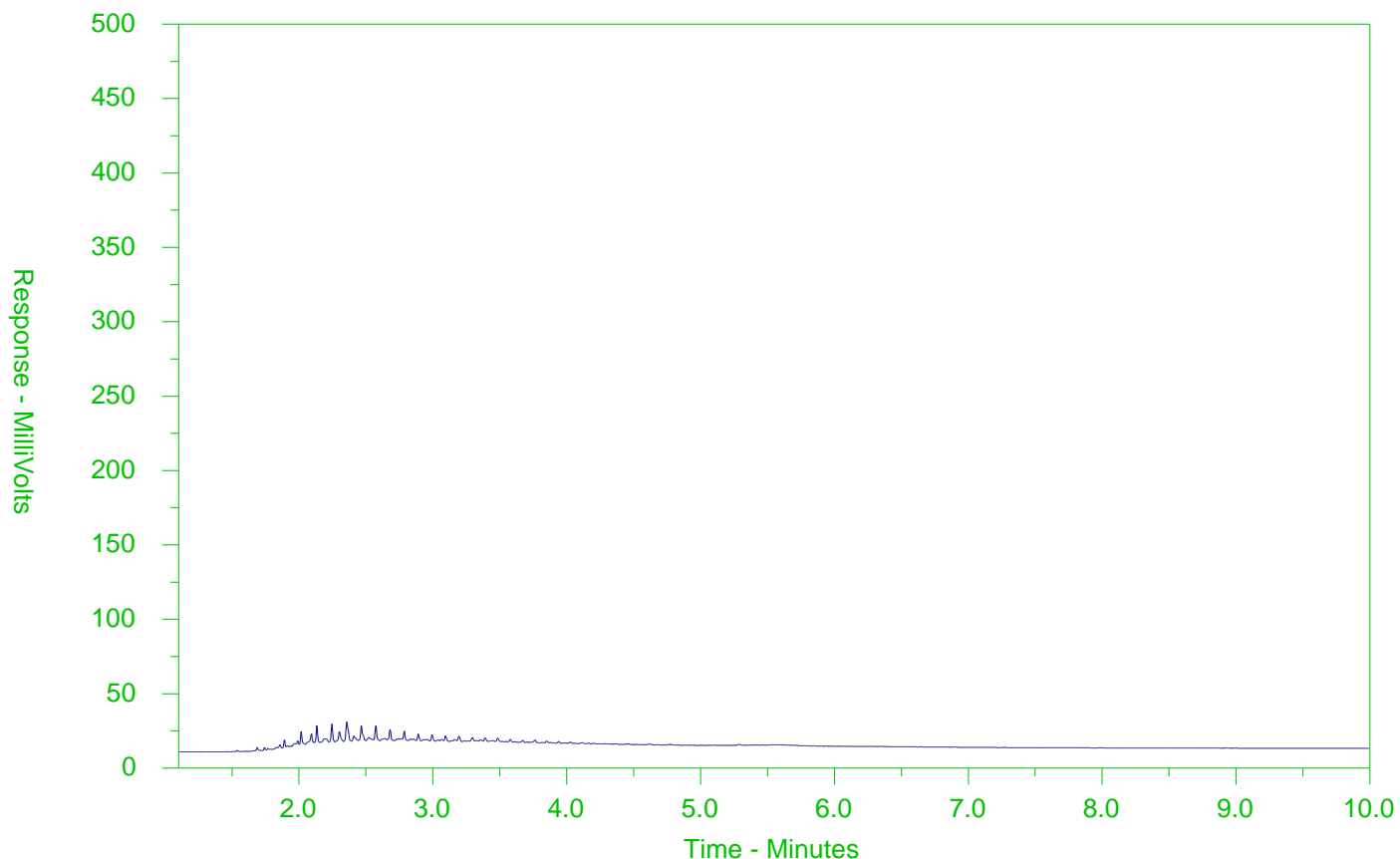
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-32  
 Client Sample ID: QAQC3



← 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.

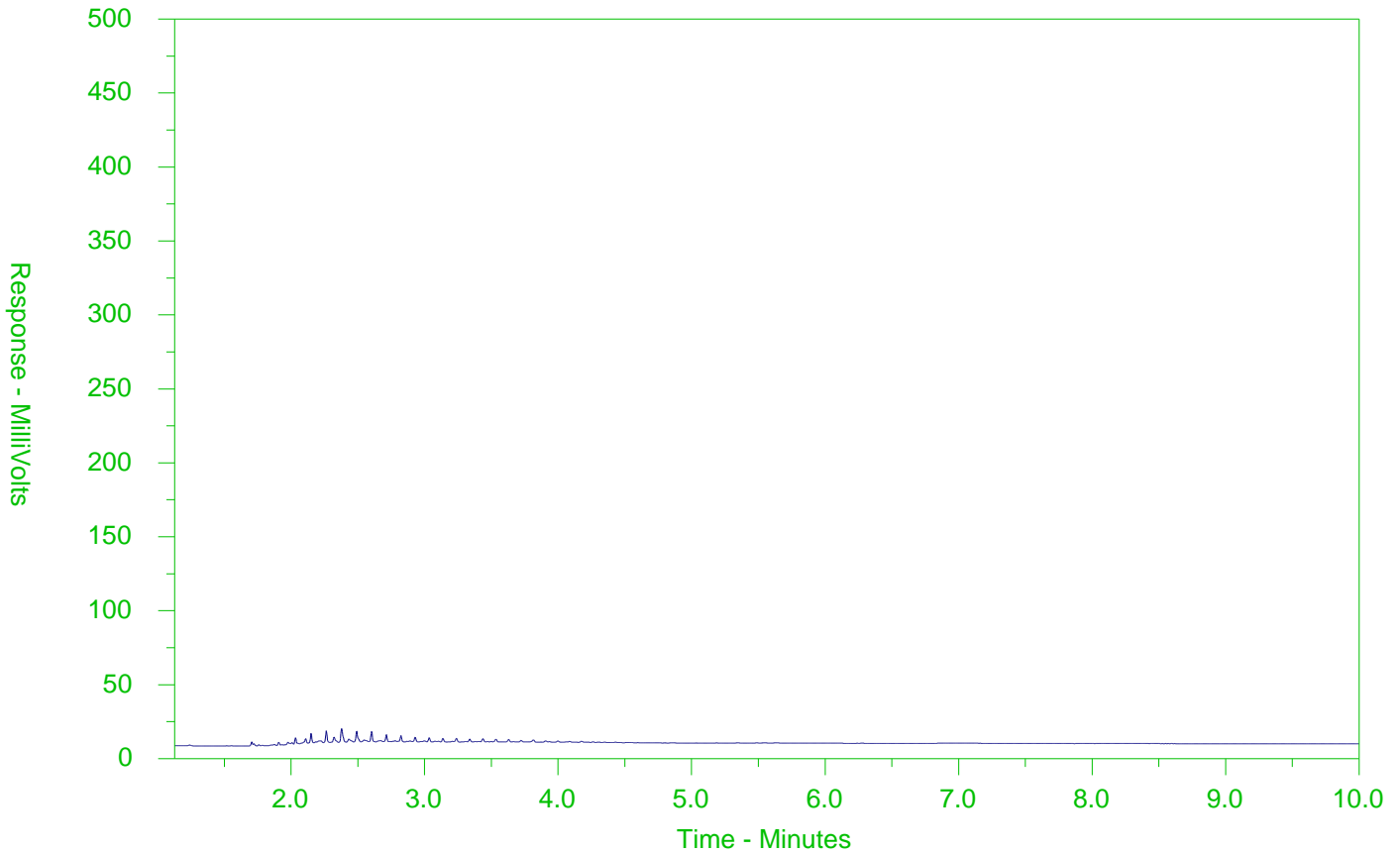
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-35  
 Client Sample ID: FL1B



← 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.

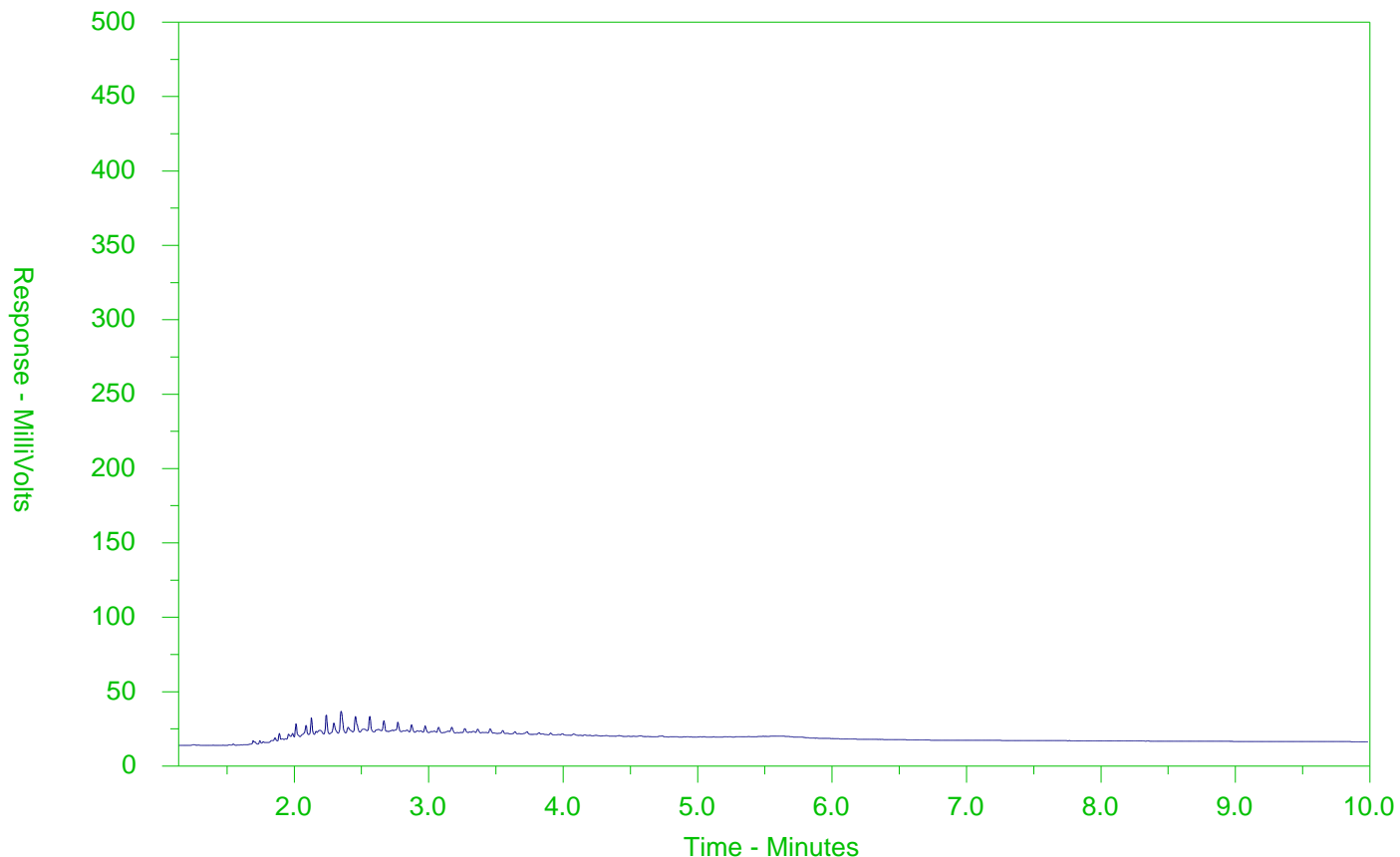
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2145643-37  
 Client Sample ID: FL3B



← 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](http://www.alsglobal.com).





L2145643-COFC

COC Number: 17-615270

Page 2 of 4

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Low - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																			
Company:		Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																			
Contact:		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/> <b>EMERGENCY</b> 1 Business day [E-100%] <input type="checkbox"/>																			
Phone:		<input type="checkbox"/> Complete Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2-200%] <input type="checkbox"/>																			
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/> (Laboratory opening fees may apply)																			
Street:		Email 1 or Fax			Date and Time Required for all E&P TATs:					dd-mm-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			<b>Analysis Request</b>																			
Invoice To		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below																			
Same as Report To <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																						
Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Email 1 or Fax																						
Company:		Email 2																						
Contact:		Oil and Gas Required Fields (client use)																						
Project Information		AFE/Cost Center:			PO#																			
ALS Account # / Quote #:		Major/Minor Code:			Routing Code:																			
Job #:		Requisitioner:			Location:																			
PO / AFE:		ALS Contact: <i>Amanda</i>			Sampler: <i>TL + RF</i>																			
LSD:																								
ALS Lab Work Order # (lab use only):																								
ALS Sample # (lab use only)		Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd mm yy)		Time (hh:mm)		Sample Type		Cyanide		Boron (MUS)		Pb		PbC Fe-Fy		SAMPLES ON HOLD		Sample is hazardous (please provide further details)		NUMBER OF CONTAINERS	
13		SWRN ✓			9-8-18		11:00		Soil		X		X		X								4	
14		SWBE ✓									X		X		X								4	
15		SWAW ✓									X		X		X								4	
16		SW3N10 ✓																	X				3	
12		SW3S10 ✓																	X				3	
18		SW3F10 ✓																	X				3	
19		SW3L10 ✓																	X				3	
20		FL4A ✓					15:00				X												3	
21		SWRN ✓									X												3	
22		SW16 ✓									X												3	
23		SW9E ✓									X												3	
24		SW1W ✓									X												3	
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																			
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																			
Are samples for human consumption use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																			
					Cooling Initiated <input type="checkbox"/>																			
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C														
										4.7 8.1														
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)																
Released by: <i>Mich Procaranti</i>		Date: <i>Aug 13-18</i>		Time:		Received by: <i>PK</i>		Date: <i>8-13-18</i>		Time: <i>12:20</i>		Received by: <i>Benevise</i>		Date: <i>Aug 13</i>		Time: <i>14:00</i>								

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.



L2145643-COFC

Report To Contact and company name below will appear on the final report		Report Form			Please contact your AM to confirm all E&P TATs (surcharges may apply)													
Company:		Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			Regular TAT if received by 3 pm - business days - no surcharges apply					EMERGENCY								
Contact:		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>					1 Business day [E-100%] <input type="checkbox"/>								
Phone:		Compare Results to Criteria on Report - provide details below if box checked <input type="checkbox"/>			3 day [P3-25%] <input type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply) <input type="checkbox"/>								
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input type="checkbox"/>													
Street:		Email 1 or Fax			Dates 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			<b>Analysis Request</b>													
Invoice To		Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below													
Copy of Invoice with Report		<input type="checkbox"/> YES <input type="checkbox"/> NO																
Company:		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																
Contact:		Email 1 or Fax																
Contact:		Email 2																
<b>Project Information</b>				<b>Oil and Gas Required Fields (client use)</b>								SAMPLES ON HOLD		NUMBER OF CONTAINERS				
ALS Account # / Quote #:				AFECost Center:				PO#				SAMPLES ON HOLD		NUMBER OF CONTAINERS				
Job #:				Major/Minor Code:				Routing Code:										
PO / AFE:				Requisitioner:														
LSD:				Location:														
ALS Lab Work Order # (lab use only):				ALS Contact: <i>Aranda</i>				Sampler: <i>TL &amp; RF</i>										
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	Cyanide	Boron (HWS)	EC	PHC F2-F4								
25	FLS A			9-8-18	15:30	Soil										3		
26	SWSN			↓	↓	↓										3		
27	SWS																	3
28	SWSSE																	3
29	SWSU																	3
30	QAC1												X					3
31	QAC2									X								3
32	QAC3									X	X	X						3
33	QAC4									X								3
34	QAC5										X							3
35	FL1B						✓						X					2
36	FL2B			✓			X								1			
Drinking Water (DW) Samples (client use)				Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)								SAMPLE CONDITION AS RECEIVED (lab use only)						
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO												Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>						
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO												Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>				Cooling Initiated <input type="checkbox"/>		
								INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C						
												97 81						
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)										
Released by: <i>Rick Fioravanti</i>		Date: <i>Aug 13-18</i>		Time:		Received by: <i>RK</i>		Date: <i>9-13-18</i>		Time: <i>1220</i>		Received by: <i>Patrick</i>		Date: <i>Aug 13 @</i>		Time: <i>14:00</i>		





DS Consultants (Vaughan)  
ATTN: Rick Fioravanti  
6221 Highway 7  
Unit 16  
Vaughan ON L4H 0K8

Date Received: 03-DEC-18  
Report Date: 06-DEC-18 14:27 (MT)  
Version: FINAL

Client Phone: 647-237-5110

## Certificate of Analysis

Lab Work Order #: L2204676  
Project P.O. #: NOT SUBMITTED  
Job Reference: 18-549-40  
C of C Numbers: 17-639339  
Legal Site Desc:

Amanda Fazekas  
Account Manager

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ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927  
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## Summary of Guideline Exceedances

Guideline		Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID							
<b>Ontario Regulation 153/04 - April 15, 2011 Standards - T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use</b>							
L2204676-1		MW18-5D SW1E	Physical Tests	Conductivity	0.917	0.7	mS/cm
L2204676-2		MW18-5D SW1W	Physical Tests	Conductivity	2.56	0.7	mS/cm
L2204676-3		MW18-5D SW1N	Physical Tests	Conductivity	1.21	0.7	mS/cm
L2204676-4		MW18-5D SW1S	Physical Tests	Conductivity	0.748	0.7	mS/cm
L2204676-5		MW18-5D FL1E	Metals	Boron (B), Hot Water Ext.	2.06	1.5	ug/g
L2204676-6		MW18-5D FL1W	Physical Tests	Conductivity	0.785	0.7	mS/cm
			Metals	Boron (B), Hot Water Ext.	1.79	1.5	ug/g
L2204676-7		DUP 18-5D	Physical Tests	Conductivity	1.89	0.7	mS/cm

# ANALYTICAL REPORT

## Physical Tests - SOIL

Analyte	Unit	Guide Limits #1 #2	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID
			L2204676-1	28-NOV-18	MW18-5D SW1E	L2204676-2	28-NOV-18	MW18-5D SW1W	L2204676-3	28-NOV-18	MW18-5D SW1N	L2204676-4	28-NOV-18	MW18-5D SW1S	L2204676-5	28-NOV-18	MW18-5D FL1E	L2204676-6	28-NOV-18	MW18-5D FL1W
Conductivity	mS/cm	0.7 -	0.917	2.56	1.21	0.748	0.629	0.785	1.89											

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# ANALYTICAL REPORT

## Metals - SOIL

Analyte	Unit	Guide Limits		Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID	Lab ID	Sample Date	Sample ID				
		#1	#2	L2204676-1	28-NOV-18	MW18-5D SW1E	L2204676-2	28-NOV-18	MW18-5D SW1W	L2204676-3	28-NOV-18	MW18-5D SW1N	L2204676-4	28-NOV-18	MW18-5D SW1S	L2204676-5	28-NOV-18	MW18-5D FL1E	L2204676-6	28-NOV-18	MW18-5D FL1W	L2204676-7
Boron (B), Hot Water Ext.	ug/g	1.5	-	1.05	0.95	0.53	1.02	2.06	1.79	1.03												

### Guide Limit #1: T8-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

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

# Reference Information

## Methods Listed (if applicable):

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

<b>B-HWS-R511-WT</b>	Soil	Boron-HWE-O.Reg 153/04 (July 2011) HW EXTR, EPA 6010B	
----------------------	------	---	--

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

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

<b>EC-WT</b>	Soil	Conductivity (EC)	MOEE E3138
--------------	------	-------------------	------------

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

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

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

## Chain of Custody Numbers:

17-639339

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

Laboratory Definition Code	Laboratory Location
----------------------------	---------------------

WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
----	---

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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



## Quality Control Report

Workorder: L2204676

Report Date: 06-DEC-18

Page 1 of 2

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Contact: Rick Fioravanti

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>B-HWS-R511-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4372028</b>							
<b>WG2945466-4</b>	<b>DUP</b>	<b>L2204791-2</b>						
Boron (B), Hot Water Ext.		3.05	3.03		ug/g	0.5	30	04-DEC-18
<b>WG2945466-2</b>	<b>IRM</b>	<b>HOTB-SAL_SOIL5</b>						
Boron (B), Hot Water Ext.			92.7		%		70-130	04-DEC-18
<b>WG2945466-3</b>	<b>LCS</b>							
Boron (B), Hot Water Ext.			108.9		%		70-130	04-DEC-18
<b>WG2945466-1</b>	<b>MB</b>							
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	04-DEC-18
<b>EC-WT</b>								
	<b>Soil</b>							
<b>Batch</b>	<b>R4372447</b>							
<b>WG2945460-4</b>	<b>DUP</b>	<b>WG2945460-3</b>						
Conductivity		0.196	0.210		mS/cm	7.1	20	04-DEC-18
<b>WG2945460-2</b>	<b>IRM</b>	<b>WT SAR2</b>						
Conductivity			94.0		%		70-130	04-DEC-18
<b>WG2945728-1</b>	<b>LCS</b>							
Conductivity			99.4		%		90-110	04-DEC-18
<b>WG2945460-1</b>	<b>MB</b>							
Conductivity			<0.0040		mS/cm		0.004	04-DEC-18

# Quality Control Report

Workorder: L2204676

Report Date: 06-DEC-18

Client: DS Consultants (Vaughan)  
6221 Highway 7 Unit 16  
Vaughan ON L4H 0K8

Page 2 of 2

Contact: Rick Fioravanti

## 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.





---

# Appendix E

# Remediation Report

1429 Dundas Street East  
Oakville, Ontario

## Prepared For:

Bressa Developments  
433 Steels Avenue East  
Suite 110  
Milton, Ontario  
L9T 8Z4

**DS Project No.:** 18-549-100

**Date:** 2019-04-10



DS CONSULTANTS LTD.  
6221 Highway 7, Unit 16  
Vaughan, Ontario, L4H 0K8  
Telephone: (905) 264-9393  
[www.dsconsultants.ca](http://www.dsconsultants.ca)

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## **TABLES**

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Table 2 – Summary of Soil Samples Submitted for Chemical Analysis

Table 3 – Summary of Metals and ORPs in Soil

Table 4 – Summary of PHCs in Soil

---

## 1.0 Introduction

This report provides a summary of the remedial activity which has been completed in order to reduce the concentrations of contaminants on, in or under the “Bressa Development Lands” Property located at 1429 Dundas Street East in the City of Oakville, Ontario (herein referred to as the “Site” or “Property”). The Property comprises the southern portion of a 101.9-hectare parcel of land known as the “Bressa Property. The adjacent lands to the east and north of the Phase Two Property are referred to as the “NHS lands” which encompass the natural heritage feature associated with Joshua’s Creek and a 30 metre off-set from the aforementioned natural heritage feature, and the “Valleylands” which include the valley associated with Joshua’s Creek. A Record of Site Condition was previously obtained for the Valleylands in August 2016 (RSC #222461).

The following sections detail the remedial actions, the presence/absence of free-flowing product, the results of the confirmatory sampling and laboratory analysis, the results of the quality assurance/quality control (QA/QC) samples and conclusions.

The objection of the remediation program was to remediate the soil and groundwater impacts identified in the Phase Two Environmental Site Assessment completed by DS Consultants, dated February 28, 2019.

## 2.0 Remedial Actions

### 2.1 Soil Excavation and Soil Treatment Activities

---

The soil remediation activities at the Property consisted of the following:

- ◆ Excavation and off-site disposal of soil impacted with PHC F2, within the vicinity of BH18-1 (3.1-3.7)
- ◆ Excavation and off-site disposal of soil impacted with EC (3.1-3.7 mbgs) and PHC F2 (6.1-6.7 mbgs), within the vicinity of borehole BH18-5;
- ◆ Excavation and off-site disposal of soil impacted with Barium and Electrical Conductivity (EC), within the vicinity of borehole TP16-11 (2.4-3.4 mbgs);
- ◆ Excavation and off-site disposal of soil impacted with Silver, within the vicinity of borehole TP15A-20 (2.4-4.0) mbgs;
- ◆ Excavation and off-site disposal of soil impacted with Boron (HWS) within the vicinities of borehole TP15A-18 (0.3-3.7mbgs); and
- ◆ Excavation and off-site disposal of soil impacted with Cyanide within the vicinity of borehole BH15A-6 (0.0-0.7mbgs).

---

The soil remediation activities are detailed in the following subsections.

### **2.1.1 Soil Excavation**

The Phase Two ESA identified concentrations of metals, ORPs and PHCs in excess of the applicable MECP Table 8 SCS as follows:

- ◆ Silver – TP15A-20 Sa3 (2.4-4.0 mbgs)
- ◆ Barium – TP16-11 Sa1 (2.4-3.4 mbgs)
- ◆ Electrical Conductivity – BH18-5 SS5 (3.1-3.7 mbgs)
- ◆ Boron (HWS) – TP15A-18 (0.3-3.1 mbgs)
- ◆ Cyanide – BH15A-6 QA/QC1 SS1(0.0-0.6)
- ◆ F2 (C10-C16) – BH18-1 SS5 (3.1-3.7 mbgs)
- ◆ F2 (C10-C16) – BH18-5 SS7 (6.1-6.7 mbgs)

A total of six (6) remedial excavations were completed on the Property and were designated as “EX-1” through “EX-6”. The approximate locations of these remedial excavations are presented on Figure R2. Details regarding the locations, dimensions, and dates in which the excavations were conducted are provided below.

#### **EX-1**

Remedial Excavation EX-1 was completed on August 9, 2018 under the supervision of DS personnel. The objective of EX-1 was to facilitate the removal and off-site disposal of the soils impacted with PHCs in the F2 fraction range which were identified in borehole BH18-1 at an approximate depth of 3.1-3.7 mbgs. The excavation was completed using an excavator supplied by DeKay Construction Ltd. The final dimensions of the remedial excavation were approximately 2.44 metres x 3.66 metres and extended to an approximate depth of 4.0 mbgs.

Approximately 40 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figure R2C. Confirmatory sampling in accordance with O.Reg. 153/04 (as amended) was conducted upon completion of the remedial excavation. Additional details are provided in Section 3.1 below. The void space of EX-1 was backfilled using native soils in the vicinity of the remedial excavation.

#### **EX-2**

Remedial Excavation EX-2 was completed on November 28, 2018 under the supervision of DS personnel. The objective of EX-2 was to facilitate the removal and off-site disposal of the soils impacted with cyanide which were identified in borehole BH15A-6 at an approximate

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depth of 0-0.6 mbgs. The excavation was completed using an excavator supplied by DeKay Construction Ltd. The final dimensions of the remedial excavation were approximately 3.66 metres x 2.13 metres and extended to an approximate depth of 1.52 mbgs.

Approximately 12 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figure R3C. Confirmatory sampling in accordance with O.Reg. 153/04 (as amended) was conducted upon completion of the remedial excavation. Additional details are provided in Section 3.1 below. The void space of EX-2 was backfilled using native soils in the vicinity of the remedial excavation.

### **EX-3**

Remedial Excavation EX-3 was completed between August 9, 2018 and January 9, 2019 under the supervision of DS personnel. The objective of EX-3 was to facilitate the removal and off-site disposal of the soils impacted with PHCs in the F2 fraction range which were identified in borehole BH18-5 at an approximate depth of 6.1-6.7 mbgs. Electrical conductivity (EC) impacts were originally suspected to be present in borehole BH18-5 based on the initial chemical analyses conducted in June 2018. Through forensics analysis it was determined that the elevated EC levels were not the result of the presence of road salt in the sample, therefore it was concluded that the elevated EC levels were the result of natural soil conditions, and therefore not considered to be contamination as defined by the EPA (EPA, 1990). Additional details are provided in Section 3.2.

The excavation was completed using an excavator supplied by DeKay Construction Ltd. Four (4) successive remedial excavations were completed. The initial excavation was completed on August 9, 2018 and was approximately 3.35 metres by 6.10 metres in area and extended to an approximate depth of 6.7 mbgs. The excavation was expanded to 7.0 metres by 6.10 metres on November 28, 2018 based on the results of the August 9, 2018 confirmatory sampling. The excavation was further expanded to 20 metres by 18 metres on January 9, 2019 based on the results of the November 28, 2018 confirmatory sampling. Additional test pit delineation was conducted on February 21, 2019 prior to the final expansion of the excavation which was completed on May 19, 2019. The final excavation area was terminated along the western axis at the Property boundary and was approximately 30 metres by 26 metres in area. The final excavation depth was approximately 7.32 mbgs and was terminated at bedrock.

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Approximately 5710 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figures R5C and R5E. Confirmatory sampling in accordance with O.Reg. 153/04 (as amended) was conducted upon completion of the remedial excavation. Additional details are provided in Section 3.1 below. The void space of EX-3 was backfilled using native soils in the vicinity of the remedial excavation.

#### **EX-4**

Remedial Excavation EX-4 was completed on August 9, 2018 under the supervision of DS personnel. The objective of EX-4 was to facilitate the removal and off-site disposal of the soils impacted with boron (HWS) which were identified in test pit TP15A-18 at an approximate depth of 0.3-3.1 mbgs. The excavation was completed using an excavator supplied by DeKay Construction Ltd. The final dimensions of the remedial excavation were approximately 2.13 metres x 3.96 metres and extended to an approximate depth of 4.27 mbgs.

Approximately 40 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figure R6C. Confirmatory sampling in accordance with O.Reg. 153/04 (as amended) was conducted upon completion of the remedial excavation. Additional details are provided in Section 3.1 below. The void space of EX-4 was backfilled using native soils in the vicinity of the remedial excavation.

#### **EX-5**

Remedial Excavation EX-5 was completed between August 9, 2018 and May 18, 2019 under the supervision of DS personnel. The objective of EX-5 was to facilitate the removal and off-site disposal of the soils impacted with EC and barium which were identified in test pit TP16-11 at an approximate depth of 0.2-0.6 mbgs. The excavation was completed using an excavator supplied by DeKay Construction Ltd. The final dimensions of the remedial excavation were approximately 6.10 metres x 2.44 metres and extended to an approximate depth of 4.57 mbgs.

Approximately 70 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figure R7C. Confirmatory sampling in accordance with O.Reg. 153/04 (as amended) was conducted upon completion of the remedial excavation. Additional details are provided in Section 3.1 below. The void space of EX-5 was backfilled using native soils in the vicinity of the remedial excavation.

## **EX-6**

Remedial Excavation EX-6 was completed May 17, 2019 under the supervision of DS personnel. The objective of EX-6 was to facilitate the removal and off-site disposal of the soils impacted with silver which were identified in test pit TP15A-20 at an approximate depth of 2.4-4.0 mbgs. The excavation was completed using an excavator supplied by DeKay Construction Ltd. The final dimensions of the remedial excavation were approximately 1.22 metres x 1.83 metres and extended to an approximate depth of 6.1 mbgs.

Approximately 15 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figure R8C. Confirmatory sampling in accordance with O.Reg. 153/04 (as amended) was conducted upon completion of the remedial excavation. Additional details are provided in Section 3.1 below. The void space of EX-6 was backfilled using native soils in the vicinity of the remedial excavation.

## **3.0 Confirmatory Sampling**

### **3.1 Confirmatory Sampling Activities**

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Confirmatory samples were collected upon completion of the remedial excavation. Per the requirements of O.Reg 153/04 (as amended), soil samples were collected from the remedial excavation for the purposes of field screening at a minimum frequency of one sample per every 5 square metres (m<sup>2</sup>) from the excavation sidewalls, and one sample per every 10m<sup>2</sup> from the excavation floor.

The screening samples collected were inspected and examined to assess soil type, ground water conditions, and possible chemical contamination by visual and olfactory observations or by organic vapour screening. Samples submitted for chemical analysis were collected from locations judged by the assessor to be most likely to exhibit the highest concentrations of contaminants based on several factors including (i) visual or olfactory observations, (ii) sample location, depth, and soil type (iii) ground water conditions and headspace reading. Organic vapour screening was conducted using a calibrated RKI Eagle 2 (Model 5101-P2).

A summary of the remedial excavation dimensions, depth, and number of soil samples collected for screening purposes as well as for laboratory analysis are shown on Table 1 and 2 and is presented in the table below:

**Table 3-1: Summary of Remedial Excavation Sampling**

Location	Excavation ID	Horizontal Extent/Dimensions (metres)	Excavation Depth (metres)	Field Screening Samples	Sidewall Samples Submitted For Chemical Analysis	Floor Samples Submitted For Chemical Analysis
Vicinity of BH18-1	EX-1 August 9, 2018	2.44 x 3.66	3.96	12	4	2
Vicinity of BH15A-6	EX-2 November 28, 2018	3.66 x 2.13	1.52	12	4	2
Vicinity of BH18-5	EX-3A August 9, 2018	3.35 x 6.10	6.7	29	4	2
	EX-3B November 28, 2018	7.00 x 6.10	7.32	45	4	2
	EX-3C January 9, 2019	20.00 x 18.00	7.32	120	8	N/A Excavation terminated at bedrock
	EX-3D January 9, 2019	30.00 x 24.00	7.32	164	7	N/A Excavation terminated at bedrock
Vicinity of TP15A-18	EX-4 August 9, 2018	2.13 x 3.96	4.27	12	4	2
Vicinity of TP16-11	EX-5 August 9, 2018 and May 18, 2019	6.10 x 2.44	4.57	20	4	2
Vicinity of TP15A-20	EX-6 May 17, 2019	1.22 x 1.83	6.1	10	2	2

### 3.2 Confirmatory Sampling Results

Confirmatory soil sampling was conducted in accordance with O.Reg. 153/04 (as amended) in order to assess the efficacy of the remedial excavation activities. The minimum confirmation sampling requirements per Table 3 of Schedule E, Part V of O.Reg. 153/04 (as amended) is summarized in Table 3-2 below:

**Table 3-2: Minimum Confirmation Sampling Requirements for Excavation**

Floor Area (m <sup>2</sup> )	Minimum No. Floor Samples	Minimum No. Sidewall Samples
<25	2	2
>25-50	2	3

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Floor Area (m <sup>2</sup> )	Minimum No. Floor Samples	Minimum No. Sidewall Samples
>50-100	3	3
>100-250	3	5
>250-500	4	6
>500-750	4	7
<750-1000	5	8

A summary of the confirmatory sampling results for each remedial excavation is provided below.

### **3.2.1 EX-1**

A total of twelve field screening samples were collected from the remedial excavation (8 sidewall, 4 floor samples). The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 3 ppm. The CGD readings remained 0 ppm for all samples. The approximate floor area of EX-1 was 9 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for chemical analysis of PHCs F2-F4. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figure R2A and projected on cross-section view in Figures R2B and R2C.

The results of the chemical analyses indicated all of the confirmatory samples met the applicable MECP Table 8 SCS.

### **3.2.2 EX-2**

A total of twelve (12) field screening samples were collected from the remedial excavation (8 sidewall, 4 floor samples). The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 1 ppm. The CGD readings ranged between 0 and 10 ppm for all samples. The approximate floor area of EX-2 was 24 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for chemical analysis of cyanide. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figure R3A and projected on cross-section view in Figures R3B and R3C.

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The results of the chemical analyses indicated all of the confirmatory samples met the applicable MECP Table 8 SCS.

### **3.2.3 EX-3**

Remedial excavation EX-3 was completed over three (3) iterative events completed between August 9, 2018 and January 9, 2019.

#### **August 9, 2018 (EX-3A)**

A total of twenty-nine (29) field screening samples (24 sidewall samples and five floor samples) were collected as part of the initial excavation activities on August 9, 2018. The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 2 ppm. The CGD readings ranged between 0 and 15 ppm for all samples. The original floor area of EX-3 was approximately 20 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for chemical analysis of EC, boron (HWS) and PHCs F2-F4. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figures R4 and R5A and projected on cross-section view in Figures R5B through R5E. The results of the chemical analyses indicated that all of the samples exceeded the Table 8 SCS for PHCs in the F2 fraction range. All of the samples with the exception of floor sample FL3A exceeded the Table 8 SCS for EC. It is noted that all of the samples collected were at depths greater than 1.5 mbgs, as such the standards for boron (HWS) are not applicable.

#### **November 28, 2019 (EX-3B)**

Based on the findings of the August 9, 2018 sampling event, EX-3 was expanded on November 28, 2018 (7m x 6.1m x 7.32m). Forty-five (45) field screening samples (40 sidewall samples and 5 floor samples) were collected from the remedial excavation. The floor samples were collected from the weathered shale/till atop the bedrock. The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 4 ppm. The CGD readings ranged between 0 and 20 ppm for all samples. The approximate floor area of EX-3 was 43 m<sup>2</sup>, as such a total of two (2) sidewall and three (3) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for chemical analysis of EC, boron (HWS) and PHCs F2-F4. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are

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presented on Figures R4 and R5A and projected on cross-section view in Figures R5B through R5E.

All of the samples analysed for PHCs F2-F4 marginally exceeded the Table 8 SCS for PHCs in the F2 fraction range. All of the samples with the exception of floor sample FL1E exceeded the Table 8 SCS for EC. It is noted that all of the samples collected were at depths greater than 1.5 mbgs, as such the standards for boron (HWS) are not applicable.

### **January 9, 2019 (EX-3C)**

Two successive expansions of EX-3 were conducted on January 9, 2019 in an attempt to further delineate the extent of the PHC impacts in soil. EX-3 was first expanded horizontally to approximate dimensions of 20m x 18m.

The remedial excavation could not be extended deeper as the November 28, 2018 excavation was terminated at bedrock. 120 field screening sidewall samples were collected from the remedial excavation. The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 2 ppm. The CGD readings ranged between 0 and 5 ppm for all samples. The approximate floor area of EX-3 was 360 m<sup>2</sup>, as such a total of six (6) sidewall samples are required per O.Reg. 153/04 (as amended). The remedial excavation was terminated at bedrock, as such floor samples could not be collected. A total of eight (8) sidewall samples were submitted for chemical analysis of PHCs F2-F4. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figures R4 and R5A and projected on cross-section view in Figures R5B through R5E.

The results of the chemical analyses indicated that all of the samples with the exception of SWN2A and SWE1B exceeded the Table 8 SCS for PHCs in the F2 fraction range.

### **January 9, 2019 (EX-3D)**

Upon completion EX-3C, the excavation was further expanded horizontally to approximate dimensions of 30m x 24m (EX-3D). The excavation was primarily expanded to the north, south and east, as the western property boundary was encountered approximately 2m west of the EC-3C excavation limit.

164 field screening sidewall samples were collected from the remedial excavation. The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 4 ppm. The CGD readings ranged between 0

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and 20 ppm for all samples. The approximate floor area of EX-3 was 720 m<sup>2</sup>, as such a total of seven (7) sidewall samples are required per O.Reg. 153/04 (as amended). The remedial excavation was terminated at bedrock, as such floor samples could not be collected.

Three (3) sidewall samples (SWN3A, SWS3B and SWE3A) were submitted in January 2019 for laboratory analysis to assess the soil quality at the perimeter of EX-3D. Upon receipt of the analytical results it was determined that all three (3) samples met the Table 8 SCS. An additional four (4) sidewall samples were collected from the EX-3D sidewalls on February 21, 2019 to supplement the three (3) sidewall samples previously collected. All of the sidewall samples submitted for chemical analysis in February 2019 met the Table 8 SCS for PHCs, indicating that the PHC impacts associated with MW18-5 had been successfully remediated. One (1) field duplicate sample was submitted for Quality Assurance/Quality Control (QA/QC) purposes as part of each of the EX-3D sample submissions. The locations of the confirmatory samples are presented on Figures R4 and R5A and projected on cross-section view in Figures R5B through R5E.

### **May 19, 2019**

The EX-3D excavation was left open between the February 2019 and May 19<sup>th</sup> due to winter conditions. On May 19, 2019 seven (7) additional sidewall samples were collected from EX-3D and submitted to Maxxam Analytics for forensic analysis of key anions to assess whether the EC impacts identified are the result of soils subject to road salt application, or if the elevated levels of EC are attributable to the natural soil conditions.

The results of the forensic analysis indicated that the samples contained chloride concentrations between 30 to 70 µg/g. It was noted by Maxxam that road salt impacted soils typically contain chloride concentrations in excess of 1000 µg/g. Furthermore, the sulphate concentrations in the samples were found to range between 800 to 4,500 µg/g, as such the reported elevated EC values appear to be the result of elevated sulphate concentrations, rather than chloride, suggesting that the elevated EC levels are not the result of application of road salt.

Sulphate sources range from naturally occurring minerals and deposits, to a wide range of soil amendments (e.g. fertilizers, pesticides and soil stabilizers). The lithology encountered in BH18-5 consisted of 300 mm of topsoil, underlain by 1.2 m of clayey silt fill, and clayey silt till (Halton Till).

The samples analysed were collected from the native Halton Till unit, which is considered to be of low permeability, and were collected at depths greater than 3.1 mbgs. Any application

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of soil amendments would have been at the surface, and the majority of any amendments applied would have adsorbed to the organic matter contained within the topsoil. There is no indication based on the Phase One ESA of soil amendments being applied to the Property within the past 10 years. Based on the physical separation of over 3 metres, and the low permeability soils present on-Site, it is the opinion of the QP<sub>ESA</sub> that the elevated sulphate concentrations are the result of naturally occurring minerals, and therefore is not considered to be a contaminant, as defined by the EPA (EPA, 1990).

### **3.2.1 EX-4**

A total of ten (10) field screening samples were collected from the remedial excavation (8 sidewall, 2 floor samples). The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 1 ppm. The CGD readings ranged between 0 and 5 ppm for all samples. The approximate floor area of EX-4 was 8.4 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for chemical analysis of boron (HWS). One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figure R6A and projected on cross-section view in Figures R6B and R6C.

The results of the chemical analyses indicated all of the confirmatory samples met the applicable MECP Table 8 SCS.

### **3.2.1 EX-5**

#### **August 9, 2018**

A total of twenty (20) field screening samples were collected from the remedial excavation (16 sidewall, 4 floor samples). The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 2 ppm. The CGD readings ranged between 0 and 20 ppm for all samples. The approximate floor area of EX-5 was 15 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for EC analysis. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figure R7A and projected on cross-section view in Figures R7B and R7C.

The results of the chemical analyses indicated all of the confirmatory samples met the applicable MECP Table 8 SCS.

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## **May 2019**

Additional chemical analysis was conducted on May 18, 2019 to confirm that the barium impacts identified by WSP in 2016 at TP16-11 had been successfully remediated during the August 2018 remedial excavation. Two (2) floor samples and two (2) sidewall samples were from the limits of EX-5 and submitted for chemical analysis of metals. The results indicated that both of the floor samples and the southern sidewall sample met the MECP Table 8 SCS. Sample TP16-11 SWW (collected from west sidewall) was found to marginally exceed the Table 8 SCS for cobalt. In accordance with O.Reg. 153/04, found additional samples (TP16-11 SWW2-SWW5) were collected on May 30, 2019 within 1.5m of TP16-11 SWW. The average concentration of cobalt was found to be 18 µg/g, which is below the Table 8 SCS.

Based on the results of the May 2019 sampling it was concluded that the former EC and barium impacts identified had been successfully remediated.

### **3.2.2 EX-6**

A total of twelve (12) field screening samples were collected from the remedial excavation (8 sidewall, 4 floor samples). The soil vapour headspace readings were collected using a PID and CGD in methane elimination mode. The PID readings ranged between 0 and 5 ppm. The CGD readings ranged between 0 and 10 ppm for all samples. The approximate floor area of EX-6 was 2.2 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of two (2) sidewall and two (2) floor samples were submitted for chemical analysis of metals. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figure R8A and projected on cross-section view in Figures R8B and R8C.

The results of the chemical analyses indicated all of the confirmatory samples met the applicable MECP Table 8 SCS.

## **3.3 Quality Control and Quality Assurance**

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The field QA/QC program involved the collection of field duplicate soil samples. In addition to the controls listed above, the analytical laboratory employed method blanks, internal laboratory duplicates, surrogate spike samples, matrix spike samples, and standard reference materials.

A summary of the field duplicate samples analyzed and an interpretation of the efficacy of the QA/QC program is provided in the table below.

**Table 3-3: Summary of QA/QC Results**

Sample ID	QA/QC duplicate	Medium	Parameter Analyzed	QA/QC Result
QAQC1	SW1N (BH18-1)	Soil	F2-F4	All results were within the analytical protocol criteria for RPD
QAQC2	SW2W (BH15A-6)	Soil	Cyanide	All results were within the analytical protocol criteria for RPD
DUP-1	SW1E (BH15A-6)	Soil	Cyanide	All results were within the analytical protocol criteria for RPD
QAQC3	SW3N (BH18-5)	Soil	F2-F4	All results were within the analytical protocol criteria for RPD
DUP 18-5D FL	FL1W (BH18-5)	Soil	F2-F4	All results were within the analytical protocol criteria for RPD
DUP-1	SWE2B	Soil	F2-F4	All results were within the analytical protocol criteria for RPD
DUP-2	SWE1B (BH18-5)	Soil	F2-F4	All results were within the analytical protocol criteria for RPD
DUP-1	CS SE1 (BH18-5)	Soil	F2-F4	All results were within the analytical protocol criteria for RPD
QAQC4	SW4N (TP15A-18)	Soil	Boron (HWS)	All results were within the analytical protocol criteria for RPD
TP15A-20 DUP-1	TP15A-20 FS2	Soil	Silver	All results were within the analytical protocol criteria for RPD
TP16-11 DUP-1	TP16-11 SWW	Soil	Barium	All results were within the analytical protocol criteria for RPD, except for the parameters listed below.
TP16-11 DUP-2	TP16-11 SWW5	Soil	Barium	All results were within the analytical protocol criteria for RPD
QAQC5	TP16-11 SW5E	Soilo	EC	All results were within the analytical protocol criteria for RPD.

The following exceptions in the RPD protocols were identified:

- ◆ The RPD value for TP16-11 DUP-1 (TP16-11 SWW) of 48% exceeded the recommended 30% RPD limit for Barium. The variance in the analytical result between the parent and duplicate sample are attributed to the heterogeneity of the matrix analyzed.

## 4.0 Conclusions

The results of the post-remediation confirmatory sampling indicated that the remedial efforts were successful in reducing the concentrations of contaminants in soil to levels below the MECP Table 8 SCS. Based on these findings no further remedial work is required to meet the requirements of O.Reg. 153/04 (as amended).

### 4.1 Signatures

This Phase Two ESA was conducted under the supervision of Mr. Patrick (Rick) Fioravanti, B.Sc., P.Geo., QP<sub>ESA</sub> in accordance with the requirements of O.Reg. 153/04 (as amended). The

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findings and conclusions presented have been determined based on the information obtained at the time of the investigation, and on an assessment of the conditions of the Site at this time.

We trust this report meets with your requirements. Should you have any questions regarding the information presented, please do not hesitate to contact our office.

Yours truly,

**DS Consultants Ltd**



**Aphrodite Koseos, B.Sc., EPT.**  
Environmental Technician



**Patrick Fioravanti, B.Sc., P.Geo.,**  
Environmental Project Manager

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## **4.2 Limitations**

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This report was prepared for the sole use of Bressa Developments and is intended to provide an assessment of the environmental condition on the property located at 1429 Dundas Street East, Oakville, Ontario. The information presented in this report is based on information collected during the completion of the Phase Two Environmental Site Assessment by DS Consultants Ltd. The material in this report reflects DS' judgment in light of the information available at the time of report preparation. This report may not be relied upon by any other person or entity without the written authorization of DS Consultants Ltd. The scope of services performed in the execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or reuse of this documents or findings, conclusions and recommendations represented herein, is at the sole risk of said users.

The conclusions drawn from the Phase Two ESA were based on information at selected observation and sampling locations. Conditions between and beyond these locations may become apparent during future investigations or on-site work, which could not be detected or anticipated at the time of this investigation. The sampling locations were chosen based upon a cursory historical search, visual observations and limited information provided by persons knowledgeable about past and current activities on this site during the Phase Two ESA activities. As such, DS Consultants Ltd. cannot be held responsible for environmental conditions at the site that was not apparent from the available information.



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# Tables



**Table 1: Summary of Monitoring Well Installation and Groundwater Data**

Phase Two ESA Borehole ID:		BH18-1	BH15A-6	BH18-5	BH18-5	BH18-5	BH18-5	TP15A-18	TP16-11	TP15A-20
Excavation ID:		EX-1	EX-2	EX-3A	EX-3B	EX-3C	EX-3D	EX-4	EX-5	EX-6
Date Completed:		09-Aug-18	28-Nov-19	09-Aug-18	28-Nov-18	09-Jan-19	09-Jan-19	09-Aug-18	09-Aug-18	28-Nov-18
Length:	m	2.44	3.66	3.35	7.00	20.00	30.00	2.13	6.10	1.22
Width:	m	3.66	2.13	6.10	6.10	18.00	24.00	3.96	2.44	1.83
Depth:	mbgs	3.96	1.52	6.70	7.32	7.32	7.32	4.27	4.57	6.10

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 2: Summary of Soil Samples Submitted for Chemical Analysis**

Excavation	Borehole Vicinity	Horizontal Extent/Dimensions (metres)	Excavation Depth	Field Screening Samples	Samples Submitted for Chemical Analysis	Sidewall or Floor Sample	Sample Depth	Parameters Analysed
EX-1	BH18-1	2.44 x 3.66	3.96	12	FL1A	Floor Sample	3.96	PHCs (F2-F4)
					FL1B	Floor Sample	3.96	PHCs (F2-F4)
					SW1S	Southwall Sample	3.1-3.7	PHCs (F2-F4)
					SW1N	Northwall Sample	3.1-3.7	PHCs (F2-F4)
					SW1E	Eastwall Sample	3.1-3.7	PHCs (F2-F4)
					SW1W	Westwall Sample	3.1-3.7	PHCs (F2-F4)
EX-2	BH15A-6	6.00 x 4.00	1.5	12	FL1E	Floor Sample	1.52	Cyanide
					FL1W	Floor Sample	1.52	Cyanide
					SW1E	Eastwall Sample	0.0-0.6	Cyanide
					SW1W	Westwall Sample	0.0-0.6	Cyanide
					SW1N	Northwall Sample	0.0-0.6	Cyanide
					SW1S	Southwall Sample	0.0-0.6	Cyanide
EX-3A	BH18-5	3.35 x 6.10	6.10	29	FL3A	Floor Sample	6.70	EC, PHCs (F2-F4)
					FL3B	Floor Sample	6.70	EC, PHCs (F2-F4)
					SW3S	Southwall Sample	3.1-3.7	EC, PHCs (F2-F4)
					SW3N	Northwall Sample	3.1-3.7	EC, PHCs (F2-F4)
					SW3E	Eastwall Sample	3.1-3.7	EC, PHCs (F2-F4)
					SW3W	Westwall Sample	3.1-3.7	EC, PHCs (F2-F4)
EX-3B	BH18-5	7.00 x 6.10	7.32	45	FL1E	Floor Sample	7.32	EC, PHCs (F2-F4)
					FL1W	Floor Sample	7.32	EC, PHCs (F2-F4)
					DUP18-5D FL	Floor Sample	7.32	EC, PHCs (F2-F4)
					SW1E	Eastwall Sample	3.1-3.7	EC
					SW1W	Westwall Sample	3.1-3.7	EC
					SW1N	Northwall Sample	3.1-3.7	EC
					SW1S	Southwall Sample	3.1-3.7	EC
					SW2E	Eastwall Sample	6.1-6.7	PHCs (F2-F4)
					SW2W	Westwall Sample	6.1-6.7	PHCs (F2-F4)
					SW2N	Northwall Sample	6.1-6.7	PHCs (F2-F4)
					SW2S	Southwall Sample	6.1-6.7	PHCs (F2-F4)



**Table 2: Summary of Soil Samples Submitted for Chemical Analysis**

Excavation	Borehole Vicinity	Horizontal Extent/Dimensions (metres)	Excavation Depth	Field Screening Samples	Samples Submitted for Chemical Analysis	Sidewall or Floor Sample	Sample Depth	Parameters Analysed
EX-3C	BH18-5	20.00 x 18.00	7.32	150	SWN1B	Northwall Sample	6.1-6.7	PHCs (F2-F4)
					SWS1B	Southwall Sample	6.1-6.7	PHCs (F2-F4)
					SWW1B	Westwall Sample	6.1-6.7	PHCs (F2-F4)
					SWE1B	Eastwall Sample	6.1-6.7	PHCs (F2-F4)
					DUP-2 (SWE1B)	Eastwall Sample	6.1-6.7	PHCs (F2-F4)
					SWN2A	Northwall Sample	6.1-6.7	PHCs (F2-F4)
					SWS2A	Southwall Sample	6.1-6.7	PHCs (F2-F4)
					SWE2B	Eastwall Sample	6.1-6.7	PHCs (F2-F4)
					SWW2A	Westwall Sample	6.1-6.7	PHCs (F2-F4)
					DUP-1 (SWE2B)	Eastwall Sample	6.1-6.7	PHCs (F2-F4)
EX-3D	BH18-5	30.00 x 24.00	7.32	235	SWN3A	Northwall Sample	6.1-6.7	PHCs (F2-F4)
					SWS3B	Southwall Sample	6.1-6.7	PHCs (F2-F4)
					SWE3A	Eastwall Sample	6.1-6.7	PHCs (F2-F4)
					CS NE1	Northwall Sample	6.1-6.7	PHCs (F2-F4)
					CS NW1	Northwall Sample	6.1-6.7	PHCs (F2-F4)
					CW SW1	Westwall Sample	6.1-6.7	PHCs (F2-F4)
					CS SE1	Eastwall Sample	6.1-6.7	PHCs (F2-F4)
					DUP-1 (CS SE1)	Eastwall Sample	6.1-6.7	PHCs (F2-F4)
EX-4	TP15A-18	2.13 X 3.96	4.27	12	FL4A	Floor Sample	4.27	Boron (HWS)
					FL4B	Floor Sample	4.27	Boron (HWS)
					SW4N	Northwall Sample	0.3-3.7	Boron (HWS)
					SW4S	Southwall Sample	0.3-3.7	Boron (HWS)
					SW4E	Eastwall Sample	0.3-3.7	Boron (HWS)
					SW4W	Westwall Sample	0.3-3.7	Boron (HWS)
EX-5	TP16-11	6.10 x 2.44	4.57	20	TP16-11 FS1	Floor Sample	4.57	Metals
					TP16-11 FS2	Floor Sample	4.57	Metals
					TP16-11 SWS	Southwall Sample	2.4-3.4	Metals
					TP16-11 SWW	Westwall Sample	2.4-3.4	Metals
					DUP -1 TP16-11	TP16-11 SWW	2.4-3.4	Metals
					TP16-11 SWW2	Westwall Sample	2.4-3.4	Metals
					TP16-11 SWW3	Westwall Sample	2.4-3.4	Metals
					TP16-11 SWW4	Westwall Sample	2.4-3.4	Metals
					TP16-11 SWW5	Westwall Sample	2.4-3.4	Metals
					DUP 2 TP16-11	TP16-11 SWW5	2.4-3.4	Metals



**Table 2: Summary of Soil Samples Submitted for Chemical Analysis**

Excavation	Borehole Vicinity	Horizontal Extent/Dimensions (metres)	Excavation Depth	Field Screening Samples	Samples Submitted for Chemical Analysis	Sidewall or Floor Sample	Sample Depth	Parameters Analysed
EX-6	TP15A-20	1.22 x 1.83	6.10	10	TP15A-20 FS1	Floor Sample	6.1	Metals
					TP15A-20 FS2	Floor Sample	6.1	Metals
					TP15A-20 SWN	Northwall Sample	2.4-4.0	Metals
					TP15A-20 SWE	Eastwall Sample	2.4-4.0	Metals
					DUP-1 TP15A-20	TP15A-20 FS2	6.1	Metals



**Table 3: Summary of Metals and Inoganicss in Soil**

Parameter		BH15A-6 SW1E	DUP-1 (SW1E)	BH15A-6 SW1W	BH15A-6 SW1N	BH15A-6 SW1S	BH15A-6 FL1E	BH15A-6 FL1W
<b>Borehole Vicinity</b>	<b>MECP Table 8 SCS</b>	BH15A-6	BH15A-6	BH15A-6	BH15A-6	BH15A-6	BH15A-6	BH15A-6
<b>Excavation</b>		EX-2	EX-2	EX-2	EX-2	EX-2	EX-2	EX-2
<b>Date of Collection</b>		28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18
<b>Date Reported</b>		06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18
<b>Sample Depth (mbgs)</b>		0-0.6	0-0.6	0-0.6	0-0.6	0-0.6	1.52	1.52
<b>Analytical Report Reference No.</b>		L2204678-1	L2204678-7	L2204678-2	L2204678-3	L2204678-4	L2204678-5	L2204678-6
Electrical Conductivity (EC)		0.7	-	-	-	-	-	-
Cyanide, Weak Acid Diss	0.051	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Barium, (Ba)	220	-	-	-	-	-	-	-
Boron (HWS)	1.5	-	-	-	-	-	-	-
Cobolt (Co)	22	-	-	-	-	-	-	-
Silver (Ag)	0.5	-	-	-	-	-	-	-

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 3: Summary of Metals and Inoganicss in Soil**

Parameter		FL3A	QAQC3 (FL3A)	FL3B	SW3S	SW3N	SW3E
<b>Borehole Vicinity</b>	<b>MECP Table 8 SCS</b>	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5
<b>Excavation</b>		EX-3A	EX-3A	EX-3A	EX-3A	EX-3A	EX-3A
<b>Date of Collection</b>		09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18
<b>Date Reported</b>		20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18
<b>Sample Depth (mbgs)</b>		6.70	6.70	6.70	3.1-3.7	3.1-3.7	3.1-3.7
<b>Analytical Report Reference No.</b>		L2145643-11	L2145643-32	L2145643-37	L2145643-12	L2145643-13	L2145643-14
Electrical Conductivity (EC)		0.7	0.668	0.664	0.753*	0.759*	0.881*
Cyanide, Weak Acid Diss	0.051	-	-	-	-	-	-
Barium, (Ba)	220	-	-	-	-	-	-
Boron (HWS)	1.5	-	-	-	-	-	-
Cobolt (Co)	22	-	-	-	-	-	-
Silver (Ag)	0.5	-	-	-	-	-	-

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 3: Summary of Metals and Inoganicss in Soil**

Parameter		SW3W	MW18-5D SW1E	DUP 18-5D (SW1E)	MW18-5D SW1W	MW18-5D SW1N	MW18-5D SW1S	MW18-5D FL1E
<b>Borehole Vicinity</b>	<b>MECP Table 8 SCS</b>	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5
<b>Excavation</b>		EX-3A	EX-3B	EX-3B	EX-3B	EX-3B	EX-3B	EX-3B
<b>Date of Collection</b>		09-Aug-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18
<b>Date Reported</b>		20-Aug-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18
<b>Sample Depth (mbgs)</b>		3.1-3.7	3.1-3.7	3.1-3.7	3.1-3.7	3.1-3.7	3.1-3.7	7.32
<b>Analytical Report Reference No.</b>		L2145643-15	L2204676-1	L2204676-7	L2204676-2	L2204676-3	L2204676-4	L2204676-5
Electrical Conductivity (EC)		0.7	0.764*	0.917*	1.89*	2.56*	1.21*	0.748*
Cyanide, Weak Acid Diss	0.051	-	-	-	-	-	-	-
Barium, (Ba)	220	-	-	-	-	-	-	-
Boron (HWS)	1.5	-	-	-	-	-	-	-
Cobolt (Co)	22	-	-	-	-	-	-	-
Silver (Ag)	0.5	-	-	-	-	-	-	-

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 3: Summary of Metals and Inoganicss in Soil**

Parameter		MW18-5D FL1W	FL4A	FL4B	SW4N	QAQC4 (SW4N)	SW4S	SW4E
Borehole Vicinity	<b>MECP Table 8 SCS</b>	BH18-5	TP15A-18	TP15A-18	TP15A-18	TP15A-18	TP15A-18	TP15A-18
Excavation		EX-3B	EX-4	EX-4	EX-4	EX-4	EX-4	EX-4
Date of Collection		28-Nov-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18
Date Reported		06-Dec-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18
Sample Depth (mbgs)		7.32	4.27	4.27	0.3-3.7	0.3-3.7	0.3-3.7	0.3-3.7
Analytical Report Reference No.		L2204676-6	L2145643-20	L2145643-38	L2145643-21	L2145643-33	L2145643-22	L2145643-23
Electrical Conductivity (EC)		0.7	0.785*	-	-	-	-	-
Cyanide, Weak Acid Diss	0.051	-	-	-	-	-	-	-
Barium, (Ba)	220	-	-	-	-	-	-	-
Boron (HWS)	1.5	-	0.46	0.55	0.37	0.39	0.34	0.61
Cobolt (Co)	22	-	-	-	-	-	-	-
Silver (Ag)	0.5	-	-	-	-	-	-	-

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 3: Summary of Metals and Inoganicss in Soil**

Parameter		SW4W	FL5A	FL5B	SW5N	SW5S	SW5E	QAQC5 (SW5E)
Borehole Vicinity	<b>MECP Table 8 SCS</b>	TP15A-18	TP16-11	TP16-11	TP16-11	TP16-11	TP16-11	TP16-11
Excavation		EX-4	EX-5	EX-5	EX-5	EX-5	EX-5	EX-5
Date of Collection		09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18
Date Reported		20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18
Sample Depth (mbgs)		0.3-3.7	4.57	4.57	2.4-3.4	2.4-3.4	2.4-3.4	2.4-3.4
Analytical Report Reference No.		L2145643-24	L2145643-25	L2145643-39	L2145643-26	L2145643-27	L2145643-28	L2145643-34
Electrical Conductivity (EC)		0.7	-	0.347	0.321	0.202	0.177	0.226
Cyanide, Weak Acid Diss	0.051	-	-	-	-	-	-	-
Barium, (Ba)	220	-	-	-	-	-	-	-
Boron (HWS)	1.5	0.28	-	-	-	-	-	-
Cobolt (Co)	22	-	-	-	-	-	-	-
Silver (Ag)	0.5	-	-	-	-	-	-	-

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 3: Summary of Metals and Inorganics in Soil**

Parameter		SW5W	TP16-11 FS1	TP16-11 FS2	TP16-11 SWS	TP16-11 SWW	DUP -1 TP16-11 (SWW)	TP16-11 SWW2
<b>Borehole Vicinity</b>	<b>MECP Table 8 SCS</b>	TP16-11	TP16-11	TP16-11	TP16-11	TP16-11	TP16-11	TP16-11
<b>Excavation</b>		EX-5	EX-5	EX-5	EX-5	EX-5	EX-5	EX-5
<b>Date of Collection</b>		09-Aug-18	18-May-19	18-May-19	18-May-19	18-May-19	18-May-19	30-May-19
<b>Date Reported</b>		20-Aug-18	28-May-19	28-May-19	28-May-19	28-May-19	28-May-19	06-Jun-19
<b>Sample Depth (mbgs)</b>		2.4-3.4	4.57	4.57	2.4-3.4	2.4-3.4	2.4-3.4	2.4-3.4
<b>Analytical Report Reference No.</b>		L2145643-29	L2276430-1	L2276430-2	L2276430-3	L2276430-4	L2276430-5	L2282595-1
Electrical Conductivity (EC)		0.7	0.218	-	-	-	-	-
Cyanide, Weak Acid Diss	0.051	-	-	-	-	-	-	-
Barium, (Ba)	220	-	112	120	103	70.5	115	125
Boron (HWS)	1.5	-	-	-	-	-	-	-
Cobolt (Co)	22	-	21.5	17.4	9.9	<b>23</b>	<b>22.3</b>	18.2
Silver (Ag)	0.5	-	0.26	0.36	<0.20	<0.20	0.31	<0.20

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 3: Summary of Metals and Inorganics in Soil**

Parameter		TP16-11 SWW3	TP16-11 SWW4	TP16-11 SWW5	DUP 2 TP16- 11 (SWW5)	TP15A-20 FS1	TP15A-20 FS2	TP15A-20 SWN
<b>Borehole Vicinity</b>	<b>MECP Table 8 SCS</b>	TP16-11	TP16-11	TP16-11	TP16-11	TP15A-20	TP15A-20	TP15A-20
<b>Excavation</b>		EX-5	EX-5	EX-5	EX-5	EX-6	EX-6	EX-6
<b>Date of Collection</b>		30-May-19	30-May-19	30-May-19	30-May-19	17-May-19	17-May-19	17-May-19
<b>Date Reported</b>		06-Jun-19	06-Jun-19	06-Jun-19	06-Jun-19	28-May-19	28-May-19	28-May-19
<b>Sample Depth (mbgs)</b>		2.4-3.4	2.4-3.4	2.4-3.4	2.4-3.4	6.10	6.10	2.4-4.0
<b>Analytical Report Reference No.</b>		L2282595-2	L2282595-3	L2282595-4	L2282595-5	L2276455-1	L2276455-2	L2276455-3
Electrical Conductivity (EC)		0.7	-	-	-	-	-	-
Cyanide, Weak Acid Diss	0.051	-	-	-	-	-	-	-
Barium, (Ba)	220	111	81.7	98	85.6	72.4	85.4	91.7
Boron (HWS)	1.5	-	-	-	-	-	-	-
Cobalt (Co)	22	18.7	19.3	11.2	9.5	14.1	14.6	15
Silver (Ag)	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 3: Summary of Metals and Inoganicss in Soil**

Parameter		TP15A-20 SWE	DUP-1 TP15A- 20 (FS2)
Borehole Vicinity	<b>MECP Table 8 SCS</b>	TP15A-20	TP15A-20
Excavation		EX-6	EX-6
Date of Collection		17-May-19	17-May-19
Date Reported		28-May-19	28-May-19
Sample Depth (mbgs)		2.4-4.0	2.4-4.0
Analytical Report Reference No.		L2276455-4	L2276455-5
Electrical Conductivity (EC)		0.7	-
Cyanide, Weak Acid Diss	0.051	-	-
Barium, (Ba)	220	137	82.9
Boron (HWS)	1.5	-	-
Cobolt (Co)	22	13	14.3
Silver (Ag)	0.5	<0.20	<0.20

For Table Notes see **Notes for Soil and Groundwater Summary Tables**, included at the end of this Section



**Table 4: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	FL1A	FL1B	SW1S	SW1N	QAQC1 (SW1N)	SW1E	
		BH18-1	BH18-1	BH18-1	BH18-1	BH18-1	BH18-1	BH18-1
		EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1
<b>Date of Collection</b>		09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18
<b>Date Reported</b>		20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18
<b>Sample Depth (mbgs)</b>		3.96	3.96	3.1-3.7	3.1-3.7	3.1-3.7	3.1-3.7	3.1-3.7
<b>Analytical Report Reference No.</b>		L2145643-1	L2145643-35	L2145643-2	L2145643-3	L2145643-30	L2145643-4	
F2 (C10-C16)	10	<10	<10	<10	<10	<10	<10	
F3 (C16-C34)	240	<50	<50	<50	<50	<50	<50	
F4 (C34-C50)	120	<50	<50	<50	<50	<50	<50	

For Table Notes see **Notes for Soil Summary Tables**, included at the end of this Section



**Table 4: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	SW1W	FL3A	FL3B	SW3S	SW3N	QAQC3 (SW3N)
		BH18-1	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5
		EX-1	EX-3A	EX-3A	EX-3A	EX-3A	EX-3A
<b>Date of Collection</b>		09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18	09-Aug-18
<b>Date Reported</b>		20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18
<b>Sample Depth (mbgs)</b>		3.1-3.7	6.70	6.70	3.1-3.7	3.1-3.7	3.1-3.7
<b>Analytical Report Reference No.</b>		L2145643-5	L2145643-11	L2145643-37	L2145643-12	L2145643-13	L2145643-32
F2 (C10-C16)		10	<10	<b>20</b>	<b>13</b>	<b>13</b>	<b>11</b>
F3 (C16-C34)	240	<50	58	54	<50	<50	<50
F4 (C34-C50)	120	<50	<50	<50	<50	<50	<50

For Table Notes see **Notes for Soil Summary Tables**, included at the end of this Section



**Table 4: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	SW3E	SW3W	MW18-5D SW2E	MW18-5D SW2W	MW18-5D SW2N	MW18-5D SW2S
		BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5
		EX-3A	EX-3A	EX-3B	EX-3B	EX-3B	EX-3B
<b>Date of Collection</b>		09-Aug-18	09-Aug-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18
<b>Date Reported</b>		20-Aug-18	20-Aug-18	06-Dec-18	06-Dec-18	06-Dec-18	06-Dec-18
<b>Sample Depth (mbgs)</b>		3.1-3.7	3.1-3.7	6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7
<b>Analytical Report Reference No.</b>		L2145643-14	L2145643-15	L2204660-1	L2204660-2	L2204660-3	L2204660-4
F2 (C10-C16)		10	<b>15</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>12</b>
F3 (C16-C34)	240	55	<50	60	69	61	<50
F4 (C34-C50)	120	<50	<50	<50	<50	<50	<50

For Table Notes see **Notes for Soil Summary Tables**, included at the end of this Section



**Table 4: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	MW18-5D FL1E	MW18-5D FL1W	DUP18-5D FL	SWN1B	SWS1B	SWW1B	
		BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5
		EX-3B	EX-3B	EX-3B	EX-3C	EX-3C	EX-3C	EX-3C
<b>Date of Collection</b>		28-Nov-18	28-Nov-18	28-Nov-18	09-Jan-19	09-Jan-19	09-Jan-19	09-Jan-19
<b>Date Reported</b>		06-Dec-18	06-Dec-18	06-Dec-18	17-Jan-19	17-Jan-19	17-Jan-19	17-Jan-19
<b>Sample Depth (mbgs)</b>		7.32	7.32	7.32	6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7
<b>Analytical Report Reference No.</b>		L2204660-5	L2204660-6	L2204660-7	L2219555-1	L2219555-4	L2219555-10	L2219555-10
F2 (C10-C16)		10	<b>13</b>	<b>12</b>	<10	<b>17</b>	<b>17</b>	<b>12</b>
F3 (C16-C34)	240	61	52	<50	63	61	<50	
F4 (C34-C50)	120	<50	<50	<50	<50	<50	<50	

For Table Notes see **Notes for Soil Summary Tables**, included at the end of this Section



**Table 4: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	SWE1B	DUP-2 (SWE1B)	SWN2A	SWW2A	SWS2A	SWE2B	
		BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5
		EX-3C	EX-3C	EX-3C	EX-3C	EX-3C	EX-3C	EX-3C
<b>Date of Collection</b>		09-Jan-19	09-Jan-19	09-Jan-19	09-Jan-19	09-Jan-19	09-Jan-19	09-Jan-19
<b>Date Reported</b>		17-Jan-19	17-Jan-19	17-Jan-19	17-Jan-19	17-Jan-19	17-Jan-19	17-Jan-19
<b>Sample Depth (mbgs)</b>		6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7
<b>Analytical Report Reference No.</b>		L2219555-7	L2219555-13	L2219555-2	L2219555-11	L2219555-5	L2219555-8	
F2 (C10-C16)		10	<10	<10	<10	<b>23</b>	<b>14</b>	<b>15</b>
F3 (C16-C34)	240	<50	<50	<50	77	<50	<50	
F4 (C34-C50)	120	<50	<50	<50	<50	<50	<50	

For Table Notes see **Notes for Soil Summary Tables**, included at the end of this Section



**Table 4: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	DUP-1 (SWE2B)	SWN3A	SWS3B	SWE3A	CS NE1	CS NW1
		BH18-5	BH18-5	BH18-5	BH18-5	BH18-5	BH18-5
		EX-3C	EX-3D	EX-3D	EX-3D	EX-3D	EX-3D
<b>Date of Collection</b>		09-Jan-19	09-Jan-19	09-Jan-19	09-Jan-19	21-Feb-19	21-Feb-19
<b>Date Reported</b>		17-Jan-19	17-Jan-19	17-Jan-19	17-Jan-19	04-Mar-19	04-Mar-19
<b>Sample Depth (mbgs)</b>		6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7	6.1-6.7
<b>Analytical Report Reference No.</b>		L2219555-12	L2219555-3	L2219555-6	L2219555-9	L2237732-1	L2237732-2
F2 (C10-C16)		10	15	<10	<10	<10	<10
F3 (C16-C34)	240	53	<50	<50	<50	<50	
F4 (C34-C50)	120	<50	<50	<50	<50	<50	

For Table Notes see **Notes for Soil Summary Tables**, included at the end of this Section



**Table 4: Summary of PHCs in Soil**

Parameter	MECP Table 8 SCS	CW SW1	CS SE1	DUP-1 (CS SE1)
		BH18-5	BH18-5	BH18-5
		EX-3D	EX-3D	EX-3D
<b>Date of Collection</b>		21-Feb-19	21-Feb-19	21-Feb-19
<b>Date Reported</b>		04-Mar-19	04-Mar-19	04-Mar-19
<b>Sample Depth (mbgs)</b>		6.1-6.7	6.1-6.7	6.1-6.7
<b>Analytical Report Reference No.</b>		L2237732-3	L2237732-4	L2237732-5
F2 (C10-C16)	10	<10	<10	<10
F3 (C16-C34)	240	<50	<50	<50
F4 (C34-C50)	120	<50	<50	<50

For Table Notes see **Notes for Soil Summary Tables**, included at the end of this Section



**Notes for Soil & Groundwater Summary Tables**

<b>Result</b>	Concentration exceeds site conditions standards
<b>Result</b>	Detection limit exceeds site condition standards
<b>Units</b>	Units for all soil analyses are in µg/g (ppb) unless otherwise indicated
mm	Milimeters
m	Meters
mbgs	Meters below ground surface
masl	Meters above sea level
SCS	Site Condition Standards
NA	Not Applicable
ORPs	Other Registered Parameters
PHCs	Petroleum Hydrocarbons
BTEX	Benzene, toluene, ethylbenzene, xylenes (total)
MECP Table 8 SCS	Generic Condition Standards in a Potable Groundwater Condition for Use within 30 m of a Water Body as contained in Table 8 of the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", published by the MECP on April 15, 2011
*	Not considard to be contamination based on the results of the forensic analysis



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# Appendix F



**DS Consultants Ltd.**  
6221 Highway 7, Unit 16  
Vaughan, ON  
L4H 0K8

July 26, 2019

Attention: Mr. Rick Fioravanti, B.Sc., P.Geo., QP<sub>ESA</sub>

**Re: Data Interpretation – Maxxam Job Nos. B9F1811, B9F1891, B9F1899,  
B9F1910, B9F1920, B9F1930 and B9F1936**

Dear Mr. Fioravanti,

Maxxam Analytics (Maxxam) was retained by DS Consultants Ltd. (DS) to provide interpretation on inorganic analytical results for seven soil samples. These analyses performed included Sodium Adsorption Ratio (SAR), Electrical Conductivity (EC), Anions by Ion Chromatography and Iodide by ICP/MS. It is our understanding that these samples were collected from a site containing fill material that was suspected to be impacted by road salt. The purpose of this investigation was to determine whether the EC exceedances are caused by road salt based on a comparison of key inorganic parameter concentrations between the samples. Below is a summary list of the samples reviewed.

Maxxam Job Number	Sample ID
B9F1936	BH18-5 SW2N
B9F1930	BH18-5 SW1S
B9F1920	BH18-5 SW3N
B9F1920	BH18-5 SW2S
B9F1899	BH18-5 SW1N
B9F1891	BH18-5 SW2E
B9F1811	BH18-5 SW1E

### Analytical Method

**Sodium Adsorption Ratio (SAR)** is calculated using the measured concentrations of sodium, calcium and magnesium. The quantitative values for these three parameters are obtained following analysis using inductively coupled plasma (ICP) optical emission spectroscopy.

**Electrical Conductivity (EC)** is measured using a probe, via a PC-Titrate system. EC is a measure of a solution's ability to conduct an electric current is directly proportional to the concentration of dissolved charged ions such as those associated with salt.



**Anions** (fluoride, chloride, nitrite, bromide, nitrate, phosphate and sulphate) are analyzed using ion chromatography.

**Iodide** concentrations were also determined using ICP coupled with mass spectrometry.

A table summarizing the analytical results is presented below.

**Table 1. Summary of analytical results.**

Parameters	BH18-5 SW2N	BH18-5 SW1S	BH18-5 SW3N	BH18-5 SW2S	BH18-5 SW1N	BH18-5 SW2E	BH18-5 SW1E	RDLs	
	JXI294	JXI210	JXI177	JXI112	JXI090	JXI055	JXH558		
<b>SAR</b>	1.3	1.1	0.69	1.3	0.8	0.82	0.69	-	
<b>Conductivity (mS/cm)</b>	1	1.5	2.2	0.98	2	1.9	2.4	0.002	
<b>Moisture (%)</b>	10	11	10	11	9.7	14	11	1	
<b>Nitrate (ug/g)</b>	4	ND	ND	ND	4	5	ND	4	<i>Anions Scan</i>
<b>Phosphate (ug/g)</b>	ND	ND	ND	ND	ND	ND	ND	20	
<b>Sulphate (ug/g)</b>	861	1,020	4,470	881	3,030	2,210	4,210	20	
<b>Iodide (ug/g)</b>	ND	ND	ND	ND	ND	ND	ND	0.04	<i>ICP/MS</i>
<b>Bromide (ug/g)</b>	ND	ND	ND	ND	ND	ND	ND	20	<i>Anions</i>
<b>Chloride (ug/g)</b>	38	38	41	34	65	55	45	10	<i>Anions</i>

## Observations and Conclusions

- All samples exceeded the applicable regulatory standard for Electrical Conductivity;

Note: Electrical conductivity (EC) can be used as a measure of soil salinity. Values for EC in excess of the applicable regulatory standards may be an indicator of road salt impact.

- All samples had chloride concentrations between 30ug/g and 70ug/g;

Note: Road salt impacted soils typically result in much higher chloride concentrations, typically >1,000ug/g

- All samples had sulphate concentrations between 800ug/g and 4,500ug/g
- The elevated EC values appear to be the result of high sulphate in the soils rather than chloride, suggesting road salt is not the cause of impact.



Based only on the analyses described above, the elevated sulphate concentrations appear to be the main contributor to the EC exceedances. This suggests that the elevated EC values are not the result of road salt impacts.

While the source of the sulphate is difficult to determine based on the limited data set, a review of literature indicates that sulphate sources could range from naturally occurring minerals and deposits to a wide range of soil amendments such as fertilizers, pesticides or soil stabilizers. If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely,  
**Maxxam Analytics Corporation**

Virgil Guran, M.A.Sc., C.Chem.  
Consulting Scientist, Site Assessment & Remediation  
Environmental Services

Terry Obal, Ph.D., C.Chem  
Chief Science Advisor  
Environmental Services



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# Appendix G

## **Phase Two Conceptual Site Model**

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### **Introduction**

The Phase Two Conceptual Site Model (CSM) has been prepared for the Site based on the Phase One ESA, Phase Two ESA, and remediation activities. This Phase Two CSM is comprised of the following figures and text:

Figure 1 – Site Location Plan

Figure 2 – Phase One Property Site Plan

Figure 3A – Phase One Property Study Area

Figure 3B – PCA within Phase One Property Study Area

Figure 4 – Borehole Location Plan with APECs

Figure 5A – Groundwater Elevation Contours and Flow Direction (Overburden)

Figure 5B – Groundwater Elevation Contours and Flow Direction (Bedrock)

Figure 6A – Soil Characterization – Metals

Figure 6Ai – Soil Characterization – Metals

Figure 6Aii – Soil Characterization – Metals

Figure 6B – Soil Characterization – ORPs

Figure 6Bi – Soil Characterization – ORPs

Figure 6Bii – Soil Characterization – ORPs

Figure 6C – Soil Characterization – PHCs

Figure 6Ci – Soil Characterization – PHCs

Figure 6D – Soil Characterization – PAHs

Figure 6Di – Soil Characterization – PAHs

Figure 6E – Soil Characterization – VOCs

Figure 6F – Soil Characterization – OCPs

Figure 6G – Soil Characterization – PCBs

Figure 7A – Groundwater Characterization – Metals and ORPs

Figure 7Ai – Groundwater Characterization – Metals and ORPs

Figure 7Aii – Groundwater Characterization – Metals and ORPs

Figure 7B – Groundwater Characterization – PHCs

Figure 7C – Groundwater Characterization – VOCs

Figure 8A – Geological Cross Section A-A'

Figure 8Ai – Geological Cross Section A-A' with Metals and Hydride Impacts in Soil

Figure 8Aii – Geological Cross Section A-A' with ORP Impacts in Soil

Figure 8Aiii – Geological Cross Section A-A' with PHC Impacts in Soil

Figure 8B – Geological Cross Section B-B’  
Figure 8Bi – Geological Cross Section B-B’ with Metals and Hydride Impacts in Soil  
Figure 8Bii – Geological Cross Section B-B’ with ORP Impacts in Soil  
Figure 8Biii – Geological Cross Section B-B’ with PHC Impacts in Soil  
Figure 8C – Geological Cross Section C-C’  
Figure 8Ci – Geological Cross Section C-C’ with Metals and Hydride Impacts in Soil  
Figure 8Cii – Geological Cross Section C-C’ with ORP Impacts in Soil  
Figure 8Ciii – Geological Cross Section C-C’ with PHC Impacts in Soil  
Figure 8D – Geological Cross Section D-D’  
Figure 8Di – Geological Cross Section D-D’ with Metals and Hydride Impacts in Soil  
Figure 8Dii – Geological Cross Section D-D’ with ORP Impacts in Soil  
Figure 8Diii – Geological Cross Section D-D’ with PHC Impacts in Soil  
Figure 9 – Exposure Pathways and Receptors  
Figure R1 – Remedial Excavation Location Plan  
Figure R2A – Confirmatory Soil Characterization for EX-1 - PHCs  
Figure R2B – Geological Cross Section D-D’ with PHC Impacts in Soil  
Figure R2C – Geological Cross Section D-D’ with PHC Impacts in Soil (Post Remediation)  
Figure R3A – Confirmatory Soil Characterization for EX-2 – ORPs  
Figure R3B – Geological Cross Section B-B’ ORP Impacts in Soil  
Figure R3C – Geological Cross Section B-B’ ORP Impacts in Soil (Post Remediation)  
Figure R4 – Confirmatory Soil Characterization for EX-3 - Metals and ORPs  
Figure R5A – Confirmatory Soil Characterization form EX-3 – PHCs  
Figure R5B – Geological Cross Section C-C’ with PHC Impacts in Soil  
Figure R5C – Geological Cross Section C-C’ with PHC Impacts in Soil (Post Remediation)  
Figure R5D – Geological Cross Section A-A’ with PHC Impacts in Soil  
Figure R5E – Geological Cross Section A-A’ with PHC Impacts in Soil (Post Remediation)  
Figure R6A – Confirmatory Soil Characterization for EX-4 – Metals and ORPs  
Figure R6B – Geological Cross Section D-D’ with ORP Impacts in Soil  
Figure R6C – Geological Cross Section D-D’ with ORP Impacts in Soil (Post Remediation)  
Figure R7A – Confirmatory Soil Characterization for EX-5 – Metals and ORPs  
Figure R7B – Geological Cross Section D-D’ with Metals and Hydride Impacts in Soil  
Figure R7C – Geological Cross Section D-D’ with Metals and Hydride Impacts in Soil (Post Remediation)  
Figure R8A – Confirmatory Soil Characterization for EX-6 – Metals and ORPs  
Figure R8B – Geological Cross Section C-C’ with Metals and Hydride Impacts in Soil

Figure R8C – Geological Cross Section C-C’ with Metals and Hydrides Impacts in Soil (Post Remediation)

Figure R9 – Exposure Pathways and Receptors – Post Remediation

The Phase Two Property is a 24 hectare (59.31 acres) parcel of land situated within a mixed residential and agricultural neighbourhood in the Town of Oakville, Ontario. It should be noted that the Phase Two Property comprises the southern portion of a 101.9-hectare parcel of land known as the “Bressa Property” and is herein referred to as the “Bressa Development Lands”. The adjacent lands to the east and north of the Phase Two Property are referred to as the “NHS lands” which encompass the natural heritage feature associated with Joshua’s Creek and a 30 metre off-set from the aforementioned natural heritage feature, and the “Valleylands” which include the valley associated with Joshua’s Creek. A Record of Site Condition was previously obtained for the Valleylands in August 2016 (RSC #222461).

The Property was historically used for agricultural purposes from the 1800s to the late 1970s. The Property was subsequently used as a golf course from the 1980s to the mid-2010s. The Property is currently vacant and undeveloped.

**Background**

Based on a review of the previous environmental reports available for the Site, it appears that fill material was placed extensively over the southwestern portion of the Site over a period of two months in the 2000s by a Mr. Frank Anthony. It was estimated by WSP in 2016 that up to 340,000 cubic metres of fill material may be present on the Property. The fill material was described to contain organics and debris, with an average depth of 3 metres. The maximum fill depth encountered was greater than 6.6 metres. A summary of the historical analytical program is provided in the following table:

Consultant	Parameter Tested	Number of Samples	Result
AME (2002)	Metals and Inorganics	30	TP34 – exceeded SCS for Boron (HWE) (2.3-3.0 mbgs). The SCS for Boron (HWE) are non-applicable to subsurface soils, as such this is not considered to be an exceedance of the applicable SCS.
Terrapex (2006)	Metals	4	Met Site Condition Standards
	PHCs	1	
	VOCs	1	
WSP (2015-2016)	Metals and Inorganics	38 + 3 duplicates	BH15A-6 SS1 – exceeded SCS for cyanide (0-0.6 mbgs) TP15A-18 Sa2 – exceeded SCS for Boron (HWE) (0.3-3.0 mbgs)

Consultant	Parameter Tested	Number of Samples	Result
			TP16-11 Sa1 – exceeded SCS for EC and Barium (2.4-3.4 mbgs)  TP15A-20 Sa3 – exceeded SCS for silver (2.4-4.0 mbgs)
	PHCs, VOCs	2 + 1 duplicate	Met Site Condition Standards
	PAHs	2 + 1 duplicate	Met Site Condition Standards
	PCBs and OC Pesticides	4 + 1 duplicate	Met Site Condition Standards

In summary, a total of eighty-two (82) soil samples were collected from the fill material on-site and analysed between 2002 and 2016. A total of four (4) exceedances of the current MECP Table 8 SCS were identified. The soil chemistry obtained by AME and Terrapex are more than a decade old and have not been relied upon for the purpose of assessing the current site conditions. The sampling conducted by WSP was completed in accordance with the protocols of O.Reg. 153/04 (as amended) and as such this data has been incorporated into this conceptual site model.

### **Phase One ESA**

DS Consultants Ltd. completed a Phase One ESA of the Property in 2018. The Phase One ESA found that the Property was historically used for agricultural purposes from the 1800s until the late 1970s. The Property was then converted into White Oaks Golf Course from the early 1980s until the mid-2010s. The Property remains vacant and undeveloped. A total of two (2) APECs relating to the two historical storage tanks servicing the former golf clubhouse and the importation of fill material were identified. No off-site PCAs were identified which were considered to be contributing to an APEC on the Property.

The following contaminants of potential concern were identified for the Property: PHCs, VOCs, BTEX, Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, low or high pH, SAR, and PAHs.

Select surface soil samples were assessed for Organochlorine Pesticides (OC Pesticides) at the request of the Client and their contractor. The purpose of this assessment was to determine if the high organic content soils could be re-used as topsoil at off-site locations. It is DS' understanding that OC Pesticide analysis was requested by the local municipality. It was noted by DS that the soils on-site had been previously assessed for the presence of OC

Pesticides, with non-detectable concentrations reported by the analytical laboratory. It is further noted that the results of the historic Phase One ESA interview with the former operator of the golf course indicated that the golf course did not have the funds available to make use of pesticides on the property.

The results of this supplementary OC Pesticide analysis has been reported under a separate letter, and these results are not considered to be relevant to this Phase Two ESA with respect to the APECs identified and the associated COPCs.

### **Phase Two ESA – June 2018 – November 2018**

The initial Phase Two ESA scope of work included a review of the data previously obtained by historical test pitting activities, and supplemented the historical data through the advancement of five (5) nests of shallow and deeper monitoring wells. The upper tier (shallow) monitoring wells were screened to intersect the first water bearing formation, which in general was encountered within the weathered shale/till complex overlaying the bedrock. The deeper monitoring wells (middle tier) were installed within the bedrock at approximately 15.2 metres depth.

Soil and groundwater samples were submitted for analysis of the potential contaminants of concern, including: PHCs, VOCs, BTEX, Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, low or high pH, SAR, OC Pesticides and PAHs.

Soil exceedances of the Table 8 SCS included the following:

#### **WSP 2015-2016 Investigation**

- ◆ Barium, identified in TP16-11 (2.4-3.4 mbgs);
- ◆ Boron (HWS), identified TP15A-18 (0.3-3.7 mbgs);
- ◆ Cyanide, identified in BH15A-6 (0.0-0.7mbgs);
- ◆ Electrical Conductivity, identified in TP16-11 (2.4-3.4 mbgs); and
- ◆ Silver, identified in TP15A-20 (2.4-4.0 mbgs);

#### **DS Consultants Ltd 2018 Phase Two ESA**

- ◆ Electrical Conductivity, identified in BH18-5 (3.1-3.7 mbgs); and
- ◆ PHC F2, identified in BH18-1 (3.1-3.7 mbgs) and BH18-5 (6.1-6.7 mbgs)

Groundwater exceedances of the Table 8 SCS were first identified as follows:

- ◆ Sodium and chloride, identified in BH15A-5, BH15A-6, BH15A-7, MW18-2D, MW18-3S, MW18-3D, MW18-4S, MW18-4D, MW18-5D;
- ◆ Cobalt, identified in BH15A-7 during one (1) sampling event;
- ◆ Uranium, identified in BH15A-7, MW18-3S and MW18-5D during one (1) sampling event

Based on the initial results of the groundwater sampling, a lower tier of monitoring wells were installed adjacent to borehole/monitoring well locations BH18-2, BH18-3, and BH18-4 and were labelled as BH18-2D2, BH18-3D2 and BH18-4D2 respectively. The lower tier of monitoring wells were installed at an approximate depth of 22.9 mbgs, within the competent bedrock. One (1) additional intermediate tier monitoring well (BH18-6) was also installed north of borehole/monitoring well location BH18-2 in order to assess the upgradient (background) groundwater conditions. The results of the groundwater sampling conducted in the lower tier monitoring wells and intermediate tier monitoring well BH18-6 indicated concentrations of sodium and chloride in excess of the Table 8 SCS.

Test pits TP18-1 to TP18-4 were advanced within APEC-2 in November 2018 in order to assess the soil quality in the vicinity of the former ASTs. All of the samples analysed met the Table 8 SCS.

### **Remedial Excavations**

Upon identifying the soil impacts, DS conducted a total of six (6) remedial excavations on the Property which were designated as “EX-1” through “EX-6”. A description of the remediation activities is provided below:

#### **EX-1**

Remedial Excavation EX-1 was completed on August 9, 2018 under the supervision of DS personnel. The objective of EX-1 was to facilitate the removal and off-site disposal of the soils impacted with PHCs in the F2 fraction range which were identified in borehole BH18-1 at an approximate depth of 3.1-3.7 mbgs. The final dimensions of the remedial excavation were approximately 2.44 metres x 3.66 metres and extended to an approximate depth of 4.0 mbgs.

Approximately 40 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figure R2C. Confirmatory sampling in accordance with O.Reg. 153/04 (as amended) was conducted upon completion of the remedial excavation. Four (4) sidewall, two (2) floor samples and one (1) QA/QC duplicate were submitted for chemical

analysis. The confirmatory sampling locations are depicted on Figure R2A. All of the confirmatory samples met the MECP Table 8 SCS.

The void space of EX-1 was subsequently backfilled using native soils in the vicinity of the remedial excavation.

### **EX-2**

Remedial Excavation EX-2 was completed on November 28, 2018 under the supervision of DS personnel. The objective of EX-2 was to facilitate the removal and off-site disposal of the soils impacted with cyanide which were identified in borehole BH15A-6 at an approximate depth of 0-0.6 mbgs. The final dimensions of the remedial excavation were approximately 3.66 x 2.13 metres and extended to an approximate depth of 1.52 mbgs.

Approximately 12 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figure R3C. Confirmatory sampling in accordance with O.Reg. 153/04 (as amended) was conducted upon completion of the remedial excavation. Four (4) sidewall, two (2) floor samples and one (1) QA/QC duplicate were submitted for chemical analysis. The confirmatory sampling locations are depicted on Figure R3A. All of the confirmatory samples met the MECP Table 8 SCS.

The void space of EX-2 was backfilled using native soils in the vicinity of the remedial excavation.

### **EX-3**

Remedial Excavation EX-3 was completed between August 9, 2018 and January 9, 2019 under the supervision of DS personnel. The objective of EX-3 was to facilitate the removal and off-site disposal of the soils impacted with PHCs in the F2 fraction range which were identified in borehole BH18-5 at an approximate depth of 6.1-6.7 mbgs. Electrical conductivity (EC) impacts were originally suspected to be present in borehole BH18-5 based on the initial chemical analyses conducted in June 2018.

#### **August 9, 2018 (EX-3A)**

The original floor area of EX-3 was approximately 20 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for chemical analysis of EC, boron (HWS) and PHCs F2-F4. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are

presented on Figures R4 and R5A and projected on cross-section view in Figures R5B through R5E. The results of the chemical analyses indicated that all of the samples exceeded the Table 8 SCS for PHCs in the F2 fraction range. All of the samples with the exception of floor sample FL3A exceeded the Table 8 SCS for EC. It is noted that all of the samples collected were at depths greater than 1.5 mbgs, as such the standards for boron (HWS) are not applicable.

#### November 28, 2019 (EX-3B)

Based on the findings of the August 9, 2018 sampling event, EX-3 was expanded on November 28, 2018 (7m x 6.1m x 7.32m). The floor samples were collected from the weathered shale/till atop the bedrock. The approximate floor area of EX-3 was 43 m<sup>2</sup>, as such a total of two (2) sidewall and three (3) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for chemical analysis of EC, boron (HWS) and PHCs F2-F4. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figures R4 and R5A and projected on cross-section view in Figures R5B through R5E.

All of the samples analysed for PHCs F2-F4 marginally exceeded the Table 8 SCS for PHCs in the F2 fraction range. All of the samples with the exception of floor sample FL1E exceeded the Table 8 SCS for EC. It is noted that all of the samples collected were at depths greater than 1.5 mbgs, as such the standards for boron (HWS) are not applicable.

#### January 9, 2019 (EX-3C)

Two successive expansions of EX-3 were conducted on January 9, 2019 in an attempt to further delineate the extent of the PHC impacts in soil. EX-3 was first expanded horizontally to approximate dimensions of 20m x 18m.

The remedial excavation could not be extended deeper as the November 28, 2018 excavation was terminated at bedrock. The approximate floor area of EX-3C was 360 m<sup>2</sup>, as such a total of six (6) sidewall samples are required per O.Reg. 153/04 (as amended). The remedial excavation was terminated at bedrock, as such floor samples could not be collected. A total of eight (8) sidewall samples were submitted for chemical analysis of PHCs F2-F4. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figures R4 and R5A and projected on cross-section view in Figures R5B through R5E.

The results of the chemical analyses indicated that all of the samples with the exception of SWN2A and SWE1B exceeded the Table 8 SCS for PHCs in the F2 fraction range.

January 9, 2019 (EX-3D)

Upon completion EX-3C, the excavation was further expanded horizontally to approximate dimensions of 30m x 24m (EX-3D). The excavation was primarily expanded to the north, south and east, as the western property boundary was encountered approximately 2m west of the EC-3C excavation limit. EX-3D was taken to the western property boundary of the Site.

The approximate floor area of EX-3 was 720 m<sup>2</sup>, as such a total of seven (7) sidewall samples are required per O.Reg. 153/04 (as amended). The remedial excavation was terminated at bedrock, as such floor samples could not be collected.

Three (3) sidewall samples (SWN3A, SWS3B and SWE3A) were submitted in January 2019 for laboratory analysis to assess the soil quality at the perimeter of EX-3D. Upon receipt of the analytical results it was determined that all three (3) samples met the Table 8 SCS. An additional four (4) sidewall samples were collected from the EX-3D sidewalls on February 21, 2019 to supplement the three (3) sidewall samples previously collected. All of the sidewall samples submitted for chemical analysis in February 2019 met the Table 8 SCS for PHCs, indicating that the PHC impacts associated with MW18-5 had been successfully remediated. One (1) field duplicate sample was submitted for Quality Assurance/Quality Control (QA/QC) purposes as part of each of the EX-3D sample submissions. The locations of the confirmatory samples are presented on Figures R4 and R5A and projected on cross-section view in Figures R5B through R5E.

May 19, 2019

The EX-3D excavation was left open between the February 2019 and May 19<sup>th</sup> due to winter conditions. On May 19, 2019 seven (7) additional sidewall samples were collected from EX-3D and submitted to Maxxam Analytics for forensic analysis of key anions to assess whether the EC impacts identified are the result of soils subject to road salt application, or if the elevated levels of EC are attributable to the natural soil conditions.

The results of the forensic analysis indicated that the samples contained chloride concentrations between 30 to 70 µg/g. It was noted by Maxxam that road salt impacted soils typically contain chloride concentrations in excess of 1000 µg/g. Furthermore, the sulphate concentrations in the samples were found to range between 800 to 4,500 µg/g, as such the reported elevated EC values appear to be the result of elevated sulphate concentrations,

rather than chloride, suggesting that the elevated EC levels are not the result of application of road salt.

Sulphate sources range from naturally occurring minerals and deposits, to a wide range of soil amendments (e.g. fertilizers, pesticides and soil stabilizers). The lithology encountered in BH18-5 consisted of 300 mm of topsoil, underlain by 1.2 m of clayey silt fill, and clayey silt till (Halton Till).

The samples analysed were collected from the native Halton Till unit, which is considered to be of low permeability, and were collected at depths greater than 3.1 mbgs. Any application of soil amendments would have been at the surface, and the majority of any amendments applied would have adsorbed to the organic matter contained within the topsoil. There is no indication based on the Phase One ESA of soil amendments being applied to the Property within the past 10 years. Based on the physical separation of over 3 metres, and the low permeability soils present on-Site, it is the opinion of the QP<sub>ESA</sub> that the elevated sulphate concentrations are the result of naturally occurring minerals, and therefore is not considered to be a contaminant, as defined by the EPA (EPA, 1990).

#### **EX-4**

Remedial Excavation EX-4 was completed on August 9, 2018 under the supervision of DS personnel. The objective of EX-4 was to facilitate the removal and off-site disposal of the soils impacted with boron (HWS) which were identified in test pit TP15A-18 at an approximate depth of 0.3-3.1 mbgs. The final dimensions of the remedial excavation were approximately 2.13 metres x 3.96 metres and extended to an approximate depth of 4.27 mbgs.

Approximately 40 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility. A visual representation of the approximate extent of the remedial excavation is provided in Figure R6C.

The approximate floor area of EX-4 was 8.4 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for chemical analysis of boron (HWS). One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figure R6A and projected on cross-section view in Figures R6B and R6C. The results of the chemical analyses indicated all of the confirmatory samples met the applicable MECP Table 8 SCS.

The void space of EX-4 was backfilled using native soils in the vicinity of the remedial excavation.

### **EX-5**

Remedial Excavation EX-5 was completed between August 9, 2018 and May 18, 2019 under the supervision of DS personnel. The objective of EX-5 was to facilitate the removal and off-site disposal of the soils impacted with EC and barium which were identified in test pit TP16-11 at an approximate depth of 0.2-0.6 mbgs. The final dimensions of the remedial excavation were approximately 6.10 metres x 2.44 metres and extended to an approximate depth of 4.57 mbgs. Approximately 70 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility.

#### **August 9, 2018**

The approximate floor area of EX-5 was 15 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of four (4) sidewall and two (2) floor samples were submitted for EC analysis. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figure R7A and projected on cross-section view in Figures R7B and R7C. The results of the chemical analyses indicated all of the confirmatory samples met the applicable MECP Table 8 SCS.

#### **May 2019**

Additional chemical analysis was conducted on May 18, 2019 to confirm that the barium impacts identified by WSP in 2016 at TP16-11 had been successfully remediated during the August 2018 remedial excavation. Two (2) floor samples and two (2) sidewall samples were from the limits of EX-5 and submitted for chemical analysis of metals. The results indicated that both of the floor samples and the southern sidewall sample met the MECP Table 8 SCS. Sample TP16-11 SWW (collected from west sidewall) was found to marginally exceed the Table 8 SCS for cobalt. In accordance with O.Reg. 153/04, found additional samples (TP16-11 SWW2-SWW5) were collected on May 30, 2019 within 1.5m of TP16-11 SWW. The average concentration of cobalt was found to be 18 µg/g, which is below the Table 8 SCS.

Based on the results of the May 2019 sampling it was concluded that the former EC and barium impacts identified had been successfully remediated. The void space of EX-5 was backfilled using native soils in the vicinity of the remedial excavation.

### **EX-6**

Remedial Excavation EX-6 was completed May 17, 2019 under the supervision of DS personnel. The objective of EX-6 was to facilitate the removal and off-site disposal of the soils

impacted with silver which were identified in test pit TP15A-20 at an approximate depth of 2.4-4.0 mbgs. The excavation was completed using an excavator supplied by DeKay Construction Ltd. The final dimensions of the remedial excavation were approximately 1.22 metres x 1.83 metres and extended to an approximate depth of 6.1 mbgs.

Approximately 15 cubic metres of soils were excavated and disposed of at a licensed MECP receiving facility.

The approximate floor area of EX-4 was 2.2 m<sup>2</sup>, as such a total of two (2) sidewall and two (2) floor samples are required per O.Reg. 153/04 (as amended). A total of two (2) sidewall and two (2) floor samples were submitted for chemical analysis of metals. One (1) field duplicate sample was also submitted for Quality Assurance/Quality Control (QA/QC) purposes. The locations of the confirmatory samples are presented on Figure R8A and projected on cross-section view in Figures R8B and R8C.

The results of the chemical analyses indicated all of the confirmatory samples met the applicable MECP Table 8 SCS.

### **Summary of Soil Quality on Property**

Soils impacted with metals, other regulated parameters, and PHCs were identified on the Property. Remediation of the impacted soils was conducted between August 2018 and May 2019. As of May 18, 2019 the soils on the Property are considered by the QP<sub>ESA</sub> to meet the applicable site condition standards.

### **Summary of Groundwater Quality on Property**

#### Cobalt and Uranium Exceedances

The cobalt (BH15A-7) and uranium (BH15A-7, MW18-3S and MW18-5D) exceedances are considered to be anomalous based on the results of the remaining three (3) sampling events in which acceptable concentrations of cobalt and uranium were identified.

#### Elevated Reported Detection Limits

The laboratory certificates of analysis indicated that dilution of the sample resulting in elevated detection limits (greater than the Table 8 SCS) was required for samples MW18-3D (July 26, 2018), MW18-3D2 (September 19, 2018) and MW18-4D2 (September 19, 2018). The results of subsequent sampling events conducted on MW18-3D indicated acceptable non-detectable concentrations of cobalt. Cobalt exceedances were not identified in any of the upper tier monitoring wells on the Property. The laboratory indicated that the dilution was required due to the elevated concentrations of other analytes in the sample (e.g. sodium and

chloride). As there is no indication of cobalt within the upper aquifer investigated or source of cobalt contamination identified, it is the opinion of the QP<sub>ESA</sub> that the elevated detection limits in the lowest tier of monitoring wells has not limited the ability to assess for the presence of cobalt as a contaminant of concern with respect to the groundwater quality on-Site.

### Sodium, Chloride and Boron

The upper tier of monitoring wells on the Property were screened within the first water bearing formation encountered. Monitoring wells MW18-1S and MW18-2S were the only borehole locations in which groundwater was identified within the overburden. The results of the chemical analyses conducted on both of these monitoring wells indicated acceptable concentrations of all parameters of concern.

The remaining upper tier monitoring wells were screened within the weathered shale/till complex (BH15A-5, BH15A-6, BH15A-7, MW18-3S and MW18-4S). The middle tier monitoring wells (MW18-1D, MW18-2D, MW18-3D, MW18-4D, MW18-5D and MW18-6) were installed within the bedrock at an approximate depth of 15 mbgs. Elevated concentrations of sodium and/or chloride in excess of the Table 8 SCS were reported in all of the middle tier monitoring wells, with the exception of MW18-1D.

The Queenston Shale which is present on-Site has been documented to naturally exhibit elevated concentrations of sulphate, chloride, calcium, sodium, magnesium, manganese, strontium, iron, hardness, and total dissolved solids (AECOM, 2009 & Canadian Journal of Earth Science, 2017). According to Sibul et al. (1977) sodium occurs naturally in Queenston Shales, and the ion exchange process results in the replacement of calcium with sodium in groundwater, resulting in naturally high concentrations of sodium in groundwater derived from the Queenston Shale formation.

In general, the reported concentrations of sodium and chloride increased with depth. The concentrations of sodium and chloride in the intermediate tier monitoring wells were approximately 1.5 to 4.8 times greater than the reported concentrations in the upper tier monitoring wells. Similarly, the concentrations of sodium and chloride in the lower tier monitoring wells were approximately 1.5 to 3.4 times greater than the reported concentrations in the middle tier monitoring wells.

The Phase Two Property is an agricultural field with no roads and/or municipal walkways subject to application of road salt. Based on the findings of the Phase One ESA, the only potential source of sodium and chloride impact to the groundwater was the fill material of

unknown quality (potentially subjected to de-icing salts) imported to the Site. The native Halton Till encountered on the property is of low permeability, and the groundwater table was generally encountered within the weathered shale/till complex.

The results of the soil chemical analysis (metals and inorganics analysis) indicated that of the 73 soil samples analysed between 2002 and 2018, only two (2) of the samples marginally exceeded the Table 8 SCS in borehole BH18-5 (3.1-3.7 mbgs) and test pit TP16-11 Sa1. The results of the May 2019 forensic analysis indicated that the elevated EC values do not appear to be attributable to the application of road salt and are therefore attributed to background conditions.

Based on the lack of apparent source of sodium and chloride impact, the findings of the May 2019 forensics analysis, and the physical separation of greater than 4 metres through low permeability till between the reported elevated levels of EC in soil and the groundwater table, and the available literature documenting naturally elevated levels of sodium and chloride in Queenstone Shales, it is concluded by DS that the elevated levels of sodium and chloride observed in water are not anthropogenic in nature, and are the result of the natural bedrock conditions.

The Environmental Protection Act (EPA) defines contaminants as “any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect (EPA, 1990)”.

Concentrations of boron in excess of the Table 8 SCS were reported in monitoring well MW18-3D2. Both of the corresponding upper and intermediate tier monitoring wells at this monitoring well nest location met the Table 8 SCS for boron, as such it is the opinion of the QP<sub>ESA</sub> that the reported concentration of boron in MW18-3D2 is attributable to background conditions, and is not considered to be contamination as defined under the EPA (EPA, 1990).

As there is no indication that the elevated concentrations of sodium, chloride, and boron reported in groundwater are anthropogenic in nature, it is concluded that the elevated concentrations of sodium, chloride and boron are not considered to be contamination, as defined by the EPA. As such it is concluded by the QP<sub>ESA</sub> that the groundwater quality on the Phase Two Property meets the applicable site condition standards.

**I. Description and Assessment of:**

**A. Areas where potentially contaminating activity has occurred**

A total of four (4) PCAs were identified in the Phase One ESA. A summary of the PCAs considered to be contributing to APECs on the Phase Two Property is provided in the table below.

**Table 1-1: Summary of PCAs Contributing to APECs**

PCA Item.	PCA Description (Per. Table 2, Schedule D of O.Reg. 153/04)	Description	Contributing to APEC (Y/N)
1	PCA-30: Importation of Fill Material of Unknown Quality	Fill material was previously imported to the Phase One Property, as has been characterized by AME in 2002, and by WSP in 2015. Several pockets of impacted fill material were formerly identified by AME and WSP. The estimated extent of the fill pile and the location of the soil impacts identified is depicted on Figure 2B.	Yes – APEC-1
2	PCA-28: Gasoline and associated products storage in fixed tanks	Two ASTs were formerly present on the Phase One Property and were used by the former golf club. The ASTs are no longer present on-site.	Yes – APEC-2

**B. Areas of potential environmental concern**

A total of two (2) APECs were identified to be present on the Phase Two Property through the completion of the Phase One ESA. A summary of the APECs identified, and the associated PCOCs is provided in the table below.

**Table 1-2: Summary of APECs identified on the Phase Two Property**

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground water, soil and/or sediment)
APEC-1	Southwestern portion of Site	PCA-30: Importation of Fill Material of Unknown Quality -Historical Importation of fill material with confirmed soil impacts	On-Site	PHCs, VOCs, BTEX, Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, low or high pH, SAR, PAHs	Soil

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground water, soil and/or sediment)
				Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, sodium, chloride	Groundwater
APEC-2	Southeastern portion of Site	PCA-28: Gasoline and associated products storage in fixed tanks -Historical presence of two ASTs servicing the former golf club.	On-Site	PHCs F1-F4, BTEX, PAHs	Soil

In order to investigate the APECs identified on the Phase Two Property, the following soil samples were submitted for chemical analysis.

**Table 1-2: Summary of Soil Samples Submitted for Chemical Analysis**

Borehole ID	Sample No.	Sample Depth (mbgs)	Soil Description	Parameter Analyzed	APEC Investigated
<b>WSP 2015-2016</b>					
TP16-01	Sa1	0.2-1.8	Fill - Silty Sand	Metals and ORPs	APEC-1
	Sa2	1.8-2.1	Fill - Silty Clay	Metals and ORPs	APEC-1
TP16-02	Sa1	1.5-2.0	Fill - Silty Sand	Metals and ORPs	APEC-1
TP16-03	Sa2	1.6-2.1	Silty Clay Till	Metals and ORPs	APEC-1
TP16-04	Sa1	0.2-1.5	Fill - Silty Sand	Metals and ORPs	APEC-1
	Sa3	2.0-3.0	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-05	Sa1	1.8-2.4	Fill - Silty Clay	Metals and ORPs	APEC-1
TP16-06	Sa2	6.0-6.2	Fill - Topsoil	Metals and ORPs	APEC-1
TP16-07	Sa3	5.9-6.1	Fill - Silty Clay	Metals and ORPs	APEC-1
TP16-08	Sa1	0.3-0.9	Fill - Clayey Silt	Metals and ORPs	APEC-1
	Sa2	0.9-3.0	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-09	Sa2	0.6-4.30	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-10	Sa1	0.2-2.7	Fill - Clayey Silt	Metals and ORPs	APEC-1
	Sa2	2.7-3.7	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-11	Sa0	1.2-2.4	Fill - Clayey Silt	PAHs	APEC-1
	Sa1	2.40-3.40	Clayey Silt	Metals and ORPs	APEC-1
TP16-13	Sa1	2.1-2.4	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-14	Sa2	0.3-1.2	Fill - Silt	Metals and ORPs	APEC-1
	Sa3	1.2-3.7	Fill - Mixed	Metals and ORPs	APEC-1
TP16-15	Sa2	0.6-1.5	Fill - Silt	Metals and ORPs	APEC-1
TP16-16	Sa2	0.4-1.3	Fill - Clayey Silt	Metals and ORPs, PAHs	APEC-1

Borehole ID	Sample No.	Sample Depth (mbgs)	Soil Description	Parameter Analyzed	APEC Investigated
TP16-17	Sa2	0.2-1.5	Fill - Clayey Silt	Metals and ORPs	APEC-1
	Sa4	3.5-4.6	Fill - Sand and Gravel	Metals and ORPs	APEC-1
TP16-18	Sa4	0.8-1.8	Fill - Clayey Silt	Metals and ORPs	APEC-1
	Sa6	2.0-2.4	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-19	Sa2	0.3-0.6	Fill - Silt	PAHs	APEC-1
	Sa5	1.8-2.7	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP16-20	Sa2	0.6-2.1	Fill - Silt	PAHs	APEC-1
	Sa6	3.0-6.1	Fill - Silty Clay	Metals and ORPs	APEC-1
BH15A-5	SS2	0.8-1.4	Fill - Topsoil	PCBs	APEC-1
	SS3	1.5-2.1	Fill - Clayey Silt	PHCs, VOCs	APEC-1
	SS4	2.3-2.9	Fill - Clayey Silt	PAHs	APEC-1
	SS6	4.6-5.2	Clayey Silt Till	PHCs	APEC-1
	SS7	6.1-6.7	Clayey Silt Till	Metals and ORPs	APEC-1
BH15A-6	SS1	0-0.6	Sand and Gravel	Metals and ORPs	APEC-1
	SS3	1.5-2.1	Clayey Silt	PHCs, VOCs	APEC-1
	SS10	9.1-9.7	Clayey Silt Till	PHCs	APEC-1
BH15A-7	SS4	2.3-2.9	Fill - Silty Clay	PCBs	APEC-1
TP15A-6	Sa2	0.3-1.7	Fill - Silty Clay	PAHs	APEC-1
TP15A-7	Sa2	0.3-3.2	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	3.2-4.3	Fill - Silty Clay	PAHs	APEC-1
TP15A-8	Sa2	0.3-2.4	Silty Clay	OCPs	APEC-1
TP15A-9	Sa2	0.3-1.1	Silty Clay	Metals and ORPs	APEC-1
TP15A-10	Sa2	0.3-0.9	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	0.9-3.7	Silty Clay	PAHs	APEC-1
TP15A-11	Sa2	0.3-2.0	Fill - Silty Clay	Metals and ORPs	APEC-1
TP15A-13	Sa2	0.3-1.2	Fill - Clayey Silt	PCBs	APEC-1
	Sa3	1.2-1.9	Fill - Clayey Silt	Metals and ORPs	APEC-1
TP15A-14	Sa3	1.2-3.0	Fill - Silty Clay	Metals and ORPs	APEC-1
TP15A-15	Sa2	0.3-1.1	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	1.1-3.2	Silty Clay	PAHs	APEC-1
TP15A-16	Sa2	0.3-2.4	Fill- Silty Clay	OCPs	APEC-1
TP15A-17	Sa2	0.3-1.5	Fill - Silty Clay	OCPs	APEC-1
	Sa3	1.5-4.3	Fill - Silty Clay	PAHs	APEC-1
TP15A-18	Sa2	0.3-3.1	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	3.1-4.0	Fill - Silty Clay	PAHs	APEC-1
TP15A-19	Sa2	0.3-2.4	Fill - Silty Clay	Metals and ORPs	APEC-1
	Sa3	2.4-4.3	Fill - Silty Clay	PCBs	APEC-1
TP15A-20	Sa2	0.3-2.4	Fill - Silty Clay	OCPs	APEC-1
	Sa3	2.4-4.0	Fill - Silty Clay	Metals and ORPs	APEC-1
<b>DS Consultants Phase Two ESA</b>					
BH18-1	SS1	0-0.6	Fill- Clayey Silt	OCPs	N/A
	SS2	0.8-1.4	Clayey Silt Till	grain size, pH	N/A
	SS3	1.5-2.1	Clayey Silt Till	Metals and ORPs	APEC-1
	SS5	3.1-3.7	Clayey Silt Till	PHCs, VOCs	APEC-1
	SS7	6.1-6.7	Clayey Silt Till	grain size, pH	N/A
	QAQC 1	0-0.6	Fill- Clayey Silt	OCPs	N/A
	QAQC 2	3.1-3.7	Clayey Silt Till	PHCs, VOCs	APEC-1
BH18-2	QAQC 3	1.5-2.1	Clayey Silt Till	Metals and ORPs	APEC-1
	SS1	0-0.6	Topsoil/Fill	OCPs	N/A
BH18-3	SS2	0.8-1.4	Fill - Clayey Silt	Metals and ORPs, PHCs, VOCs	APEC-1
	SS1	0-0.6	Topsoil/Fill	OCPs	N/A
BH18-3	SS2	0.8-1.4	Fill - Clayey Silt	Metals and ORPs	APEC-1

Borehole ID	Sample No.	Sample Depth (mbgs)	Soil Description	Parameter Analyzed	APEC Investigated
	SS10	9.1-9.7	Clayey Silt Till	PHCs, VOCs	APEC-1
BH18-4	SS1	0-0.6	Topsoil/Fill	OCPs	N/A
	SS2	0.8-1.4	Clayey Silt Till	Metals and ORPs, grain size, pH	APEC-1
	SS7	6.1-6.7	Clayey Silt Till	grain size, pH	N/A
	SS9	9.1-9.8	Clayey Silt Till	PHCs, VOCs	APEC-1
BH18-5	SS1	0-0.6	Topsoil/Fill	OCPs	N/A
	SS5	3.1-3.7	Clayey Silt Till	Metals and ORPs	APEC-1
	SS7	6.1-6.7	Clayey Silt Till	PHCs, VOCs	APEC-1
TP18-1	S1	0-1.5	Fill	PHCs, PAHs	APEC-2
	Dup-1	0-1.5	Fill	PHCs, PAHs	APEC-2
TP18-2	S1	0-1.5	Fill	PHCs, PAHs	APEC-2
TP18-3	S1	0-1.5	Fill	PHCs, PAHs	APEC-2
TP18-4	S1	0-1.5	Fill	PHCs, PAHs	APEC-2
<b>DS Confirmatory Sampling – Vicinity of BH18-1 (EX-1)</b>					
BH18-1	FL1A	3.96	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	FL1B	3.96	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SW1S	3.1-3.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SW1N	3.1-3.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SW1E	3.1-3.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SW1W	3.1-3.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
<b>DS Confirmatory Sampling – Vicinity of BH15A-6 (EX-2)</b>					
BH15A-6 (EX-2)	FL1E	1.52	Sand and Gravel	Cyanide	APEC-1
	FL1W	1.52	Sand and Gravel	Cyanide	APEC-1
	SW1E	0.0-0.6	Sand and Gravel	Cyanide	APEC-1
	SW1W	0.0-0.6	Sand and Gravel	Cyanide	APEC-1
	SW1N	0.0-0.6	Sand and Gravel	Cyanide	APEC-1
	SW1S	0.0-0.6	Sand and Gravel	Cyanide	APEC-1
<b>DS Confirmatory Sampling – Vicinity of BH18-5 (EX-3A)</b>					
BH18-5 (EX-3A)	FL3A	6.70	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	FL3B	6.70	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	SW3S	3.1-3.7	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	SW3N	3.1-3.7	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	SW3E	3.1-3.7	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	SW3W	3.1-3.7	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	QAQC3 (FL3A)	6.70	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
<b>DS Confirmatory Sampling – Vicinity of BH18-5 (EX-3B)</b>					
BH18-5 (EX-3B)	FL1E	7.32	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	FL1W	7.32	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	DUP18-5D FL	7.32	Clayey Silt Till	EC, PHCs (F2-F4)	APEC-1
	SW1E	3.1-3.7	Clayey Silt Till	EC	APEC-1
	SW1W	3.1-3.7	Clayey Silt Till	EC	APEC-1
	SW1N	3.1-3.7	Clayey Silt Till	EC	APEC-1
	SW1S	3.1-3.7	Clayey Silt Till	EC	APEC-1
	SW2E	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SW2W	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SW2N	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
SW2S	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1	
<b>DS Confirmatory Sampling – Vicinity of BH18-5 (EX-3C)</b>					
BH18-5 (EX-3C)	SWN1B	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SWS1B	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SWW1B	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SWE1B	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	DUP-2 (SWE1B)	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SWN2A	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SWS2A	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1

Borehole ID	Sample No.	Sample Depth (mbgs)	Soil Description	Parameter Analyzed	APEC Investigated
	SWE2B	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SWW2A	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	DUP-1 (SWE2B)	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
<b>DS Confirmatory Sampling – Vicinity of BH18-5 (EX-3D)</b>					
BH18-5 (EX-3D)	SWN3A	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SWS3B	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	SWE3A	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	CS NE1	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	CS NW1	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	CW SW1	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	CS SE1	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
	DUP-1 (CS SE1)	6.1-6.7	Clayey Silt Till	PHCs (F2-F4)	APEC-1
<b>DS Confirmatory Sampling – Vicinity of TP15A-18 (EX-4)</b>					
TP15A-18 (EX-4)	FL4A	4.27	Fill - Silty Clay	Boron (HWS)	APEC-1
	FL4B	4.27	Fill - Silty Clay	Boron (HWS)	APEC-1
	SW4N	0.3-3.7	Fill - Silty Clay	Boron (HWS)	APEC-1
	SW4S	0.3-3.7	Fill - Silty Clay	Boron (HWS)	APEC-1
	SW4E	0.3-3.7	Fill - Silty Clay	Boron (HWS)	APEC-1
	SW4W	0.3-3.7	Fill - Silty Clay	Boron (HWS)	APEC-1
<b>DS Confirmatory Sampling – Vicinity of TP16-11 (EX-5)</b>					
TP16-11 (EX-5)	FL5A	4.57	Clayey Silt	EC	APEC-1
	FL5B	4.57	Clayey Silt	EC	APEC-1
	SW5N	2.40-3.40	Clayey Silt	EC	APEC-1
	SW5S	2.40-3.40	Clayey Silt	EC	APEC-1
	SW5E	2.40-3.40	Clayey Silt	EC	APEC-1
	SW5W	2.40-3.40	Clayey Silt	EC	APEC-1
	QAQC5 (SW5E)	2.40-3.40	Clayey Silt	EC	APEC-1
	TP16-11 FS1	4.57	Clayey Silt	Metals	APEC-1
	TP16-11 FS2	4.57	Clayey Silt	Metals	APEC-1
	TP16-11 SWS	2.4-3.4	Clayey Silt	Metals	APEC-1
	TP16-11 SWW	2.4-3.4	Clayey Silt	Metals	APEC-1
	DUP -1 TP16-11	2.4-3.4	Clayey Silt	Metals	APEC-1
	SWW2	2.4-3.4	Clayey Silt	Metals	APEC-1
	SWW3	2.4-3.4	Clayey Silt	Metals	APEC-1
	SWW4	2.4-3.4	Clayey Silt	Metals	APEC-1
SWW5	2.4-3.4	Clayey Silt	Metals	APEC-1	
DUP 2 TP16-11	2.4-3.4	Clayey Silt	Metals	APEC-1	
<b>DS Confirmatory Sampling – Vicinity of TP15A-20 (EX-6)</b>					
TP15A-20 (EX-6)	TP15A-20 FS1	6.1	Fill - Silty Clay	Metals	APEC-1
	TP15A-20 FS2	6.1	Fill - Silty Clay	Metals	APEC-1
	TP15A-20 SWN	2.4-4.0	Fill - Silty Clay	Metals	APEC-1
	TP15A-20 SWE	2.4-4.0	Fill - Silty Clay	Metals	APEC-1
	DUP-1 TP15A-20	6.1	Fill - Silty Clay	Metals	APEC-1

**C. Any subsurface structures and utilities on, in or under the Phase Two Property that may affect contaminant distribution and transport**

Underground utilities can affect contaminant distribution and transport. Trenches excavated to install utility services, and the associated granular backfill may provide preferential pathways for horizontal contaminant migration in the shallow subsurface.

The Property formerly contained underground services including two septic systems, an underground water cistern, and an inferred natural gas service, servicing the former golf

clubhouse. Based on the information obtained in the Phase One interview, all of the former services have been decommissioned.

The former underground services are not located in close proximity to the APECs identified on the Phase One Property, as such these former services are not considered to have presented pathways for contaminant migration.

**II. Description of, and as appropriate, figures illustrating, the physical setting of the Phase Two Property and any areas under it including:**

**A. Stratigraphy from ground surface to the deepest aquifer or aquitard investigated**

Topsoil was encountered in all the boreholes advanced by DS and ranged from Topsoil ranging in thickness between 50 to 350 mm was generally encountered in all borehole locations. It is estimated that up to 340,000 cubic metres of mixed fill material is present on-Site, ranging in thickness between 0.9 to 7.0 mbgs. The fill material was generally found to be underlain by Halton Till (clayey silt/silty clay, and clayey silt till). A silty sand/sandy silt till was encountered above the bedrock in boreholes BH18-2 and BH18-4 (eastern side of Site). Bedrock was encountered at various depths across the site, ranging between 7.3 to 11.3 mbgs. Groundwater was in general, first encountered within the weathered shale/till complex overlying the bedrock. A summary of the geologic units investigated is provided in Table 1-3 below.

**Summary of Geologic Units Investigated**

<b>Geologic Unit</b>	<b>Inferred Thickness (m)</b>	<b>Top Elevation (masl)</b>	<b>Bottom Elevation (masl)</b>	<b>Properties</b>
Topsoil	0.05-0.35	166.2	159.3	
Fill Material	0.4-7.0	165.8	158.6	Mixed – containing construction debris, brick, topsoil, organics, etc.
Clayey Silt/Silty Clay Till	5.8-10.5	164.8	148.7	Some sand, trace gravel, occasional cobble/boulder, grey, moist
Silty Sand Till	1.5	155.5	147.2	Trace clay, trace gravel, occasional cobble/bulder, reddish brown, wet
Sandy Silt Till	1.5	154.0	148.1	Trace gravel, occasional cobble/boulder, reddish brown

Geologic Unit	Inferred Thickness (m)	Top Elevation (masl)	Bottom Elevation (masl)	Properties
Till Shale Complex	1.5	147.2	145.7	Trace gravel, reddish brown, moist
Shale Bedrock	Unknown	156.2-145.7	Unknown	Highly weathered shale, reddish-brown, moist

A visual representation of the stratigraphy investigated is presented on the cross-sections provided in Figures 8A, 8B, 8C and 8D.

**B. Hydrogeological Characteristics, including aquifers, aquitards and, in each hydrostratigraphic unit where one or more contaminants is present at concentrations above the applicable site condition standards, lateral and vertical gradients**

Three (3) tiers of monitoring wells were installed on the Property.

**Summary of Monitoring Well Installations**

Zone	Monitoring Wells	Geologic Unit Screened	Properties
Upper Tier	MW18-1S, MW18-2S	Halton Till	First water bearing formation encountered.
	MW18-3S, MW18-4S, MW18-5S	Weathered Shale/Till Complex	
Middle Tier	MW18-1D, MW18-2D, MW18-3D, MW18-4D, MW18-5D, MW18-6	Weathered Shale (Queenston Formation)	Monitoring wells screened to assess groundwater conditions within upper bedrock
Lower Tier	MW18-2D2, MW18-3D2, MW18-4D2	Shale (Queenston Formation)	Monitoring wells screened to assess groundwater conditions in deeper, more competent bedrock

The depth to groundwater was found to range between 0.85 to 5.13 mbgs on June 25, 2018, and 0.85 to 8.65 mbgs on July 26, 2018 across the upper and middle tier monitoring wells. The depth to groundwater in the lower tier monitoring wells was recorded on August 24, 2018, and ranged from 0.72 to 4.10 mbgs. Generally, the groundwater elevation was found to range from 166.05 to 154.45 masl across the Property.

It should be noted that excavation EX-3 was extended to bedrock depth (approximately 7.3 metres) in the vicinity of MW18-5D. No groundwater was encountered from ground surface to the bedrock interface.

The results of the interface probe measurements and field observations indicate that positive head pressure is present within the aquifer screened, resulting in the high groundwater levels recorded in the monitoring wells.

Based on the groundwater elevations calculated, the groundwater flow direction is interpreted to be southeasterly towards Joshua’s Creek and ultimately, Lake Ontario. The groundwater elevation contours and flow direction are presented on Figures 5A and 5B.

The horizontal hydraulic gradient was calculated based on the groundwater levels recorded on June 25, 2018.

**Summary of Horizontal Hydraulic Gradient Calculations**

Hydrogeological Unit	Calculated Horizontal Hydraulic Gradient
Upper Tier (Halton Till and weathered shale/till complex)	Maximum: 0.02084715 Average: 0.01424544 Minimum: 0.0077625
Intermediate/Lower Tier Bedrock	Maximum: 0.0175517 Average: 0.01143462 Minimum: 0.003814

The vertical hydraulic gradient was calculated based on the groundwater levels recorded on June 25, 2018.

**Summary of Vertical Hydraulic Gradient Calculations**

Monitoring Well Nest	Calculated Vertical Hydraulic Gradient
MW18-1S MW18-1D	0.3200, down
MW18-2S MW18-2D	0.2627, up
MW18-3S MW18-3D	0.001493, down
MW18-4S MW18-4D	5.215e-15, down

The results of the vertical hydraulic gradient calculations generally indicate downward migration of groundwater and that the aquifer investigated is acting as a source of recharge for Joshua’s Creek. It is noted that an upward trend was identified in MW18-2S/2D.

**C. Depth to bedrock**

Shale bedrock was encountered at depths ranging from 7.3 to 13.7 mbgs across the Property, with corresponding elevations ranging between 156.2 to 145.7 masl.

**D. Approximate depth to water table**

The depth to groundwater was found to range between 0.85 to 5.13 mbgs on June 25, 2018. The water table was encountered within the overburden in monitoring wells BH18-1 and BH18-3 at an approximate depth of 6.1 mbgs. The water table was generally observed within the weathered shale/till complex in the remaining monitoring wells.

It should be noted that excavation EX-3 was extended to bedrock depth (approximately 7.3 metres) in the vicinity of MW18-5D. No groundwater was encountered from ground surface to the bedrock interface.

**E. Any respect in which section 41 or 43.1 of the regulation applies to the property**

The pH values measured between 6.1 and 8.02, which are within the acceptable limits for non-sensitive sites. There are no areas of natural significance on the Phase Two Property, or within 30 m of the Phase Two Property. As such the Phase Two Property is not considered to be environmentally sensitive as defined by Section 41.

**F. Areas where soil has been brought from another property and placed on, in or under the Phase Two Property**

No fill material was imported to the Property for the purpose of backfilling the remedial excavation. Native soils existing on the Property were used to backfill the remedial excavation for safety purposes.

**G. Approximate locations, if known, of any proposed buildings and other structures**

Redevelopment of the Property for residential purposes has been proposed. It is DS' understanding that the development will consist of a residential subdivision. Additional details regarding the location of the homes were not available at this time.

**III. Where a contaminant is present on, in or under the Phase Two Property at a concentration greater than the applicable site condition standard, identification of**

**A. Each area where a contaminant is present on, in or under the Phase Two Property at a concentration greater than the applicable SCS**

### Soil – Metals and ORPs

Soils impacts with metals were identified at test pit TP16-11 (barium) and TP15A-20 (silver) at depths ranging between 0.2-0.6 mbgs and 2.4-4.0 mbgs (respectively). The horizontal extent of the metals impacts in soil is presented on Figures 6A, 6Ai and 6Aii. The vertical extent of the impacts was determined during the remedial excavation activities displayed in Figures R7A through R8C.

Soils impacts with ORPs were identified at test pit TP16-11 (EC), TP15A-18 (boron- HWS), and borehole BH15A-6 (cyanide) at depths ranging between 0.2-0.6 mbgs, 0.3-3.1 mbgs and 0-0.6 mbgs (respectively). The horizontal extent of the ORP impacts in soil is presented on Figures 6B, 6Bi and 6Bii. The vertical extent of the impacts was determined during the remedial excavation activities, displayed in Figures R3A through R3C and in Figures R6A through R7C.

Elevated levels of EC in excess of the Table 8 SCS were also identified in borehole BH18-5 SS5 at a depth of 3.1 to 3.7 mbgs. Delineation/confirmatory sampling was conducted as part of the remedial activities at the Site. The results of the first round of confirmatory sampling indicated that EC impacts were still present within a 7 metre radius of BH18-5. Additional delineation/confirmatory sampling was conducted in May 2019, involving the collection of additional samples at locations approximately 30 metres to the north, south, east and west of BH18-5. As part of the May 2019 sampling program samples were submitted to Maxxam Analytics for forensic analysis in order to determine if the source of the EC impact was attributable to the use of road salt based on a comparison of key inorganic parameter concentrations.

EC is measured using a probe, via a PC-Titrate system, and is a measure of the solution's ability to conduct an electric current. The conductivity is directly proportional to the concentration of dissolved charged ions, such as those associated with salt. The results of the forensic analysis indicated that the samples contained chloride concentrations between 30 to 70 µg/g. It was noted by Maxxam that road salt impacted soils typically contain chloride concentrations in excess of 1000 µg/g. Furthermore, the sulphate concentrations in the samples were found to range between 800 to 4,500 µg/g, as such the reported elevated EC values appear to be the result of elevated sulphate concentrations, rather than chloride, suggesting that the elevated EC levels are not the result of application of road salt.

Sulphate sources range from naturally occurring minerals and deposits, to a wide range of soil amendments (e.g. fertilizers, pesticides and soil stabilizers). The lithology encountered

in BH18-5 consisted of 300 mm of topsoil, underlain by 1.2 m of clayey silt fill, and clayey silt till (Halton Till).

The samples analysed were collected from the native Halton Till unit, which is considered to be of low permeability, and were collected at depths greater than 3.1 mbgs. Any application of soil amendments would have been at the surface, and the majority of any amendments applied would have adsorbed to the organic matter contained within the topsoil. There is no indication based on the Phase One ESA of soil amendments being applied to the Property within the past 10 years. Based on the physical separation of over 3 metres, and the low permeability soils present on-Site, it is the opinion of the QP<sub>ESA</sub> that the elevated sulphate concentrations are the result of naturally occurring minerals, and therefore is not considered to be a contaminant, as defined by the EPA (EPA, 1990). A copy of the forensic analysis letter provided by Maxxam has been appended.

#### Groundwater – Metals and ORPs

Exceedances of the Table 8 SCS for the following Metals and ORPs were identified in groundwater:

- Boron was identified in MW18-3D2
- Chloride was identified in MW18-2D, MW18-2D2, MW18-3D, MW18-3D2, MW18-4S, MW18-4D, MW18-4D2, BH15A-5, MW15A-6, and MW15A-7;
- Cobalt was identified in BH15A-5, MW15A-6, and MW15A-7;
- Sodium was identified in MW18-2D, MW18-2D2, MW18-3S, MW18-3D, MW18-3D2, MW18-4S, MW18-4D, MW18-4D, MW15A-6, MW15A-7, MW18-5D, and BH18-6; and
- Uranium was identified in BH18-3S, MW15A-7, and MW18-5D.

A discussion and interpretation of these aforementioned exceedances is provided under the “Summary of Groundwater Quality” provided on page 12 of this text. Based on these aforementioned considerations, the groundwater on the Property is considered by the QP<sub>ESA</sub> to meet the Table 8 SCS.

#### PHCs

Exceedances of the Table 8 SCS for PHC F2 (C10-C16) were identified in boreholes BH18-1 and BH18-5 for soil at respective depths of 3.1-3.7 mbgs and 6.1-6.7. The horizontal extent appears to be localized on the western portion of the property. The horizontal extent of the PHC impacts in soil is presented on Figures 6C and 6Ci. The vertical extent of the impacts was determined during the remedial excavation activities, and are displayed in Figures R2A through R2C and Figures R4 through R5E.

No exceedances of the Table 8 SCS were identified for PHCs in groundwater.

**B. The contaminants associated with each of the areas**

A visual representation of the location of the impacts identified, including the individual contaminants associated with the impacted areas, and the remedial activities in the vicinity of impacted areas is presented in figures 6A through 7D and R2A through R8C.

The contaminants identified at concentrations greater than the applicable SCS included: barium, silver, boron (HWS), cyanide, PHC F2 (C10-C16), boron, chloride, cobalt, sodium, and uranium.

The contaminants identified that are not considered to be naturally occurring included barium, silver, boron (HWS), cyanide, and PHC F2 (C10-C16).

**C. Medium that contaminants were identified in**

Contaminants, as defined under the EPA were only identified in soil.

**D. Description and assessment of what is know about each of the areas**

Metals and ORPs

Impacted soils were identified primarily in the southern and eastern portions of the property, within the vicinity of borehole BH15A-6 and test pits TP15A-18, TP15A-20, and TP16-11. It is inferred that these impacts are due to the historical importation of fill material of poor environmental quality identified on the property.

PHCs

PHC impacts were identified on the eastern portion of the property, within the vicinity of boreholes BH18-1 and BH18-5. The PHC impacts appear to be localized within the clayey silt till unit. The source of the PHC impacts were identified within the native soils and were not identified within the fill material at any location on the Property. It is possible that the elevated PHC F2 levels were natural in origin. It should be noted that PHC impacts were not identified in groundwater in either of these sample locations.

**E. Distribution in which the areas of each contaminant is present in the area at a concentration greater than the applicable SCS, for each medium in which the contaminant is present, together with figures showing the distribution**

### Metals and ORPs

The horizontal distribution of the impacts identified are presented on Figures 6A through 6Bii. The vertical distribution of the impacts is presented on Figures 8Ai, 8Aii, 8Bi, 8Bii, 8Ci, 8Cii, 8Di, 8Dii R3B, R3C, R6B, R6C, R7B, R7C, R8B and R8C. In general the vertical extent of the impacted soil was determined to range from 1.5 to 4.6 mbgs. The impacts were generally limited in lateral extent, as illustrated in the accompanying figures.

### PHCs

The horizontal extent of the PHC impacts in soil is depicted on Figure 6C, 6Ci, R2A, R5A. The vertical extent of the PHC impacts in soil is depicted on Figures R2B, R2C, R5B, R5C, R5D and R5E. In general, the PHC impacts in the vicinity of BH18-1 extended to a maximum depth of 3.96 mbgs, and 7.3 mbgs (bedrock interface) in borehole BH18-5D. The lateral extent in the vicinity of BH18-1 was relative minor (2.44m x 3.66 m). The horizontal extent of the PHC impacts in BH18-5 was found to be extensive (30m x 24 m). It is possible that the marginally elevated levels of PHCs in this portion of the site were naturogenic in nature.

**F. Anything known about the reason for the discharge of the contaminants present on, in or under the Phase Two Property at a concentration greater than the applicable SCS**

Fill material was historically imported to the Property. The fill material was observed to contain brick, wood, and other deleterious materials.

**G. Anything known about migration of the contaminants present on, in or under the phase two property at a concentration greater than the applicable SCS away from any area of potential environmental concern, including the identification of any preferential pathways**

No exceedances of the Table 8 SCS for PHCs were identified in groundwater, as such there is no indication of the migration of F2 (C10-C16) impacts identified in BH18-1 and BH18-5.

Similarly, there is no evidence of potential migration of the metals/ORPs impacts from the soil into the groundwater.

The native soils on the Property are of low permeability and will tend to inhibit the migration of contaminants.

**H. Climatic or meteorological conditions that may have influenced distribution and migration of the contaminants, such as temporal fluctuations in groundwater levels**

The groundwater was generally encountered within the shale bedrock, which is overlain by Halton Till. Based on the site geology, it is the opinion of the QP<sub>ESA</sub> that climatic/meteorological conditions have had minimal effect on contaminant distribution across the Property. The impacted soils on-Site were all situated well above the groundwater table, with the exception of the PHC F2 impacts identified in borehole BH18-5. The groundwater obtained from MW18-5D met the Table 8 SCS for PHCs, therefore, there is no indication of downward migration of impacts on the Property.

**I. Information concerning soil vapour intrusion of the contaminants into buildings**

All of the impacted soils have been remediated through excavation and off-site disposal.

**IV. Where contaminants on, in or under the Phase Two Property are present at concentrations greater than the applicable SCS, one or more cross-sections showing**

- A. The lateral and vertical distribution of a contaminant in each area where the contaminants are present at concentrations greater than the applicable SCS in soil, groundwater and sediment**
- B. Approximate depth to water table**
- C. Stratigraphy from ground surface to the deepest aquifer or aquitard investigated**
- D. Any subsurface structures and utilities that may affect contaminants distribution and transport**

Cross-sections depicting this content have been prepared, refer to Figures 8A through 8D, and Figures R2B, R2C, R3B, R3C, R5B through R5E, R6B, R6C, R7B, R7C, R8B, and R8C.

**V. For each area where a contaminant is present on, in or under the property at a concentration greater than the applicable SCS for the contaminant, a diagram identifying, with narrative explanatory notes**

- A. The release mechanisms**
- B. Contaminant transport pathway**
- C. The human and ecological receptors located on, in or under the phase two property**
- D. Receptor exposure points**
- E. Routes of exposure**

Refer to Figure R9.