130 Water Street North

Hydrogeologic Characterization & Preliminary Dewatering Assessment Report

Project Location:

130 Water Street North, Cambridge, ON

Prepared for:

Cambridge Development Inc.
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Prepared by:

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October 2, 2020

MTE File No.: 35571-402

Engineers, Scientists, Surveyors.

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1.0 Introduction

MTE Consultants Inc. (MTE) was retained by Pearle Hospitality to complete a hydrogeological characterization in support of the development of a residential condominium. As the Site is currently zoned residential/commercial, a zone change will be required to permit re-development. The proposed development is located on vacant property currently used for parking at 130 Water Street North in Cambridge, Ontario (the "Site"). The Site location is illustrated on **Figure 1**.

For the reader's benefit, the Ontario Ministry of the Environment, Conservation and Parks (MECP) was previously named the Ontario Ministry of the Environment (MOE) and the Ontario Ministry of the Environment and Climate Change (MOECC). For ease of discussion in this report, "MECP" is used to represent this provincial ministry and is inclusive of MOE and MOECC.

1.1 Scope and Methodology

MTE has previously completed a Phase One Environmental Site Assessment (ESA), and a Phase Two ESA ate the Site. A Site Specific Assessment (RA) is currently being undertaken. The work described herein builds on this knowledge to satisfy requirements for a Hydrogeology Study to support Region of Waterloo's (Region) requirements in support a zone change for the Site.

In order to meet the objectives of this hydrogeological investigation, the following scope of work was implemented:

Field Investigation

A limited field program was conducted to fill in small gaps in knowledge present in the ESA and RA work. This program consisted of in-situ hydraulic response testing on the following wells:

- Shallow overburden: MW302-15 and MW401-16
- Intermediate overburden: MW502-17
- Deep overburden: MW301B-15

Reporting

- A summary of regional geology and hydrogeology.
- A summary and discussion of the historical groundwater quality.
- A detailed description of Site hydrogeology including hydraulic conductivity, hydraulic gradients, groundwater velocity, and groundwater flow directions.
- A calculation the preliminary seasonal high water table to determine minimum separation distances from footings and foundations to groundwater.
- Overview and discussion on construction dewatering requirements.
- Evaluation and discussion on potential impacts to the proposed development on the groundwater aquifer system.
- A summary of implications of the Grand River Source Protection Plan on the proposed development.

2.0 Site Description

The Site is approximately 0.63 hectares and is currently used for parking. The Site is bounded by Water Street North to the east, with commercial properties beyond. Immediately north is The Grand Condominiums (residential), immediately south is the Cambridge Mill (commercial), and immediately west is a community trail with the Grand River beyond. Existing Site features are shown on Figure 2.

The Site is generally flat. A flood control berm located to the west, along the Grand River and the condominium building to the north, are higher in elevation than the Site. The adjacent lands to the east and south are generally at similar elevations to the Site.

The parking area ground cover is a mix of asphalt and gravel. Surface drainage appears to be directed overland to on-Site catch basins, which are connected to the municipal storm sewer system.

3.0 Regional Geology and Hydrogeology

3.1 Physiography and Geology

The Site is located within the physiographic region known as the Guelph Drumlin Field (Chapman and Putnam, 2007). The sediments are comprised of the stony tills of the drumlins and deep gravel terraces of the meltwater spillways (Figure 3). Both types of material usually have a shallow deposit of loam which reduces the stoniness of the surface sediments (Chapman and Putnam, 1984).

Ontario Geological Survey (OGS) mapping of the quaternary geology of the area (OGS, 2010) is presented on Figure 4. The OGS mapping indicates that overburden materials have been incised by the Grand River and that bedrock is expected to be present at surface. Further to the east, the bedrock is expected to be overlain by glaciofluvial outwash sands and gravels of the Late Wisconsin episode. Cross-sections created for the Region of Waterloo prior to the creation of the Tier 3 Water Budget model indicate that the overburden materials mapped by the OGS as existing only to the east of the Site may actually be present closer to the Grand River (Stantec, 2011).

The bedrock beneath the Site is the Eramosa member of the Guelph Formation which is characterized as tan to brown, fine- to medium-crystalline, sucrosic dolostone (Armstrong and Dodge, 2004).

3.2 Groundwater Flow Direction

Mapping available from the GRCA Grand River Information Network indicates that shallow groundwater flow in the area is from the east and west towards the Grand River.

3.3 Water Supply Wells

The municipal wellfields closest to the Site are Blair, Middleton, Elgin, and Willard located 1.7 km northwest, 1.9 km south-southwest, 2.2 km south east, and 3.6 km south-southeast, respectively. All four wellfields draw water from the Guelph and Eramosa bedrock formations; with the Blair, Middleton, and Willard wells extending deeper into the Gasport formation. Figure

5 shows the locations of these municipal wells and their associated Wellhead Protection Areas (WHPAs) as presented in the current MECP online mapping (MECP, 2020) base on an outdated Source Protection Plan (SPP; LERSPC, 2015a).

The Site is shown as being located within the WHPA-C (2- to 5- year time of travel) with a score of 8 for the Middleton wellfield. The site is also located within the WHPA-E (50-day time of travel in surface water to a well) with a score of 8.1 for both the Middleton and Willard wellfields. The Middleton wellfield is associated with TCE and chloride drinking water quality issues. This means that the raw water quality at well been impacted by TCE and chloride. This not to be interpreted as representing that the Site is a source of TCE or chloride contamination in the Middleton wells as the SPP provides no information provided about the source of impact (i.e. nature and cause of impact, extent of impact, location of the source of impact relative to the Site, etc.).

The LERSPC has posted a draft updated Assessment Report for the Region (LERSPC, 2019a). The revised mapping in the report indicates that the Site is in the WHPA-D (5- to 25- year time of travel) with a score of 6 for the Middleton wellfield and a WHPA-E (50-day time of travel in surface water to a well) with a score of 8.1 for the Willard wellfield). TCE and chloride issues continue to be identified at Middleton, along with sodium which was added as an issue with this update. This revised SPP has an effective date of October 1, 2020.

The MECP Water Well Record database does not indicate the presence of any private water supply wells within 500 m of the Site.

4.0 Site Conditions

4.1 Geologic Profiles

Based on the boreholes drilled at the Site as part of previous Site investigations (MTE, 2019), the stratigraphy is interpreted to include the following geological units (from ground surface down):

Fill

Fill was encountered below asphalt in each of the boreholes to a maximum depth of 6.7 metres below ground surface (mbgs) (approximately 262 metres above mean sea level (mamsl)). The upper portion of the fill typically consisted of granular base associated with the asphalt parking lot. The lower portion of the fill typically consisted of sand and gravel. In the north, west and central portions of the Site, the lower portion of the fill also included varying amounts of ash, slag, cinders, brick and wood, which appear to be from historical placement of poor quality fill at the Site.

Sand and Silt

These layers vary in thickness and extend to a maximum depth of 8.4 mbgs (approximately 260 mamsl).

Sand and Gravel

A layer of native sand and gravel was encountered throughout the Site at elevations ranging from approximately 266 to 241 mamsl. These sands and gravels are likely representative of the glaciofluvial outwash sands and gravels mapped by the OGS as being present to the east of the Site (Section 3.1, Figure 4)

Bedrock

Bedrock was encountered at a depth of 28.3 mbgs at MW301B-15, representing an elevation of approximately 241 mamsl. This is consistent with the well record for monitoring well XCG-BH14, installed along the eastern property boundary in 2005, where limestone bedrock was encountered at an elevation of approximately 236 mamsl.

Locations of cross-sections depicting the Site-wide geology are presented on Figure 2. The cross-sections themselves are presented on Figures 6 through 8. Borehole logs are provided in Appendix A.

4.2 Hydraulic Conductivity

MTE conducted single well hydraulic response slug tests (SWRT) in the following wells on June 3, 2020 in order to estimate the hydraulic conductivity of the screened interval:

- Shallow overburden: MW302-15 and MW401-16
- Intermediate overburden: MW502-17
- Deep overburden: MW301B-15

In addition, analysis from SWRTs conducted in MW301A-15 (shallow overburden) and MW301B-15 was available for review.

SWRTs typically involve the rapid introduction and/or removal of a slug of known displacement to raise the water level in a well. The response of this rapid change is measured over time and can be used to calculated hydraulic conductivity. One downside of this method it that water levels are influenced by splashing caused by the introduction or removal of the slug. In a long test of several minutes or more, this influence does not cause problems with the overall interpretation. In a short test of under a minute, the entire testing period may be overly influenced and subsequent calculations inaccurate. For this reason, at wells with a high hydraulic conductivity, a pneumatic method was used where the required initial rise of water level is generated instantaneously by adding pressure to a sealed well.

For both methods, groundwater level recovery was monitored using a pressure transducer (data logger) programmed to collect water levels every second. The tests were carried out multiple times to ensure the viability of assumptions underlying analysis methods.

Prior to analysis, recovery data from the monitoring wells was normalized by dividing the observed head change by the expected head change (based on slug size or pressure applied). Normalized data plots from repeat tests at the same well were compared to determine coincidence between tests. Coincidence between tests suggests that assumptions underlying conventional analysis methods are valid at that well (Butler et. al., 1996).

MTE analyzed one representative test from each of the monitoring wells to provide a hydraulic conductivity estimate using the AquiferTest Pro 2015.1 software (Waterloo Hydrogeologic, 2015). Hydraulic conductivity estimates for the saturated sediments adjacent to each well screen are as follows:

Well Name	Well Category	Sediment Description	Test Type	Hydraulic Conductivity (m/sec)
MW301A-15 (tested in 2018)	Shallow Overburden	1.2m Fill 0.8m Sand	Slug	6.12×10^{-7}
MW302-15	Shallow Overburden	2.8m Fill 1.9m Silt	Slug	1.58×10^{-5}
MW401-16	Shallow Overburden	3.7m Sand	Pneumatic	3.00×10^{-4}
MW502-17	Intermediate Overburden	2.6m Sand and Gravel	Pneumatic	1.03×10^{-4}
MW301B-15 (tested in 2018)	Deep Overburden	2.5m Sand and Gravel	Slug	1.08×10^{-3}
MW301B-15 (tested in 2020)	Deep Overburden	2.5m Sand and Gravel	Pneumatic	1.10×10^{-3}

The estimated hydraulic conductivity values in the sand and sand/gravel units are consistent with averaged published values (Freeze and Cherry, 1979). AquiferTest data sheets are provided in Appendix B.

4.3 Groundwater Elevations and Flow Direction

Twenty-one (21) monitoring wells installed by MTE and five (5) existing monitoring wells were have been monitored by MTE since March 2017. The wells are screened at various depths, as follows:

- Twenty (20) wells screened in shallow overburden materials at or near the water table.
- Four (4) wells screened at an intermediate depth within overburden materials.
- One (1) well screened in the contact zone at the bedrock interface.
- One (1) well screened within bedrock.

Groundwater and ground surface elevations for all wells are presented in Table 1. Three wells (ETC-OW6-15, MW301A-15, and MW405-16) were instrumented with electronic data loggers in 2015 to collect continuous water level data. All three loggers were full by the end of 2017. The data loggers were downloaded on April 16, 2020 and reset. The hydrographs of this data are presented in Appendix C.

Figure 9 illustrates groundwater elevation contours based on the measured groundwater levels in the shallow overburden on February 26, 2018. This date was selected as it represents the highest average water levels measured at most monitoring wells to date. As shown on Figure 9, the shallow groundwater flow across the Site is in a south to southwesterly direction from the high in the north-east corner.

The horizontal hydraulic gradient is a measurement of the slope of the water table surface which is the change in hydraulic head divided by the lateral distance between two or more monitoring points along a flow path. The horizontal hydraulic gradient was calculated between MW507-17 and MW405-16; and MW407-16 and 301A-15. In each case, the latter is directly downgradient from the former. The average of these two values is 0.0023 m/m.

The average linear groundwater velocity was estimated by calculating using Darcy's Law, as follows:

$$q = (-Ki)/n$$

Where:
q = average linear groundwater velocity (m/s)
K = effective hydraulic conductivity (1.43x10-5 m/s; geometric mean of calculated values for shallow overburden)
i = horizontal hydraulic gradient (0.0023 m/m)
ne= effective soil porosity (0.35 typical for sands and silts, Freeze and Cherry, 1979)

The average linear groundwater velocity (q) within the shallow groundwater at the Site is estimated to be 2.9cm/year.

4.4 Groundwater Quality

An extensive groundwater sampling program was completed by MTE as part of the Phase Two ESA. The contaminants of concern identified in the ESA include sodium, chloride, various polyaromatic hydrocarbon (PAHs), 1,1-biphenyl, petroleum hydrocarbons (PHCs), benzene, ethylbenzene, toluene, xylene (BTEX), and volatile organic compounds (VOCs; including TCE, cis-1,2-dichloroethylene, vinyl chloride, 1,1-dichloroethylene, 1,1-dichloroethane, and styrene. A summary of the analytical results is presented in Appendix D; further details are provided in the Phase Two ESA report (MTE, 2019).

5.0 Impacts of Development

5.1 Source Protection Considerations

As described in Section 3.3, Online Source Protection mapping (MECP, 2020) indicates that the Site is located within the WHPA-C with a score of 8 for the Middleton wellfield and the WHPA-E with a score of 8.1 for both the Middleton and Willard wellfields. The Middleton wellfield is associated with TCE and chloride drinking water quality issues.

Approved revisions to the Assessment Report (LERSPC, 2091a) and Source Protection Plan (LERSPC, 2019a) will take effect October 1, 2020. The revised mapping in the Assessment Report indicates that the Site will be in the WHPA-D with a score of 6 for the Middleton wellfield and a WHPA-E with a score of 8.1 for the Willard wellfield. TCE and chloride issues continue to be identified at Middleton, along with sodium which was added as an issue with this update.

Regardless of which mapping applies, prior to submission to the City of Cambridge for planning approval, a Risk Management Plan for the application of road salt will need to be negotiated with the Region of Waterloo's Risk Management Official. This plan will require measures to be incorporated into the site design which will reduce the formation of ice (and thus the need for salt application). Examples include the direction of roof water away from impervious surfaces requiring deicing, lot grading and storm water design to minimize the flow path of parking lot runoff, and providing for a designated space to store plowed snow on the low side of any paved surfaces near a catch basin.

5.2 Temporary Construction Dewatering

Based on preliminary building design drawings, MTE has completed an analytical estimate of expected dewatering volumes. Details of the calculations are attached as Appendix E.

Assuming a time period of one week of pumping prior to the commencement of work, a pumping rate of approximately 1,040,000 liters per day (L/d) would be required to dewater the work area. To keep the excavation dry on a continuous basis for six months, a pumping rate of approximately 265,000 L/d is expected**. These pumping rates, while including a conservative factor of safety, may be underestimate of the true rates as the effects of the nearby Grand River acting as a constant source of water have not been included.**

The analytical model used to assess this dewatering rate does not account for elevated water table conditions from seasonal variation, direct precipitation inputs, groundwater storage, and infiltration/soil seepage and should be considered an estimate only.

The assumptions used in the calculation are presented in the table below.

Input Parameter	***Value***	***Rationale/Source***
Area of Excavation	4,288.2 m^2 (46,158 ft^2)	Design Package provided by Pearle Hospitality dated February 21, 2020 and associated e-mail communication June 10, 2020. Note that this represents creating one large excavation for all of the construction elements. Breaking the construction down into stages could reduce the dewatering estimates significantly.
Duration of Construction	6 months	E-mail communication with Pearle Hospitality dated September 29, 2020.
Elevation of Water Table	265.73 mamsl	Highest water table elevation recorded by MTE in on-Site monitoring wells. Recorded at MW503 on May 24, 2018.
Elevation of Base of Excavation	261.9 mamsl	E-mail communication with Pearle Hospitality dated September 29, 2020.
Elevation of Base of Aquifer	259.9 mamsl	As the aquifer extends for a significant depth below the excavation, the base of the aquifer was set to the excavation depth minus 2 m. The saturated thickness is the distance from the water table to the base of the aquifer.
Hydraulic Conductivity	1.43×10^{-5} m/sec	Based on the cross-sections provided in Appendix B, dewatering is expected to occur in the fill, sand, and silt layers. A geometric mean of hydraulic conductivities estimated from single well response testing in these shallow sediments was used.
Storage Coefficient	0.25	The storage coefficient of an unconfined aquifer typically ranges from 0.02 to 0.26. As dewatering will occur in a sand unit, a number at the high end of this scale was selected (Fetter, 1994).
Factor of Safety	1.5	A standard factor of safety used in dewatering calculations to account for variability of sediments, rain events, and other factors that cause the “real world” situation to differ from the ideal situation described by the dewatering equations.

Permit to Take Water

Under the Ontario Water Resources Act, a Permit to Take Water (PTTW) is required from the Ministry of the Environment and Climate Change (MOECC) for water takings greater than 50,000 L/d. For water takings with a pumping rate below 400,000 L/d, a simplified process to register the project on the Environmental Activity and Sector Registry (EASR) is used in place of a full PTTW application.

Given the pumping rates estimated above, a full Category 3 PTTW will be required if initial dewatering of the excavation (i.e. the initial pumping that creates the dry work space) is completed in a period of one week. An initial dewatering period of approximately two months would be required to lower the pumping rate to the point where an EASR would be accepted.

As the long term dewatering rate (i.e. the pumping rate required to keep the work space dry during construction) falls within EASR requirements, the length of the initial dewatering period will determine which level of approval is needed.

Discharge Options

Three options are available for disposal or discharge of groundwater removed during construction:

(i) Off-Site Disposal

Groundwater pumped from the excavation may be taken to an off-Site MOECC approved waste facility using a licensed waste hauler (i.e. vacuum truck) according to HWIN manifesting. This activity would be at a per cubic metre cost.

(ii) Discharge to Sanitary Sewer under RMOW Compliance Agreement

Through a sewer-use agreement with the RMOW, groundwater may be discharged into the municipal sanitary sewer system at a cost per cubic metre, but must undergo pretreatment to meet RMOW Sanitary Sewer criteria prior to discharge. Treated effluent water will require ongoing testing to ensure the discharge water quality meets the sewer use by-law compliance agreement. An assessment of sewer capacity will also will also be required.

(iii) Discharge to Storm Sewer or Surface Water Source under MOECC Environmental Compliance Approval (ECA)

Groundwater may be discharged into the municipal storm sewer under an MOECC Sewage Works ECA, but must be pretreated to meet Provincial Water Quality Objectives (PWQOs) and RMOW Storm Sewer criteria prior to discharge. In addition, a capacity assessment of the storm sewer or other receiver (such as a surface water body) must be completed prior to discharge to ensure the discharge flow rate does not impact the capacity of the sewer.

Groundwater quality sampling results (MTE, 2019) indicate that groundwater pre-treatment options would require the removal of metals, PHCs, VOCs (including BTEX compounds), and PAHs.

In order to discharge to the storm sewer, the mobile wastewater treatment system should be able to accommodate the estimated maximum daily flow volumes calculated above.

Limitations and Recommendations

The dewatering volumes presented above were calculated using an analytical model which does not take effects of the nearby Grand River acting as a constant source of water into account. A constant rate pumping test of a sufficient duration and rate such that the influence of the test extends to the river, could be conducted on Site to refine the dewatering volume estimates. It should be noted that the dewatering estimated is intended for temporary construction dewatering while the proposed building is under construction. Waterproofing or ongoing groundwater management for the building under post construction conditions will be managed/designed by others.

5.3 Infiltration

As the soil and groundwater beneath the Site is impacted by PAHs, PHCs, BTEX, and VOCs above applicable regulatory Standards, no on-Site infiltration of stormwater will be permitted.

6.0 Conclusions and Recommendations

Based on the above hydrogeological investigation, MTE offers the following findings:

Geology

- Stratigraphic conditions beneath the Site consist of fill underlain by a sand and silt unit and a sand and gravel unit above limestone bedrock.

Hydrogeology

- The groundwater table is encountered at depths ranging between approximately 2.2 to 4.7 m bgs and elevations between 263.6 mamsl to 265.7 mamsl.
- The groundwater flow direction is inferred to be south to southwesterly.
- The horizontal hydraulic gradient of the shallow groundwater table beneath the Site is estimated to be 0.0023 m/m;
- Estimated average hydraulic conductivity values for the shallow, intermediate, and deep overburden beneath the Site were 1.4x10-5 m/sec, 1.0x10-4 m/sec, and 1.1x10-3 m/sec, respectively.
- The groundwater velocity of the shallow groundwater beneath the Site was estimated to be 2.9 cm/year.

Groundwater Quality

- Contaminants of concern identified in the Phase Two ESA include sodium, chloride, various PAHs, 1,1-biphenyl, PHCs, BTEX, and VOCs including TCE, cis-1,2-dichloroethylene, vinyl chloride, 1,1-dichloroethylene, 1,1-dichloroethane, and styrene.

Impacts of Development

- Online mapping shows the Site as being located within the WHPA-C with a score of 8 for the Middleton wellfield and the WHPA-E with a score of 8.1 for both the Middleton and Willard wellfields. In updates which took effect October 1, 2020, the Site is located in the WHPA-D with a score of 6 for the Middleton wellfield and a WHPA-E with a score of 8.1 for the Willard wellfield. A Risk Management Plan for the application of de-icing salt will be required prior to development application submission to the City of Cambridge.
- Based on an initial building design, dewatering will be required to keep excavations safe and stable during construction. This dewatering will likely require that at Category 3 PTTW be obtained from the MECP.
- As the groundwater beneath the Site is impacted by PAHs, PHCs, BTEX, and VOCs, no on-Site infiltration of stormwater will be permitted.

Recommendations

- Dewatering volumes were estimated using an analytical model which does not take effects of the nearby Grand River acting as a constant source of water into account. A constant rate pumping test of a sufficient duration and rate such that the influence of the test extends to the river, should be conducted on-Site to refine the dewatering volume estimates. This should be conducted once the design and construction duration have been finalized.
- Monitoring wells located at the Site should be maintained in accordance with Ontario Regulation 903 (as amended), and upon decommissioning, should be decommissioned in accordance with Ontario Regulation 903 (as amended).
- Continued quarterly monitoring of the existing monitoring well network to document water levels on an ongoing basis and to monitor seasonal fluctuations.

7.0 Limitations

Services provided by **MTE Consultants Inc**. (MTE) were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the Environmental Engineering & Consulting profession. No other warranty or representation, expressed or implied, as to the accuracy of the information, conclusions or recommendations is included or intended in this report.

This report was completed for the sole use of MTE and their client. It was completed in accordance with the scope of work identified in the introduction of the text. As such, this report may not deal with all issues potentially applicable to the Site and may omit issues, which are, or may be, of interest to the reader. MTE makes no representation that the present report has dealt with any and all of the important features, including any or all important environmental features, except as provided in the Introduction. All findings and conclusions presented in this report are based on Site conditions, as they existed during the time period of the investigation. This report is not intended to be exhaustive in scope or to imply a risk-free facility.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based upon it, are the responsibility of such third parties. MTE accepts no responsibility for liabilities incurred by or damages, if any, suffered by any third party as a result of decisions made or actions taken, based upon this report. Others with interest in the site should undertake their own investigations and studies to determine how or if the condition affects them or their plans.

It should be recognized that the passage of time may affect the views, conclusions and recommendations (if any) provided in this report because environmental conditions of a property can change. Should additional information become available, MTE recommends that it be brought to our attention in order that we may re-assess the contents of this report.

We trust this meets your current requirements. If you have any questions or comments, please do not hesitate to contact the undersigned.

All of which is respectfully submitted,

MTE Consultants Inc.

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Figures

N
NORTH

N
PROJECT NORTH

Legend

- Site Boundary
- 5m Contours
- Railroad
- Waterbody

Data Sources:

Contains information licensed under the Open Government License Ontario.

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Project CRS: NAD83 / UTM zone 17N

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Client
Pearle Hospitality

Project
Hydrogeologic Characterization

Site
130 Water Street North, Cambridge, ON

Title
Site Location Map

Reviewed By	ATD		
Prepared By	ATD	Project No	35571-402
Drawn By	SAR	Figure No	1
Date	June 2020		

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GWR1.1

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N
NORTH

N
PROJECT NORTH

Legend

Site Boundary

A — A' Geological Cross Section Location

Monitoring Locations

Monitoring Well

Borehole

Waterbody

Data Sources:

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0 8 16 24 32 40 m

Scale (11x17): 1:836

Project CRS: NAD83 / UTM zone 17N

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Client
Pearle Hospitality

Project
Hydrogeologic Characterization

Site
130 Water Street North, Cambridge, ON

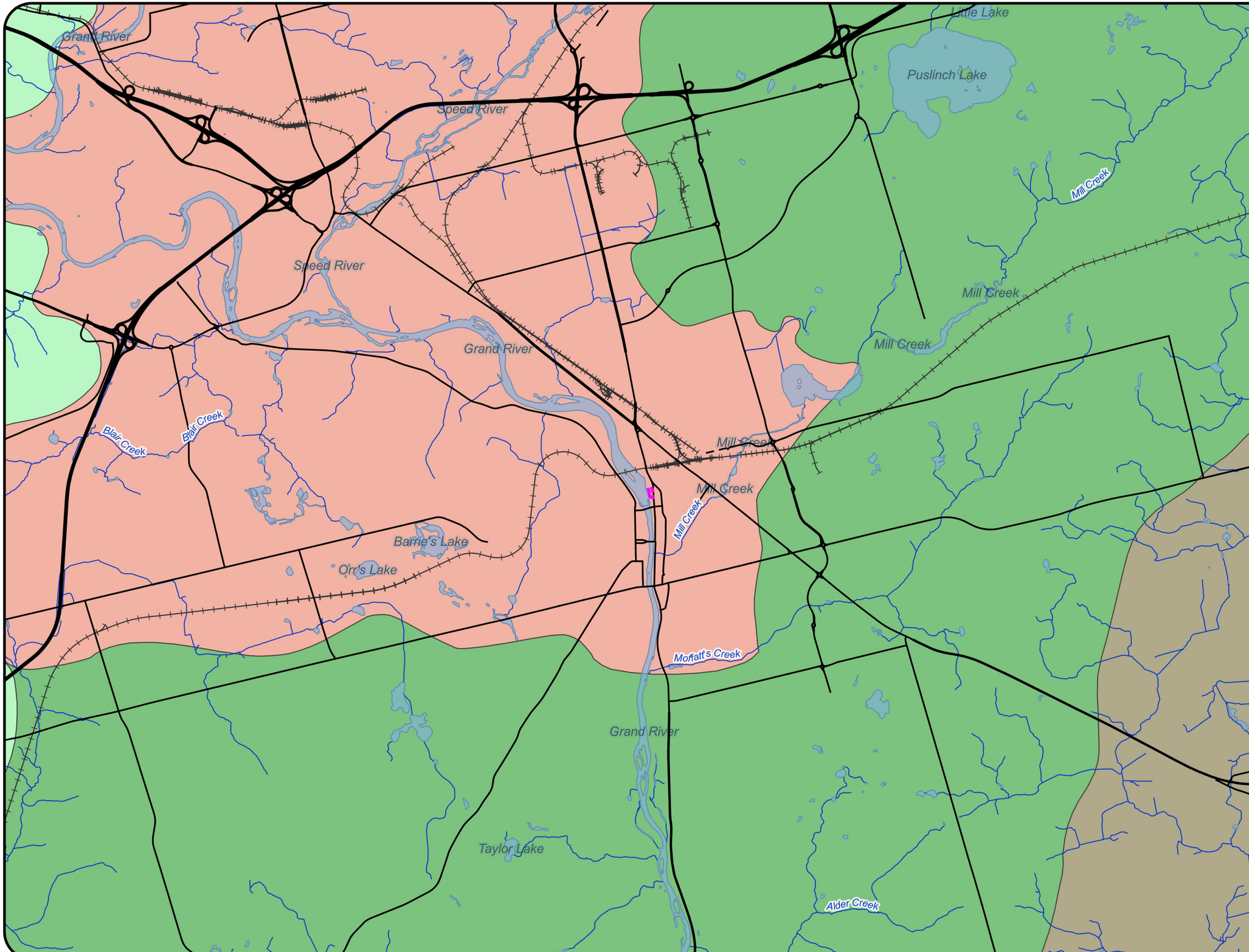
Title
Existing Features

Reviewed By	ATD		
Prepared By	ATD	Project No	35571-402
Drawn By	SAR	Figure No	2
Date	June 2020		

Project No: 35571-402 P:\P35571\402\35571-402_gwr1.qgz

GWR1.2

June 08, 2020 - 00:38 - Plotted By: SRederer



N
NORTH

N
PROJECT NORTH

Legend

- Site Boundary
- Roads
- Railroad
- Waterbody
- Water Courses

Physiographic Regions

- 5. Horseshoe Moraines
- 6. Flamborough Plain
- 10. Waterloo Hills
- 11. Guelph Drumlin Field

Data Sources:

Contains information licensed under the Open Government License Ontario.

Chapman L.J. and Putnam D.F. 2007. Physiography of southern Ontario; Ontario Geological Survey Miscellaneous Release—Data 228.

0 400 800 1200 1600 2000 m

Scale (11x17): 1:50000

Project CRS: NAD83 / UTM zone 17N

MTE
Engineers,Scientists, Surveyors
Ph. (519) 743-6500

Client	Pearle Hospitality
Project	Hydrogeologic Characterization
Site	130 Water Street North, Cambridge, ON
Title	**Physiographic Regions**
Reviewed By	ATD
Prepared By	ATD
Project No	35571-402
Drawn By	SAR
Figure No	3a
Date	June 2020

Project No: 35571-402 P:\P35571\402\35571-402_gwr1.qgz
GWR1.3a
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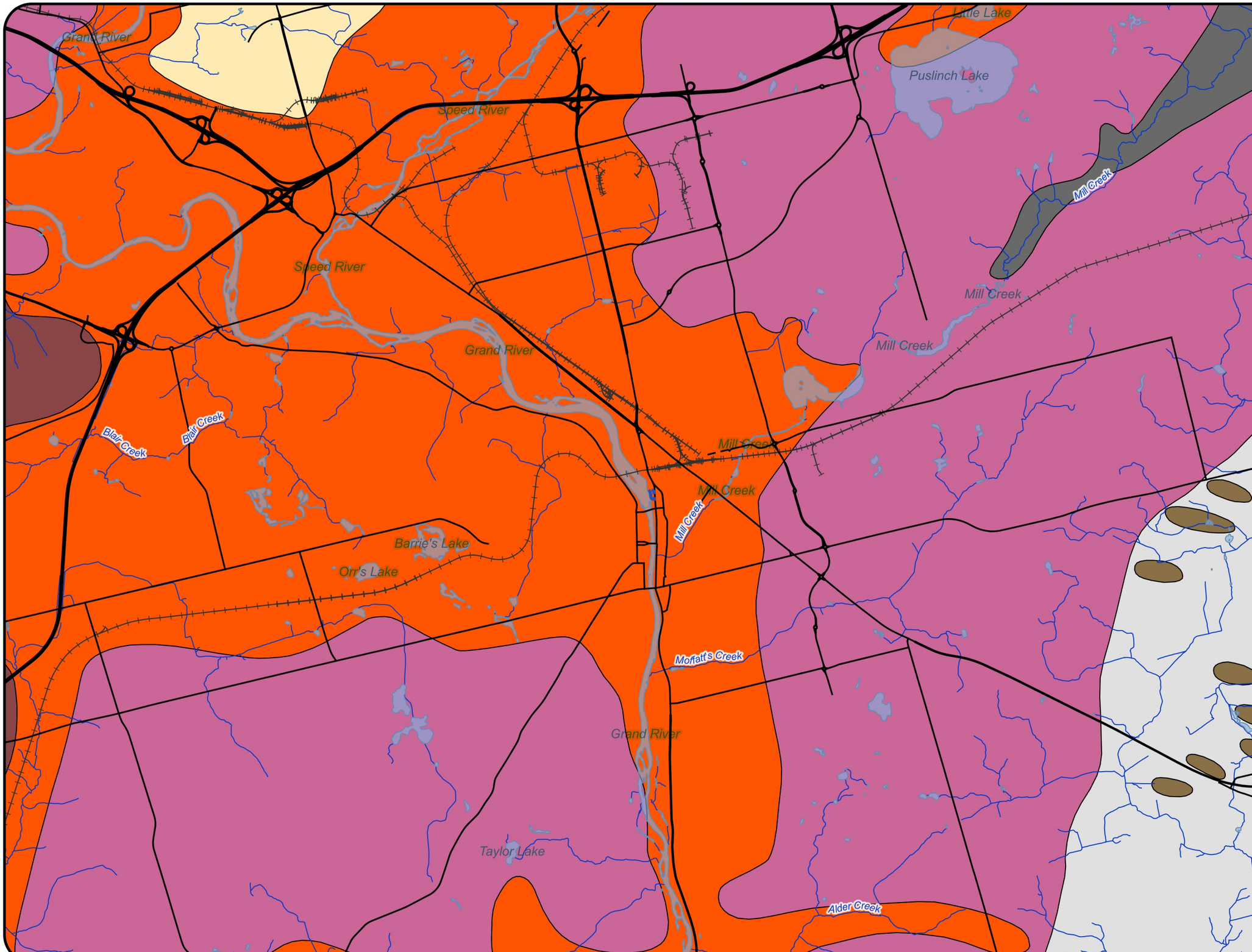

N
NORTH

N
PROJECT NORTH

Legend

- Site Boundary
- Roads
- Railroad
- Waterbody
- Water Courses

Physiogrpahic Landforms

- 2. Till Moraines
- 3. Spillways
- 4. Kame Moraines
- 6. Till Plains (Drumlinized)
- 7. Drumlins
- 9. Limestone Plains
- 17. Peat and Muck

Data Sources:

Contains information licensed under the Open Government License Ontario.

Chapman L.J. and Putnam D.F. 2007. Physiography of southern Ontario; Ontario Geological Survey Miscellaneous Release—Data 228.

0 400 800 1200 1600 2000 m

Scale (11x17): 1:50000

Project CRS: NAD83 / UTM zone 17N

MTE
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Client
Pearle Hospitality

Project
Hydrogeologic Characterization

Site
130 Water Street North, Cambridge, ON

Title
Physiographic Landforms

Reviewed By	ATD		
Prepared By	ATD	Project No	35571-402
Drawn By	SAR	Figure No	3b
Date	June 2020		

Project No: 35571-402 P:\P35571\402\35571-402_gwr1.qgz

GWR1.3b

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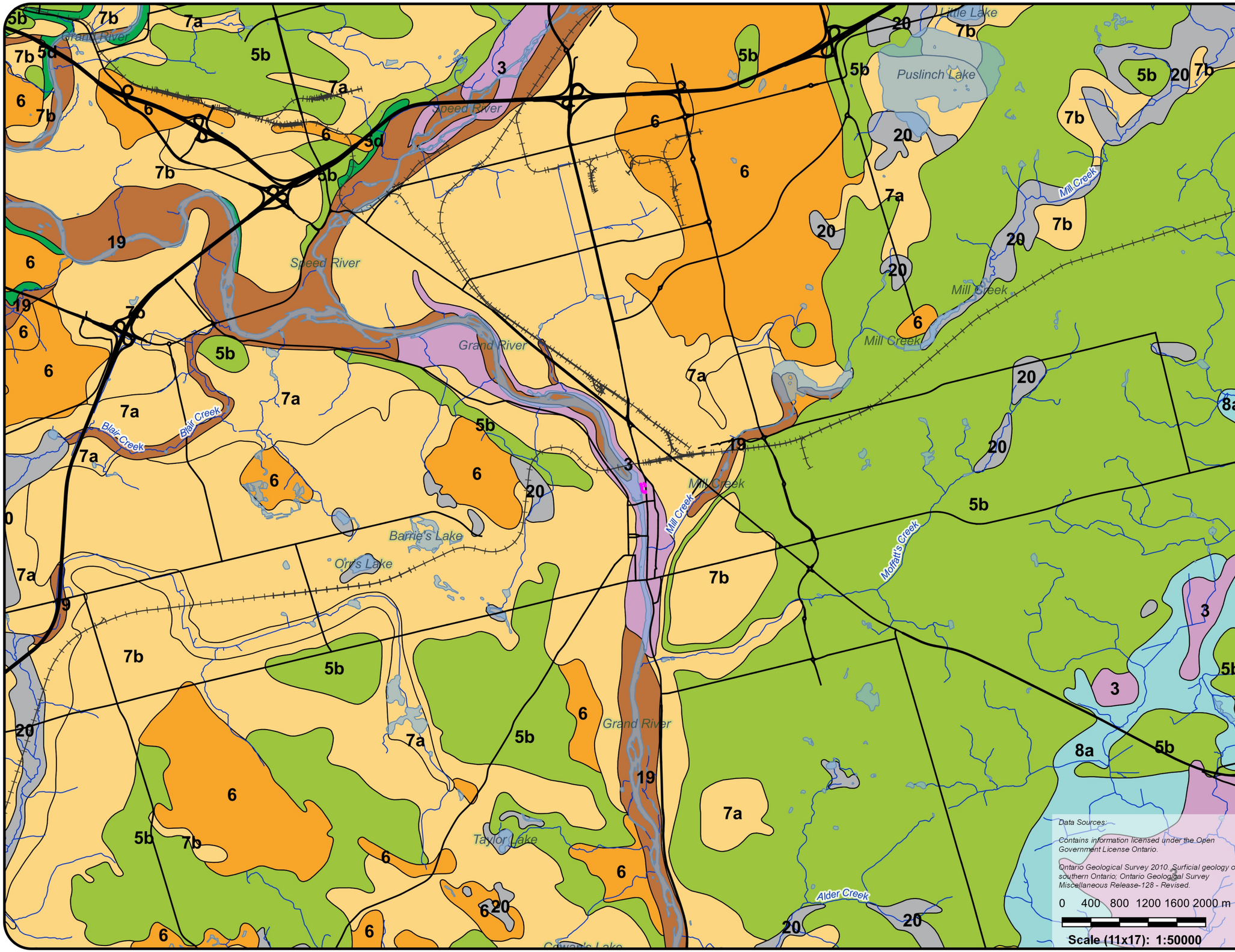

NORTH

PROJECT NORTH

Legend

- Site Boundary
- Roads
- Railroad
- Waterbody
- Water Courses

Quaternary Geology

Quaternary

- 20. Organic Deposits: peat, muck, marl
- 19. Modern alluvial deposits: clay, silt, sand, gravel, may contain organic remains
- 9. Coarse-textured glaciolacustrine deposits: sand, gravel, minor silt and clay
- 9. Coarse-textured glaciolacustrine deposits: sand, gravel, minor silt and clay
- 8. Fine-textured glaciolacustrine deposits: silt and clay, minor sand and gravel
- 8a. Massive to well laminated
- 7. Glaciofluvial deposits: river deposits and delta topset facies
- 7a. Sandy deposits
- 7b. Gravelly deposits
- 6. Ice-contact stratified deposit: sand and gravel, minor silt, clay and till
- 6. Ice-contact stratified deposit: sand and gravel, minor silt, clay and till
- 5. Till:
- 5b. Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain
- 5d. Clay to silt-textured till (derived from glaciolacustrine deposits or shale)

Paleozoic

- 3. Paleozoic bedrock

Project CRS: NAD83 / UTM zone 17N

MTE

Engineers,Scientists, Surveyors

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Client: Pearle Hospitality

Project: Hydrogeologic Characterization

Site: 130 Water Street North, Cambridge, ON

Title: **Quaternary Geology**

Reviewed By	ATD		
Prepared By	ATD	Project No	35571-402
Drawn By	SAR	Figure No	4
Date	June 2020		

Project No: 35571-402 P:\P35571\402\35571-402_gwr1.qgz

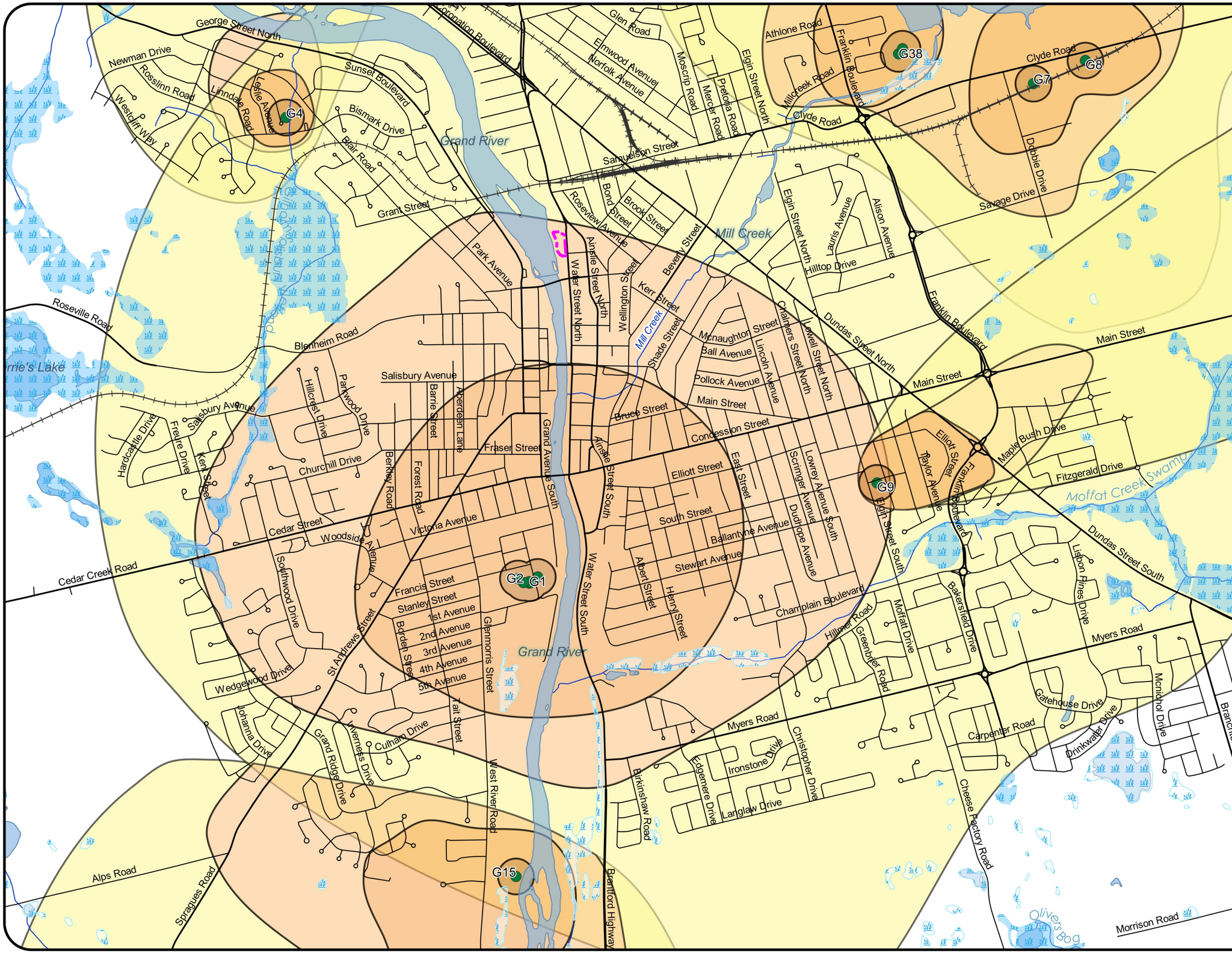
GWR1.4

June 05, 2020 - 17:49 - Plotted By: SRederer

Project No: 35571-402 P:\P35571\402\35571-402_gwr1.qgz

GWR1.5

June 05, 2020 - 17:59 - Plotted By: SRederer



N
NORTH

N
PROJECT NORTH

Legend

- Site Boundary
- Roads
- Railroad
- Provincally Significant Wetland
- Unevaluated Wetland
- Waterbody
- Water Courses
- Municipal Well (GRCA)

WHPA-Wellhead Protection Area (GRCA)

- A
- B
- C
- D

Data Sources:

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0 100200300400500 m

Scale (11x17): 1:20000

Project CRS: NAD83 / UTM zone 17N

MTE

Engineers,Scientists, Surveyors

Ph. (519) 743-6500

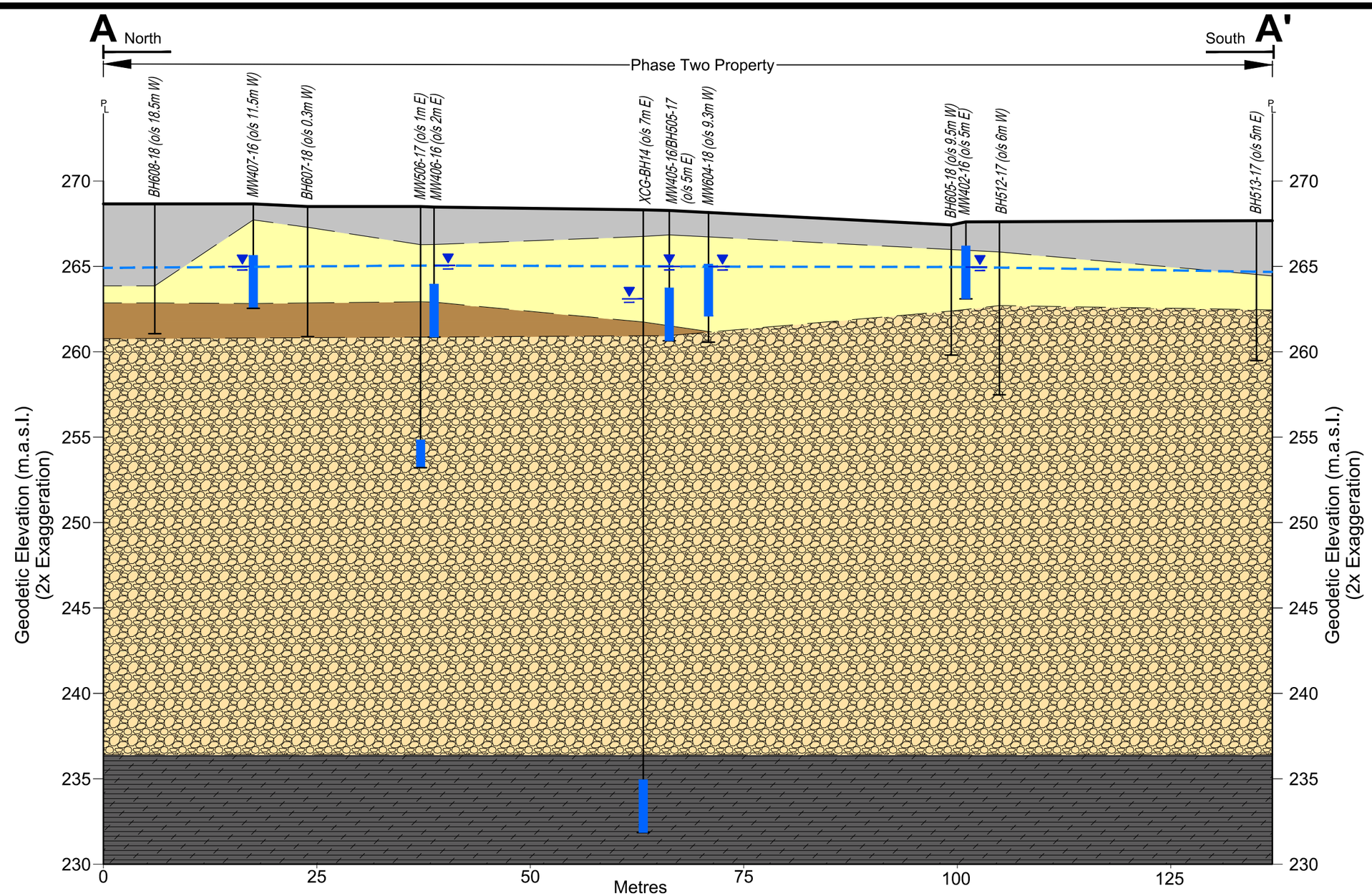
Client: Pearle Hospitality

Project: Hydrogeologic Characterization

Site: 130 Water Street North, Cambridge, ON

Title: **Municipal Water Supply Wells**

Reviewed By	ATD		
Prepared By	ATD	Project No	35571-402
Drawn By	SAR	Figure No	5
Date	June 2020		



LEGEND

- Fill
- Sand
- Silt
- Sand & Gravel
- Bedrock (Limestone)
- Inferred Water Table

m.a.s.l. = metres above sea level

MW405-16
- Sample Location ID & Offset Distance
- Borehole
- Water Level (January 2019)
- Well Screen

GEOLOGICAL CROSS-SECTION A-A'

MTE Engineers, Scientists, Surveyors

Project Name	
Hydrogeologic Characterization	
Site: 130 Water Street North, Cambridge, Ontario	Client: Pearl Hospitality

Scale (11x17)	MTE Project No.	Date	Figure No.
1:500	35571-402	June 2020	6

Project: 35571-400 CAD: P:\35571\402\35571-402-ESA1.DWG

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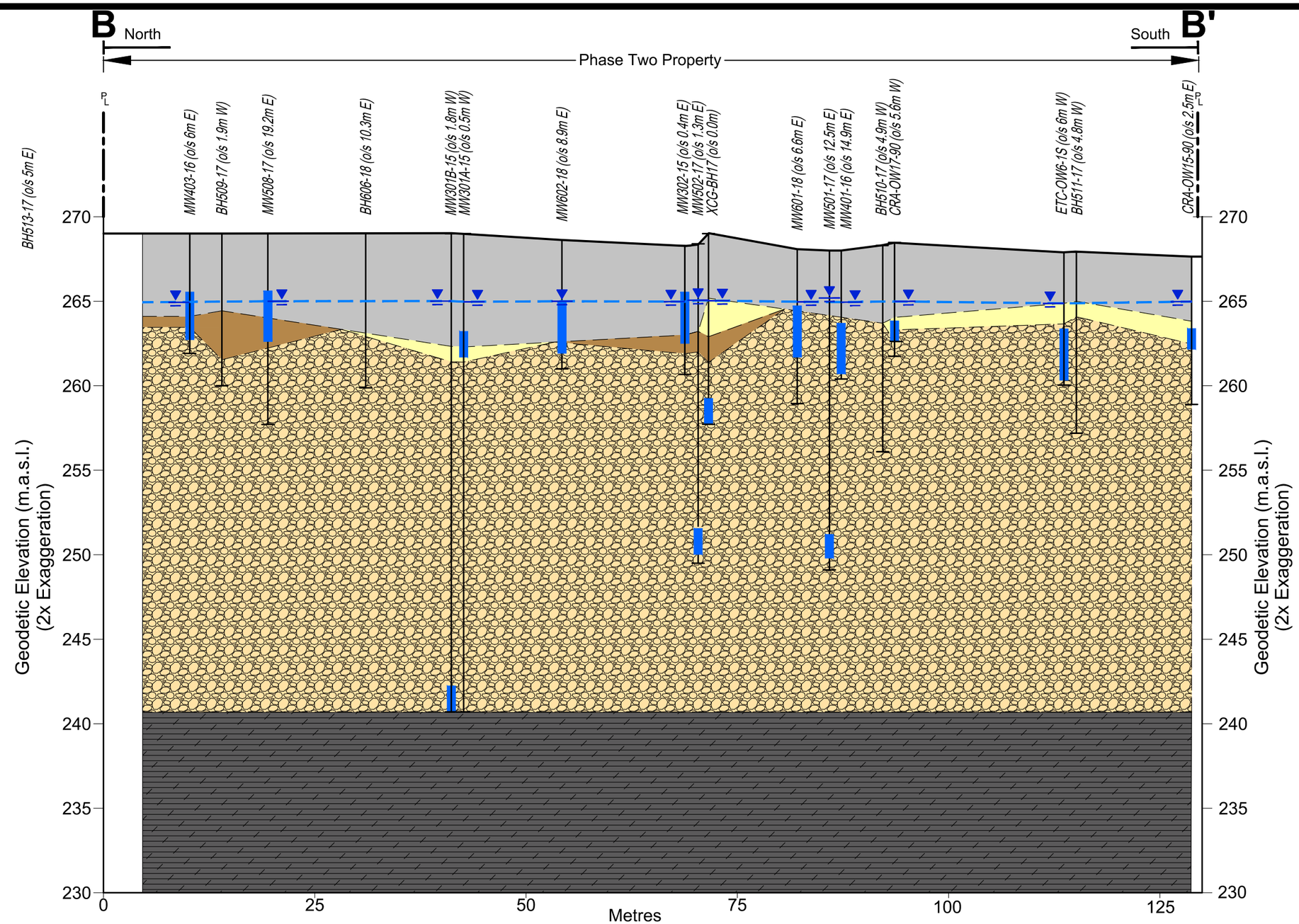


LEGEND

- Fill
- Sand
- Silt
- Sand & Gravel
- Bedrock (Limestone)
- Inferred Water Table

m.a.s.l. = metres above sea level

MW405-16 — Sample Location ID & Offset Distance

Borehole

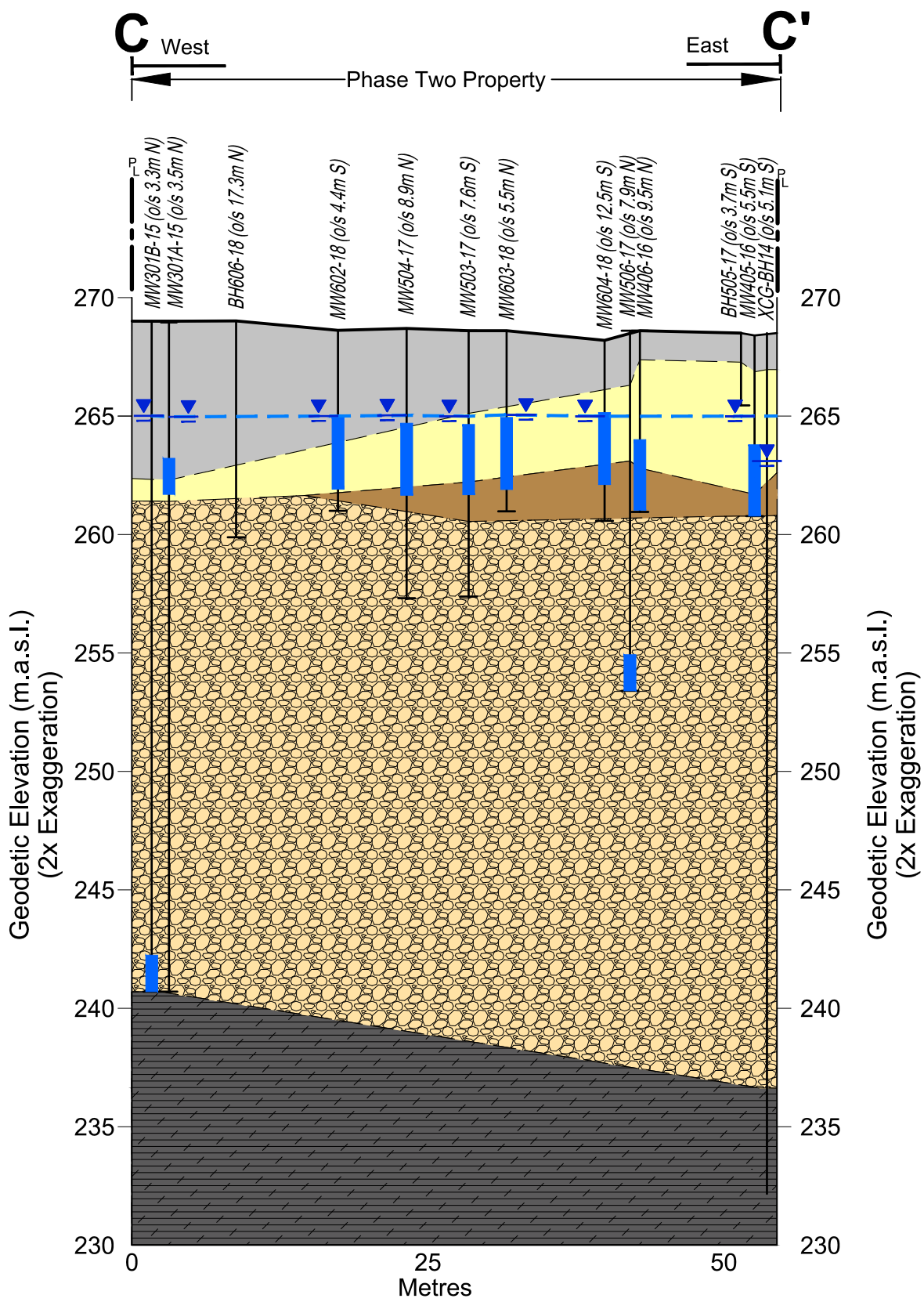
Water Level (January 2019)

Well Screen

MTE
Engineers, Scientists, Surveyors

GEOLOGICAL CROSS-SECTION B-B'

Project Name			
Hydrogeologic Characterization			
Site: 130 Water Street North, Cambridge, Ontario		Client: Pearl Hospitality	
Scale (11x17): 1:500	MTE Project No.: 35571-402	Date: June 2020	Figure No.: 7



LEGEND

- Fill
- Sand
- Silt
- Sand & Gravel
- Bedrock (Limestone)
- Inferred Water Table

m.a.s.l. = metres above sea level

MW405-16 — Sample Location ID & Offset Distance

Borehole

Water Level (January 2019)

Well Screen

GEOLOGICAL CROSS-SECTION C-C'

MTE Engineers, Scientists, Surveyors

Project Name			
Hydrogeologic Characterization			
Site: 130 Water Street North, Cambridge, Ontario		Client: Pearl Hospitality	
Scale (11x17): 1:1000	MTE Project No.: 35571-402	Date: June 2020	Figure No.: 8

N
NORTH

N
PROJECT NORTH

Legend

Site Boundary

Waterbody

Monitoring Locations

Monitoring Well (Groundwater Elevation (mAMSL))

Groundwater Contours (0.1m Interval) Groundwater Flow Direction (Inferred)

Data Sources:

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0 8 16 24 32 40 m

Scale (11x17): 1:836

Project CRS: NAD83 / UTM zone 17N

MTE
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Client
Pearle Hospitality

Project
Hydrogeologic Characterization

Site
130 Water Street North, Cambridge, ON

Title
Inferred Shallow Groundwater Flow February 26, 2018

Reviewed By	ATD		
Prepared By	ATD	Project No	35571-402
Drawn By	SAR	Figure No	9
Date	June 2020		

Project No: 35571-402 P:\P35571\402\35571-402_gwr1.qgz

GWR1.9

June 17, 2020 - 12:43 - Plotted By: SRederer

Tables

Table 1: Monitoring Well Installation Details and Groundwater Elevations

Well ID	Monitoring Well Installation Details				Groundwater Elevations									
					March 24, 2017		April 4, 2017		June 14, 2017		July 18, 2017		August 18, 2017	
	Installation Date	Consultant	Ground Surface Elevation (masl)[1]	Screened Interval (mbgs)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)
Shallow Overburden Monitoring Wells														
CRA-OW15-90	February 6, 1990	CRA	267.629	4.27 - 5.49	2.97	264.66	-	-	2.90	264.73	2.91	264.72	2.93	264.70
CRA-OW17-90	February 9, 1990	CRA	268.517	4.61 - 5.83	3.81	264.71	3.76	264.762	3.80	264.72	3.76	264.76	3.81	264.71
ETC-OW6-1S	July 5, 2006	ETC	267.921	4.57 - 7.62	3.37	264.55	-	-	3.30	264.62	3.30	264.62	3.33	264.59
MW301A-15	December 7, 2015	MTE	269.030	5.79 - 7.32	4.30	264.73	4.23	264.800	4.27	264.76	4.26	264.77	-	-
MW302-15	December 10, 2015	MTE	268.302	2.74 - 5.79	3.58	264.72	3.54	264.762	3.50	264.80	3.53	264.78	3.59	264.71
MW401-16	May 3, 2016	MTE	267.922	4.27 - 7.32	3.26	264.66	3.22	264.702	3.16	264.76	3.19	264.73	3.25	264.67
MW402-16	May 3, 2016	MTE	267.731	1.52 - 4.57	3.05	264.68	3.01	264.723	2.97	264.76	3.01	264.72	3.05	264.68
MW403-16	May 3, 2016	MTE	269.171	3.35 - 6.40	4.42	264.76	-	-	4.34	264.84	4.39	264.79	4.44	264.74
MW404-16	May 3, 2016	MTE	267.576	3.05 - 6.10	2.93	264.64	-	-	2.84	264.73	2.88	264.69	2.91	264.66
MW405-16	May 4, 2016	MTE	268.385	4.57 - 7.62	3.66	264.72	-	-	3.55	264.83	-	-	3.65	264.73
MW406-16	May 4, 2016	MTE	268.507	4.57 - 7.62	3.73	264.78	3.72	264.789	3.62	264.89	3.62	264.88	-	-
MW407-16	May 4, 2016	MTE	268.632	3.05 - 6.10	3.88	264.75	-	-	3.73	264.90	3.80	264.83	3.85	264.78
MW503-17	February 22, 2017	MTE	268.466	3.96 - 7.01	3.77	264.70	-	-	3.63	264.84	3.69	264.77	-	-
MW504-17	February 22, 2017	MTE	268.665	3.96 - 7.01	3.90	264.76	-	-	3.77	264.89	3.82	264.84	3.89	264.77
MW507-17	February 22, 2017	MTE	268.504	3.05 - 6.10	3.79	264.71	-	-	3.64	264.86	-	-	3.74	264.76
MW508-17	February 22, 2017	MTE	268.805	3.35 - 6.40	4.03	264.77	-	-	3.91	264.89	3.95	264.86	4.01	264.79
MW601-18	December 11, 2018	MTE	268.083	3.35 - 6.40	-	-	-	-	-	-	-	-	-	-
MW602-18	December 11, 2018	MTE	268.626	3.66 - 6.71	-	-	-	-	-	-	-	-	-	-
MW603-18	December 10, 2018	MTE	268.597	3.66 - 6.71	-	-	-	-	-	-	-	-	-	-
MW604-18	December 11, 2018	MTE	268.196	3.05 - 6.10	-	-	-	-	-	-	-	-	-	-
XCG-BH17	September 29, 2005	XCG	268.335	9.75 - 11.28	4.70	263.64	3.65	264.690	3.59	264.75	3.59	264.75	3.61	264.73
Intermediate Overburden Monitoring Wells														
MW501-17	February 27, 2017	MTE	267.958	16.76 - 18.29	3.28	264.68	-	-	3.10	264.86	3.13	264.83	3.15	264.81
MW502-17	March 7, 2017	MTE	268.390	16.76 - 18.29	3.73	264.66	3.70	264.685	3.55	264.84	3.59	264.80	3.60	264.79
MW506-17	February 21, 2017	MTE	268.453	13.72 - 15.24	3.84	264.77	3.83	264.78	3.61	265.00	3.70	264.91	3.73	264.88
Deep Overburden Monitoring Wells														
MW301B-15	December 10, 2015	MTE	269.023	26.82 - 28.35	4.48	264.54	-	-	4.29	264.73	4.33	264.69	4.33	264.69
Bedrock Monitoring Wells														
XCG-BH14	September 30, 2005	XCG	268.259	33.53 - 36.58	6.23	262.03	-	-	6.12	262.14	5.81	262.45	5.67	262.59

[1]Geodetic elevations surveyed December 11, 2018

masl = metres above sea level

mbgs = metres below ground surface

Table 1: Monitoring Well Installation Details and Groundwater Elevations

Well ID	Monitoring Well Installation Details				Groundwater									
					September 11, 2017		November 9, 2017		February 26, 2018		March 21, 2018		April 30, 2018	
	Installation Date	Consultant	Ground Surface Elevation (masl)[1]	Screened Interval (mbgs)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)
Shallow Overburden Monitoring Wells														
CRA-OW15-90	February 6, 1990	CRA	267.629	4.27 - 5.49	3.09	264.54	2.93	264.70	2.22	265.41	2.72	264.91	2.27	265.36
CRA-OW17-90	February 9, 1990	CRA	268.517	4.61 - 5.83	3.94	264.58	3.81	264.71	3.07	265.45	3.60	264.92	3.13	265.39
ETC-OW6-1S	July 5, 2006	ETC	267.921	4.57 - 7.62	3.50	264.43	3.32	264.60	-	-	3.11	264.81	2.65	265.27
MW301A-15	December 7, 2015	MTE	269.030	5.79 - 7.32	-	-	4.29	264.74	3.62	265.41	4.14	264.89	3.69	265.34
MW302-15	December 10, 2015	MTE	268.302	2.74 - 5.79	3.68	264.63	3.58	264.72	2.87	265.43	3.40	264.90	2.93	265.37
MW401-16	May 3, 2016	MTE	267.922	4.27 - 7.32	3.41	264.52	3.25	264.67	2.50	265.42	3.03	264.89	2.56	265.36
MW402-16	May 3, 2016	MTE	267.731	1.52 - 4.57	3.20	264.53	3.06	264.67	2.38	265.35	2.83	264.90	2.43	265.30
MW403-16	May 3, 2016	MTE	269.171	3.35 - 6.40	4.51	264.67	4.41	264.77	3.71	265.47	4.26	264.92	3.80	265.38
MW404-16	May 3, 2016	MTE	267.576	3.05 - 6.10	3.07	264.50	2.91	264.66	2.19	265.38	2.71	264.86	2.25	265.32
MW405-16	May 4, 2016	MTE	268.385	4.57 - 7.62	3.91	264.47	3.68	264.70	2.92	265.46	3.39	264.99	2.93	265.45
MW406-16	May 4, 2016	MTE	268.507	4.57 - 7.62	3.89	264.62	3.74	264.77	3.02	265.49	3.47	265.04	2.97	265.54
MW407-16	May 4, 2016	MTE	268.632	3.05 - 6.10	4.02	264.61	3.90	264.73	3.05	265.58	3.63	265.00	3.11	265.52
MW503-17	February 22, 2017	MTE	268.466	3.96 - 7.01	3.91	264.56	3.76	264.71	3.02	265.45	3.53	264.94	3.05	265.42
MW504-17	February 22, 2017	MTE	268.665	3.96 - 7.01	4.05	264.61	3.92	264.74	-	-	-	-	3.19	265.47
MW507-17	February 22, 2017	MTE	268.504	3.05 - 6.10	3.91	264.59	3.79	264.71	3.01	265.49	3.50	265.00	3.04	265.46
MW508-17	February 22, 2017	MTE	268.805	3.35 - 6.40	4.17	264.63	4.04	264.76	3.28	265.52	3.80	265.00	3.35	265.45
MW601-18	December 11, 2018	MTE	268.083	3.35 - 6.40	-	-	-	-	-	-	-	-	-	-
MW602-18	December 11, 2018	MTE	268.626	3.66 - 6.71	-	-	-	-	-	-	-	-	-	-
MW603-18	December 10, 2018	MTE	268.597	3.66 - 6.71	-	-	-	-	-	-	-	-	-	-
MW604-18	December 11, 2018	MTE	268.196	3.05 - 6.10	-	-	-	-	-	-	-	-	-	-
XCG-BH17	September 29, 2005	XCG	268.335	9.75 - 11.28	3.80	264.54	3.63	264.71	2.92	265.42	3.38	264.955	2.89	265.445
Intermediate Overburden Monitoring Wells														
MW501-17	February 27, 2017	MTE	267.958	16.76 - 18.29	3.37	264.59	3.20	264.76	2.48	265.48	2.88	265.08	2.38	265.58
MW502-17	March 7, 2017	MTE	268.390	16.76 - 18.29	3.82	264.57	3.65	264.74	2.91	265.48	3.32	265.07	2.83	265.56
MW506-17	February 21, 2017	MTE	268.453	13.72 - 15.24	3.93	264.68	3.77	264.84	3.03	265.57	3.45	265.15	2.94	265.66
Deep Overburden Monitoring Wells														
MW301B-15	December 10, 2015	MTE	269.023	26.82 - 28.35	4.58	264.44	4.39	264.63	3.63	265.39	4.05	264.97	3.55	265.47
Bedrock Monitoring Wells														
XCG-BH14	September 30, 2005	XCG	268.259	33.53 - 36.58	-	-	5.72	262.54	4.91	263.35	5.39	262.87	4.78	263.48

[1]Geodetic elevations surveyed December 11, 2018

masl = metres above sea level

mbgs = metres below ground surface

Table 1: Monitoring Well Installation Details and Groundwater Elevations

Well ID	Monitoring Well Installation Details				Groundwater Elevations									
					May 24, 2018		January 10, 2019		April 16, 2020			June 3, 2020		
	Installation Date	Consultant	Ground Surface Elevation (masl)[1]	Screened Interval (mbgs)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Elevation (masl)	Water Level (mbgs)	Water Level (mbtop)	Water Elevation (masl)	Water Level (mbgs)	Water Level (mbtop)	Water Elevation (masl)
Shallow Overburden Monitoring Wells														
CRA-OW15-90	February 6, 1990	CRA	267.629	4.27 - 5.49	2.60	265.03	2.65	264.98	2.76	3.66	264.87	-	-	-
CRA-OW17-90	February 9, 1990	CRA	268.517	4.61 - 5.83	3.47	265.05	3.53	264.99	4.62	5.63	263.90	-	-	-
ETC-OW6-1S	July 5, 2006	ETC	267.921	4.57 - 7.62	2.98	264.94	3.03	264.89	3.15	3.66	264.77	3.43	3.94	264.49
MW301A-15	December 7, 2015	MTE	269.030	5.79 - 7.32	4.02	265.01	4.06	264.97	4.21	4.97	264.83	4.43	5.19	264.60
MW302-15	December 10, 2015	MTE	268.302	2.74 - 5.79	2.62	265.68	3.32	264.98	3.41	4.11	264.89	3.62	4.32	264.69
MW401-16	May 3, 2016	MTE	267.922	4.27 - 7.32	2.89	265.03	2.97	264.95	3.06	2.95	264.86	3.36	3.25	264.56
MW402-16	May 3, 2016	MTE	267.731	1.52 - 4.57	2.71	265.02	2.77	264.96	2.87	2.69	264.86	-	-	-
MW403-16	May 3, 2016	MTE	269.171	3.35 - 6.40	4.13	265.05	4.23	264.94	-	-	-	-	-	-
MW404-16	May 3, 2016	MTE	267.576	3.05 - 6.10	2.57	265.00	2.63	264.94	2.74	2.59	264.83	-	-	-
MW405-16	May 4, 2016	MTE	268.385	4.57 - 7.62	3.20	265.18	3.38	265.00	3.45	3.36	264.94	3.80	3.71	264.58
MW406-16	May 4, 2016	MTE	268.507	4.57 - 7.62	3.26	265.25	3.41	265.09	-	-	-	-	-	-
MW407-16	May 4, 2016	MTE	268.632	3.05 - 6.10	3.44	265.19	3.64	264.99	-	-	-	-	-	-
MW503-17	February 22, 2017	MTE	268.466	3.96 - 7.01	2.74	265.73	3.48	264.99	3.56	3.44	264.91	-	-	-
MW504-17	February 22, 2017	MTE	268.665	3.96 - 7.01	3.50	265.16	3.63	265.03	3.72	3.60	264.94	4.04	3.92	264.62
MW507-17	February 22, 2017	MTE	268.504	3.05 - 6.10	3.33	265.17	3.52	264.98	3.58	3.44	264.92	-	-	-
MW508-17	February 22, 2017	MTE	268.805	3.35 - 6.40	3.65	265.15	3.81	265.00	3.84	3.76	264.96	4.15	4.07	264.65
MW601-18	December 11, 2018	MTE	268.083	3.35 - 6.40	-	-	3.11	264.97	3.21	3.15	264.87	-	-	-
MW602-18	December 11, 2018	MTE	268.626	3.66 - 6.71	-	-	3.63	265.00	3.70	3.55	264.93	-	-	-
MW603-18	December 10, 2018	MTE	268.597	3.66 - 6.71	-	-	3.55	265.05	3.64	3.54	264.96	3.97	3.86	264.63
MW604-18	December 11, 2018	MTE	268.196	3.05 - 6.10	-	-	3.21	264.99	3.29	3.23	264.91	-	-	-
XCG-BH17	September 29, 2005	XCG	268.335	9.75 - 11.28	3.22	265.115	3.30	265.04	3.47	4.31	264.87	-	-	-
Intermediate Overburden Monitoring Wells														
MW501-17	February 27, 2017	MTE	267.958	16.76 - 18.29	2.68	265.28	2.77	265.19	3.02	2.95	264.94	3.39	3.32	264.57
MW502-17	March 7, 2017	MTE	268.390	16.76 - 18.29	3.14	265.25	3.33	265.06	3.49	4.28	264.90	3.86	4.65	264.53
MW506-17	February 21, 2017	MTE	268.453	13.72 - 15.24	3.05	265.55	3.00	265.45	-	-	-	-	-	-
Deep Overburden Monitoring Wells														
MW301B-15	December 10, 2015	MTE	269.023	26.82 - 28.35	3.86	265.16	4.01	265.01	4.23	4.98	264.80	4.61	5.36	264.41
Bedrock Monitoring Wells														
XCG-BH14	September 30, 2005	XCG	268.259	33.53 - 36.58	5.31	262.95	5.16	263.10	5.92	6.62	262.34	-	-	-

[1]Geodetic elevations surveyed December 11, 2018

masl = metres above sea level

mbgs = metres below ground surface

Appendix A

Borehole Logs

Borehole Number: MTE-MW301A-15

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

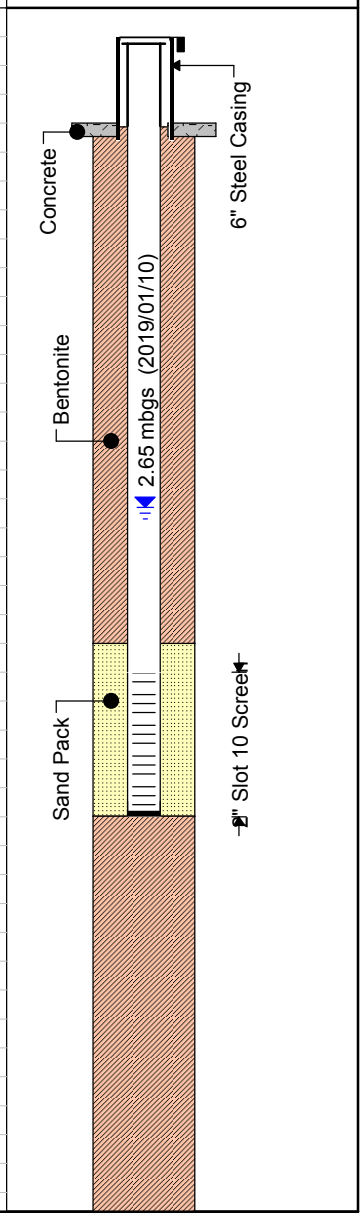
Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/7/2015

Drilling Contractor: Geo-Environmental Drilling

Drill Method: CME-75 Auger Drill Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
		Ground Surface	269.0						
		TOPSOIL	0.0	1	SS				
		FILL Loose, light brown, coarse sand and gravel, some silt, dry, no staining or odours.		2	SS		metals, pH		
				3	SS				
			266.7						
		Some brick fragments, ash/slag.	2.3	4	SS		PAHs, metals		
				5	SS				
				6	SS				
			264.5				PHCs, PAHs, metals, pH		
		Saturated at 4.6 m.	4.6	7	SS				
				8	SS		PHCs, PAHs		
		SAND Dense, light brown, fine silt, wet, no staining or odours.	6.7						
			261.4						
		SAND AND GRAVEL Dense, light brown, coarse gravel, saturated, coal tar odour and sheen.	7.6	9	SS		PHCs, PAHs		
			259.9						
		No staining or odour.	9.1	10	SS		PAHs, pH		
				11	SS		PAHs, pH		



Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 1 of 3

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW301A-15

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/7/2015

Drilling Contractor: Geo-Environmental Drilling

Drill Method: CME-75 Auger Drill Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
38									
40	12			12	SS				
42									
44									
46	14			13	SS				
48									
50				14	SS				Bentonite Grout
52	16								
54									
56				15	SS				
58									
60	18			16	SS				
62									
64									
66	20			17	SS				
68									
70				18	SS				
72	22								
74									
76				19	SS				

Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 2 of 3

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW301A-15

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/7/2015

Drilling Contractor: Geo-Environmental Drilling

Drill Method: CME-75 Auger Drill Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	
Depth	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	Well Completion Details
78	24								
80				20	SS				
82									
84	26								
86				21	SS				
88									
90				22	SS				
92	28		240.7						
94		End of Borehole	28.3						
96									
98	30								
00									
02									
04	32								
06									
08									
10									
12	34								
14									
16									

Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 3 of 3

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW301B-15

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

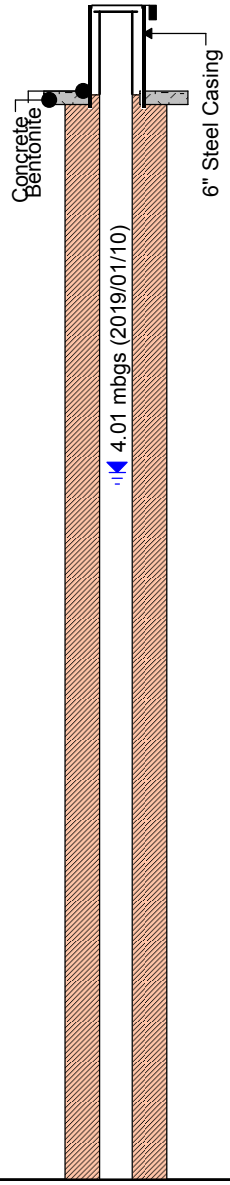
Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2015

Drilling Contractor: Geo-Environmental Drilling

Drill Method: CME-75 Auger Drill Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
		Ground Surface	269.0						
		TOPSOIL	0.0						
		FILL Loose, light brown, coarse sand and gravel, some silt, dry, no staining or odours.	266.7						
		Some brick fragments, ash/slag.	264.5						
		Saturated at 4.6 m.	262.3						
		SAND Dense, light brown, fine silt, wet, no staining or odours.	261.4						
		SAND AND GRAVEL Dense, light brown, coarse gravel, saturated, coal tar odour and sheen.	259.9						
		No staining or odours.							



Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 1 of 3

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW301B-15

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

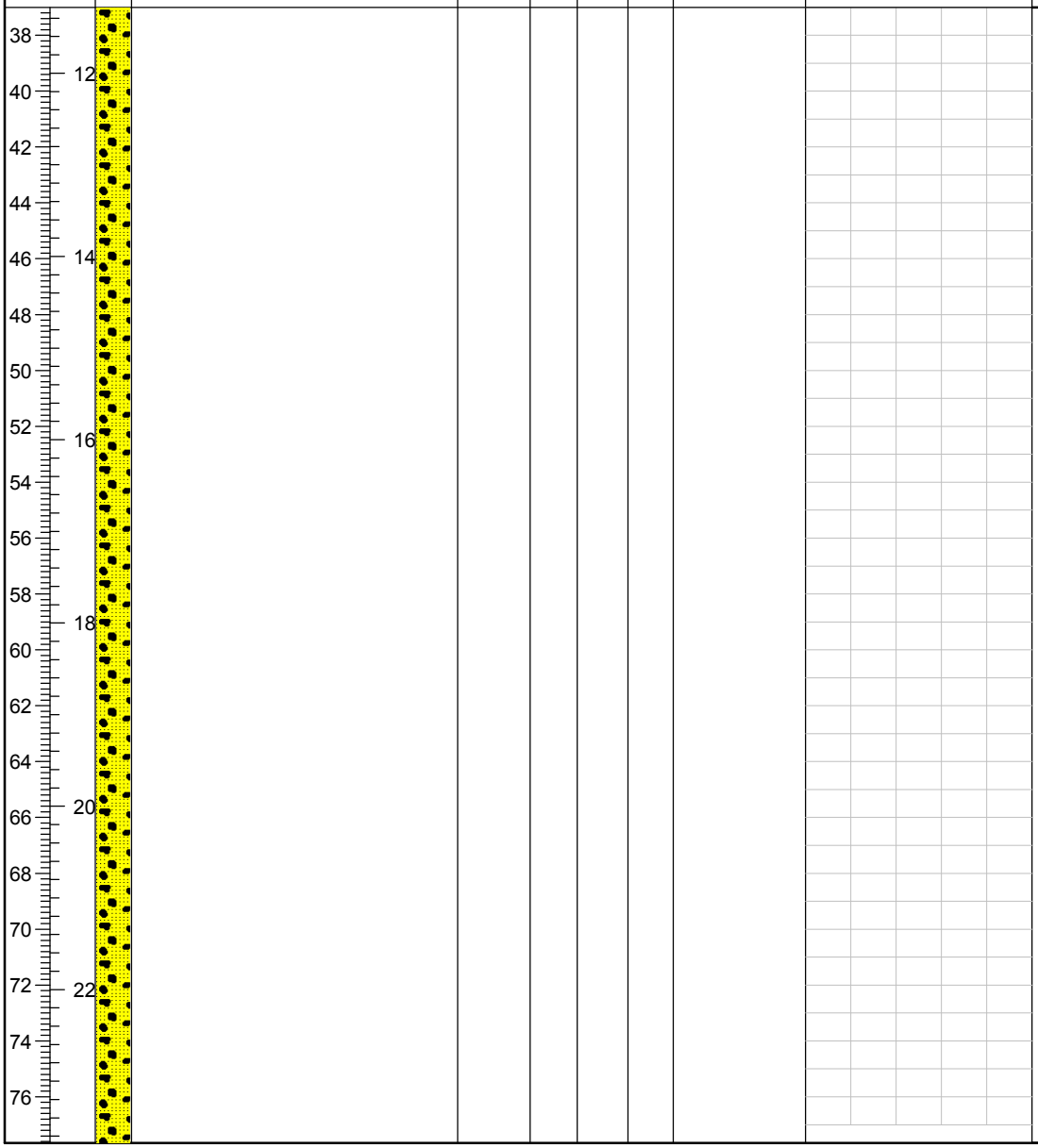
Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2015

Drilling Contractor: Geo-Environmental Drilling

Drill Method: CME-75 Auger Drill Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	



Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 2 of 3

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW301B-15

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

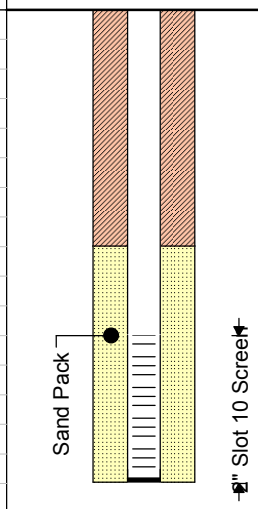
Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2015

Drilling Contractor: Geo-Environmental Drilling

Drill Method: CME-75 Auger Drill Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
78	24								
80									
82									
84	26								
86									
88									
90									
92	28		240.7						
94		End of Borehole	28.3						
96									
98	30								
00									
02									
04	32								
06									
08									
10									
12	34								
14									
16									



Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 3 of 3

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW302-15

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

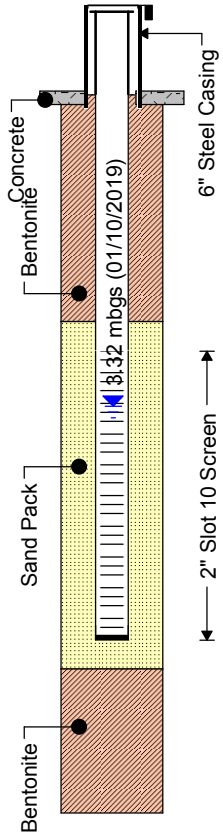
Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2015

Drilling Contractor: Geo-Environmental Drilling

Drill Method: CME-75 Auger Drill Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
		Ground Surface	268.3						
		TOPSOIL	0.0	1	SS				
		FILL Loose, light brown, coarse sand and gravel, some silt, dry, no staining or odours.		2	SS				
		Some ash.	266.5 / 1.8	3	SS		PHCs, PAHs, metals, pH		
		Wet at 3.3 m.	265.6 / 2.7	4	SS				
				5	SS		PHCs, BTEX, VOCs		
		Some rootlets, black with coal tar odour and sheen.	264.5 / 3.8	6	SS				
				7	SS				
		SILT Medium dense, light grey-black, coarse sand, some clay, saturated, coal tar odour and sheen.	263.1 / 5.2	8	SS		PHCs, BTEX, VOCs, PAHs, metals, pH		
		SAND AND GRAVEL Medium dense, light grey-black, coarse gravel, saturated, coal tar odour and sheen.	261.9 / 6.4	9	SS				
				10	SS				
		End of Borehole	260.7 / 7.6						



Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 1 of 1

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW401-16

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 5/3/2016

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
			Ground Surface	267.9
0	0		**ASPHALT**	0.0 / 267.6
			FILL Brown, fine grained sand, trace gravel, some silt, damp, no staining or odours.	0.3 / 267.2
2			Dark brown to black, medium to coarse grained sand, some gravel, some cinders and brick fragments.	0.8
4			Red-brown, fine to medium grained sand, some silt and gravel, damp, no staining or odours.	266.4
6			**SAND AND GRAVEL** Brown, medium grained to coarse, damp.	1.5
	2		**SAND** Brown, medium grained, trace gravel, damp.	265.8 / 2.1
8			Moist at 2.1 m.	
10				
12			Wet to saturated at 3.7 m.	264.3 / 3.7
	4			
14				
16				
18			Coarse grained sand at 5.5 m, trace coal tar odour.	262.4 / 5.5 / 262.1
			Black staining with strong coal tar odour at 5.8 - 6.1 m.	5.8 / 261.8
20	6		Dark brown, coarse grained sand and gravel, some clay, coal tar odour and staining.	6.1
22				
24				260.3
26	8		End of Borehole	7.6

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	70	PAHs, metals
2	DP	75	
3	DP	100	PHCs, BTEX, PAHs, metals
4	DP	100	PHCs, BTEX, PAHs
5	DP	0	

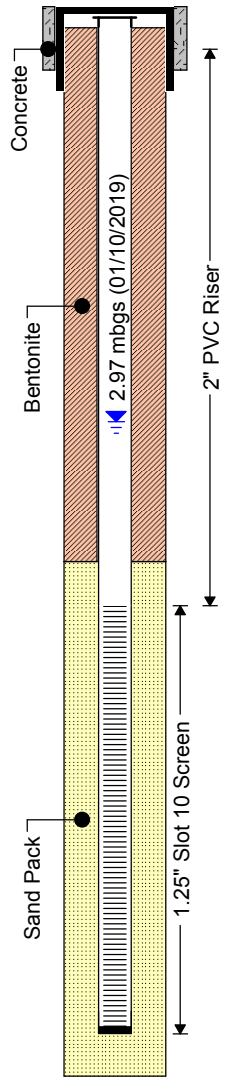
HEADSPACE

VOC ppm / Hydrocarbon ppm

100 200 300 400

2, 0, 16, 7, 23, 351, 181, >500

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: SCA

Drafted by: SCA

Reviewed by: RJF

Borehole Number: MTE-MW402-16

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 5/3/2016

Drilling Contractor: Direct Environmental Driling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Soil Description	Depth (m)
		Ground Surface	267.7
		TOPSOIL	0.0
		FILL Red-brown, fine to medium grained sand, trace gravel, damp.	267.1 / 0.6
		SAND AND GRAVEL Brown, medium to coarse grained sand, damp.	265.9 / 1.8
		Trace gravel.	
		Wet at 2.1 m.	264.7
		Saturated at 3.0 m.	3.0
		End of Borehole	260.1 / 7.6

SAMPLE

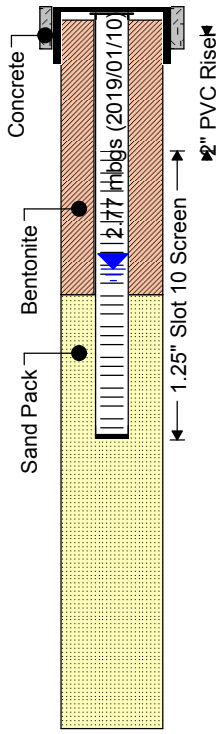
Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	40	
2	DP	60	
3	DP	80	
4	DP	0	
5	DP	0	

HEADSPACE

VOC ppm / Hydrocarbon ppm (100 200 300 400)

Number	VOC ppm
1	0
2	0
3	1
4	1
5	0

Well Completion Details



Cover Type: Flushmount

Notes: No noticeable staining or odours

Sheet: 1 of 1

Field Technician: SCA

Drafted by: MEF

Reviewed by: RJF

Borehole Number: MTE-MW403-16

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 5/3/2016

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Soil Description	Depth (m)
		Ground Surface	269.2
		FILL Dark brown, fine to medium grained sand and gravel, damp, no noticeable staining or odours.	0.0 / 268.7
		medium to coarse grained sand and gravel, trace cinders and brick fragments.	0.5
		cinders, ash, slag and brick fragments	267.3 / 1.8
		wet	265.8 / 3.4
		SILT Black, high organic content, shells, saturated, no noticeable staining or odours.	264.3 / 4.9
		SANDY SILT Dark grey, fine grained sand, high organic content, saturated, no noticeable staining or odours.	
		SAND Dark grey, medium grained, saturated	262.5 / 6.7
		SANDY SILT Dark grey, fine grained sand, high organic content, some wood, saturated, no noticeable staining or odours.	261.6 / 7.6
		End of Borehole	

SAMPLE

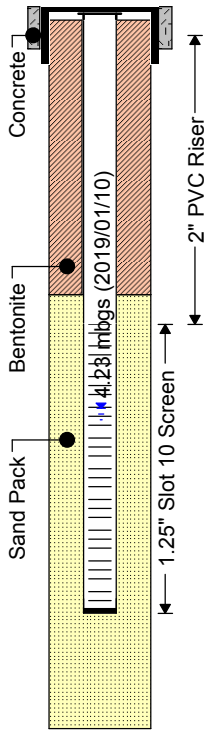
Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	60	
2	DP	50	
3	DP	40	
4	DP	80	
5	DP	100	

HEADSPACE

VOC ppm / Hydrocarbon ppm (100 200 300 400)

Number	VOC ppm
1	0
2	0
3	0
4	0
5	0

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: SCA

Drafted by: MEF

Reviewed by: RJF

Borehole Number: MTE-MW404-16

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

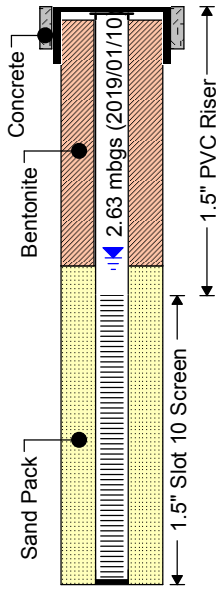
Drill Date: 5/3/2016

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE				SAMPLE				HEADSPACE
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)
		Ground Surface	267.6					
		FILL Loose, light brown, coarse silty sand and gravel, dry, some ash/slag, wood, no staining or odours	0.0	1	DP	90	PAHs, metals, pH	39
				2	DP	50		15
		SAND AND GRAVEL Medium dense, light brown, coarse gravel with silt, wet at 3 m, coal tar odour and staining at 4.4 m.	264.5 / 3.0	3	DP	50	PHCs, BTEX, metals	1 / 11
		Saturated at 4.6 m, no staining or odours.	263.0 / 4.6	4	DP	30		5
		End of Borehole	261.5 / 6.1					

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW405-16

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 5/4/2016

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Soil Description	Depth (m)
		Ground Surface	268.4
		FILL Loose, light brown, coarse silty sand and gravel, dry, some ash/slag and wood at 0.9 - 1.5 m, no staining or odours.	0.0 – 266.9
		SAND Medium dense, light brown, fine silt, dry, no staining or odours.	1.5 – 265.0
		Fine silt with gravel, moist, no staining or odours.	3.4 – 263.2
		Wet with coal tar odours at 5.2 - 6.1 m.	5.2 – 261.7
		SILT Dense, light grey-brown, fine sand with clay, wet, slight coal tar odour, no staining.	6.7 – 261.1
		SAND AND GRAVEL Dense, light brown, coarse gravel, wet, no staining or odours.	7.3
		End of Borehole	

SAMPLE

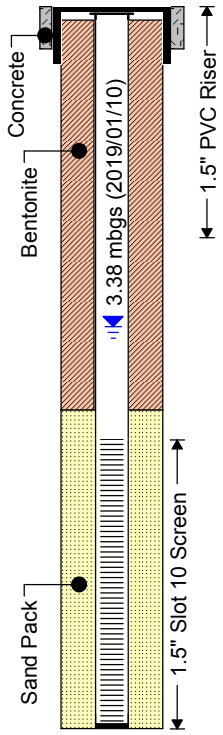
Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	90	metals
2	DP	50	
3	DP	50	
4	DP	30	PHCs, BTEX, metals, ABNs
5	DP	50	BTEX, metals

HEADSPACE

VOC ppm / Hydrocarbon ppm (100 200 300 400)

Sample	VOC ppm
2	13
3	0
3	3
4	5
4	4
5	2
5	4

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW406-16

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 5/4/2016

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Soil Description	Depth (m)
		Ground Surface	268.5
		ASPHALT	0.0
		FILL Loose, light brown, coarse silty sand and gravel, dry, some ash/slag, wood, brick and concrete, no staining or odours.	267.0
		SAND Medium dense, light brown, coarse gravel with silt, moist at 2.9 m , no staining or odours .	1.5
		Saturated at 3.7 m.	264.8 / 3.7
		Black with coal tar odour at 5.3 m and sheen at 5.8 m.	263.2 / 5.3
		SILT Dense, light grey-brown, fine sand, wet, coal tar odour and sheen.	262.7 / 5.8
		SAND AND GRAVEL Dense, light brown, coarse gravel, wet, no staining or odours.	261.0 / 7.5
		End of Borehole	

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	90	PAHs, metals, PCBs, OC Pesticides
2	DP	50	
3	DP	50	PHCs, BTEX, PAHs, metals, PCBs
4	DP	30	PHCs, BTEX, PAHs, metals, ABNs
5	DP	50	PHCs, BTEX, PAHs, ABNs

HEADSPACE

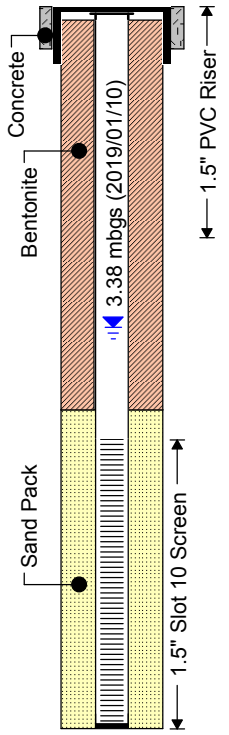
VOC ppm / Hydrocarbon ppm

100 200 300 400

12

3

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW407-16

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 5/4/2016

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Soil Description	Depth (m)
		Ground Surface	268.6
		ASPHALT	0.0
		FILL loose, light brown, coarse silty sand and gravel, dry, some brick at 0.6-0.9 m, no staining or odours	267.7 / 0.9
		SAND medium dense, light grey-brown, coarse gravel with silt, dry, coal tar odour and sheen	
		SILT dense, light grey-brown, fine sand and clay, wet, faint odour, no staining	262.8 / 5.8
		End of Borehole	

SAMPLE

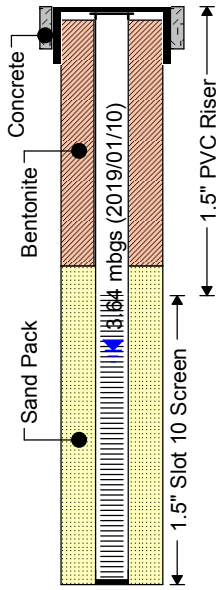
Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	90	PAHs, metals, OC Pesticides
2	DP	50	
3	DP	50	PHCs, BTEX, PAHs, metals, ABNs
4	DP	30	PHCs, BTEX, PAHs, metals, ABNs; PHCs, BTEX, PAHs

HEADSPACE

VOC ppm ■ / Hydrocarbon ppm ▼ (100 200 300 400)

Depth (m)	VOC (ppm)
1.0	120
2.5	37
3.5	11
4.0	31

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW501-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/27/2017

Drilling Contractor: Altech Drilling

Drill Method: Dietrich D-120 Auger Rig

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
			Ground Surface	268.0
0	0		**ASPHALT**	0.0
2			**FILL** Loose, light brown, coarse sand and gravel, trace silt, ash/slag/cinders, dry, no staining or odours.	266.3
6	2		**SILT** Loose, light brown, coarse sand, dry, no staining or odours.	1.7
10			**SAND** Medium dense, light brown, fine silt, wet, no staining or odours.	264.8 / 3.2
18			Saturated, black staining with coal tar odour.	262.5 / 5.5
20	6		**SILT** Dense, light grey-brown, coarse sand, some clay, wet, strong coal tar odour and sheen.	
26	8			259.6
28			**SAND AND GRAVEL** Dense, light brown, coarse, wet, no staining or odours.	8.4
40	12			

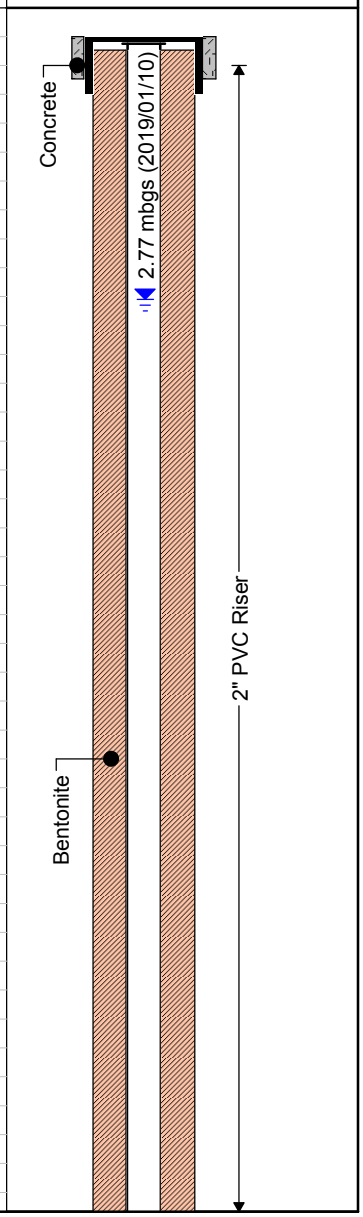
SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	SS		
2	SS		PCBs
3	SS		
4	SS		PHCs, BTEX, PAHs
5	SS		
6	SS		
7	SS		BTEX, VOCs, PAHs, ABNs
8	SS		
9	SS		PHCs, BTEX, PAHs
10	SS		
11	SS		PHCs, BTEX, PAHs
12	SS		

HEADSPACE

VOC ppm ■ ■
Hydrocarbon ppm ▼ ▼
100 200 300 400

Well Completion Details



Cover Type: Flushmount

Notes: SS (Split Spoon)

Sheet: 1 of 2

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW501-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

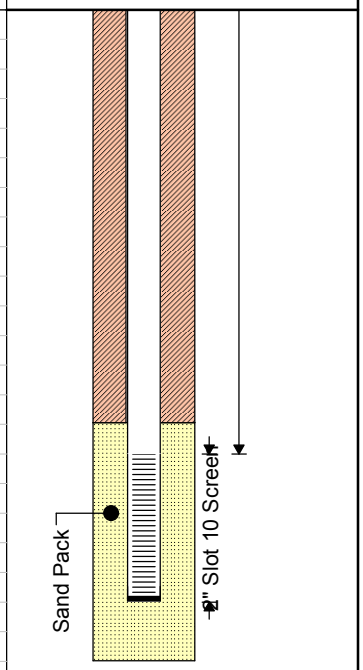
Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/27/2017

Drilling Contractor: Altech Drilling

Drill Method: Dietrich D-120 Auger Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
42									
44									
46	14								
48									
50									
52	16								
54									
56									
58									
60	18			13	SS		PHCs, BTEX, VOCs, PAHs, metals, ABNs		
62		End of Borehole	249.1 18.9						
64									
66	20								
68									
70									
72	22								
74									
76									
78	24								
80									



Cover Type: Flushmount

Notes: SS (Split Spoon)

Sheet: 2 of 2

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW502-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

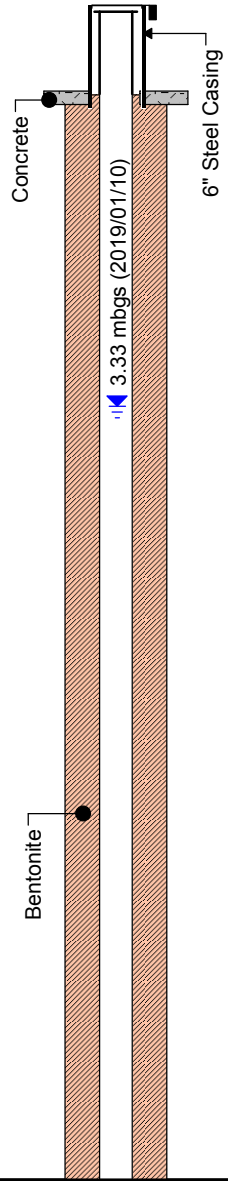
Location: 130 Water Street North, Cambridge, ON

Drill Date: 3/7/2017

Drilling Contractor: Altech Drilling

Drill Method: Dietrich D-120 Auger Drill Rog

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	Well Completion Details
		Ground Surface	268.4						
0 / 0		**TOPSOIL**	0.0	1	SS				
		FILL Loose, light brown, coarse sand and gravel, some silt, dry, no staining or odours.		2	SS				
6 / 2		Some ash.	266.6 / 1.8	3	SS				
8		Wet at 3.3 m.	265.6 / 2.7	4	SS				
10				5	SS				
12 / 4		Some rootlets, black with coal tar odour and sheen.	264.6 / 3.8						
16				7	SS				
18		**SILT** Medium dense, light grey-black, coarse sand, some clay, saturated, coal tar odour and sheen.	263.2 / 5.2	8	SS		ABNs	321	
20 / 6			262.0 / 6.4	9	SS				
22		**SAND AND GRAVEL** Medium dense, light grey-black, coarse gravel, saturated, coal tar odour and sheen.							
26 / 8				10	SS				
30				11	SS			67	
32 / 10									
36				12	SS			57	



Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 1 of 2

Field Technician: ADP/KLW

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW502-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

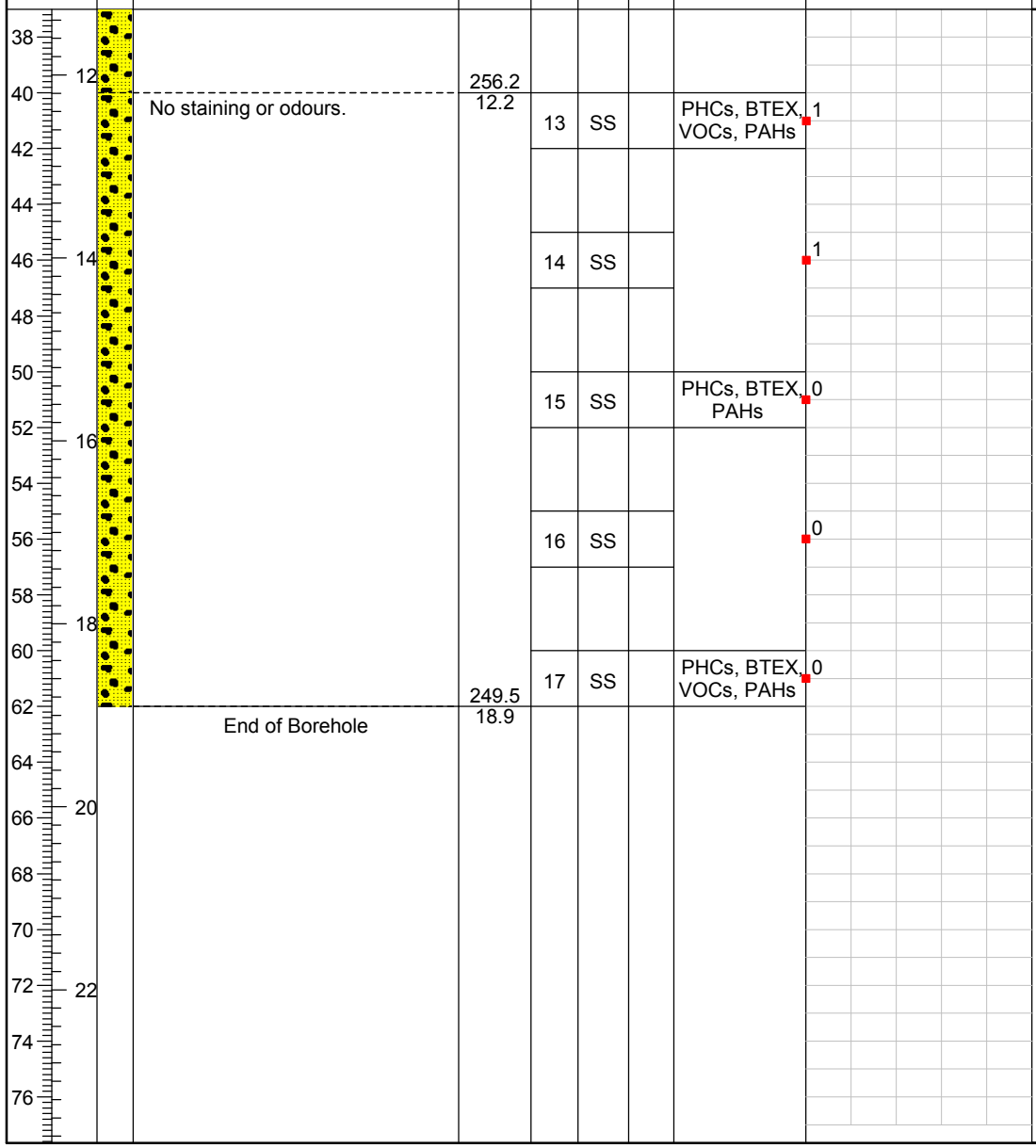
Location: 130 Water Street North, Cambridge, ON

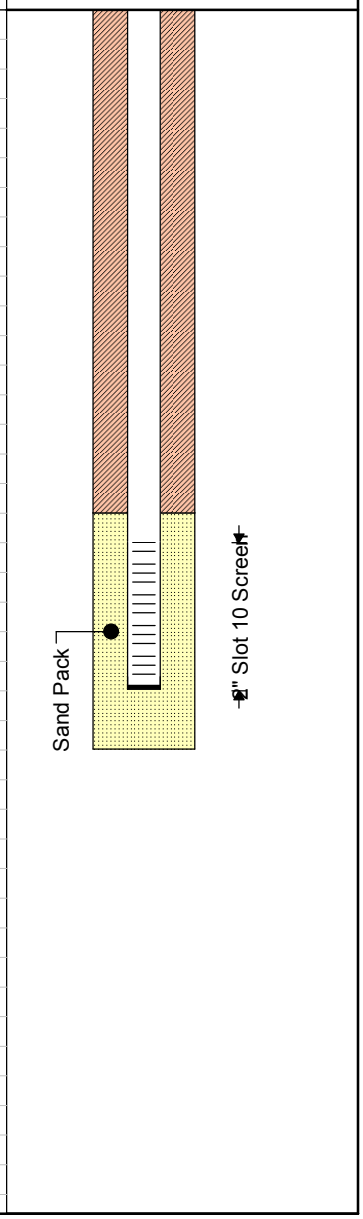
Drill Date: 3/7/2017

Drilling Contractor: Altech Drilling

Drill Method: Dietrich D-120 Auger Drill Rog

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
			256.2						
		No staining or odours.	12.2	13	SS		PHCs, BTEX, VOCs, PAHs	1	
				14	SS			1	
				15	SS		PHCs, BTEX, PAHs	0	
				16	SS			0	
				17	SS		PHCs, BTEX, VOCs, PAHs	0	
			249.5						
		End of Borehole	18.9						





Cover Type: Steel Stick-up

Notes: SS (Split Spoon)

Sheet: 2 of 2

Field Technician: ADP/KLW

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW503-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/22/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: Dietrich D-50 Auger Rig

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
			Ground Surface	268.5
0	0		**FILL** Loose, light brown, coarse silty sand and gravel, dry, no staining or odours.	0.0
			Some asphalt at 1.22 m, ash/slag at 2.8 - 3.4 m bgs, moist.	267.2 / 1.2
2	2			
4				
6				
8				
10				265.0
12	4		**SAND** Medium dense, light brown, coarse gravel with silt, saturated, faint coal tar odour, no staining.	3.5
14				
16				
18			Strong coal tar odour and sheen.	263.0 / 5.5
20	6			
22			**SILT** Medium, dense, light grey-brown, coarse gravelly sand, wet, coal tar odour and sheen.	262.1 / 6.4
24				
26	8		**SAND AND GRAVEL** Medium dense, grey-brown, wet, coal tar odour, no staining.	260.4 / 8.1
28				
30				
32	10			
34				
36				257.2
38			End of Borehole	11.3
40	12			

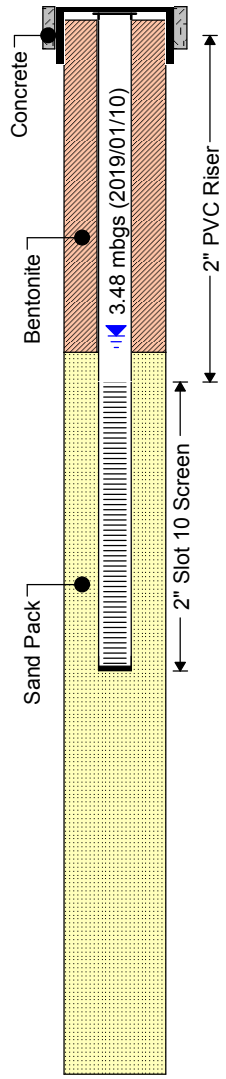
SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	SS		
2	SS		metals, PCBs
3	SS		
4	SS		
5	SS		
6	SS		
7	SS		
8	SS		PHCs, BTEX, PAHs, ABNs
9	SS		
10	SS		
11	SS		
12	SS		

HEADSPACE

VOC ppm ■ ■
Hydrocarbon ppm ▼ ▼
100 200 300 400

Well Completion Details



Cover Type: Flushmount

Notes: SS (Split Spoon)

Sheet: 1 of 1

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW504-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/22/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: Dietrich D-50 Auger Rig

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
			Ground Surface	268.7
0	0		**FILL** Loose, medium brown, sand and gravel, trace silt, some brick fragments, ash/slag, no noticeable staining or odours.	0.0
2				
4				
6	2			
8				
10				265.3
12			**SAND** Loose, light brown, medium silt, dry, no staining or odours.	3.4
14	4		Coal tar odour and saturated at 4.3 m bgs.	
16				
18				
20	6			262.3
22			**SILT** Compact, fine, wet, faint coal tar odour.	6.4
24				
26	8		**SAND AND GRAVEL** Loose, brown, coarse, moist, faint coal tar odour, no staining.	260.7 7.9
28				
30				
32	10			
34				
36				257.4
38			End of Borehole	11.3
40	12			

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	SS		
2	SS		PAHs, metals, PCBs
3	SS		
4	SS		metals
5	SS		
6	SS		
7	SS		
8	SS		PHCs, BTEX, PAHs, metals, ABNs
9	SS		
10	SS		
11	SS		PAHs
12	SS		

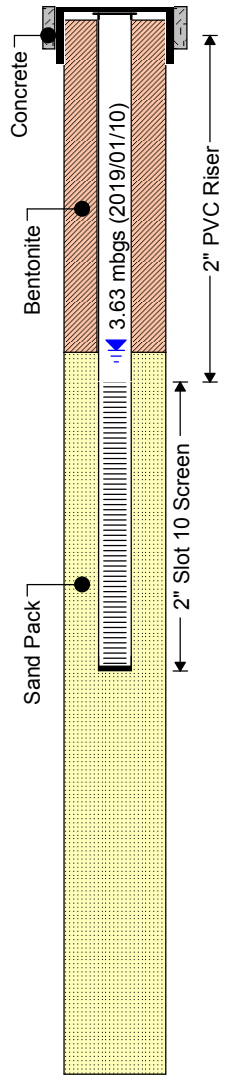
HEADSPACE

VOC ppm

Hydrocarbon ppm

100 200 300 400

Well Completion Details



Cover Type: Flushmount

Notes: SS (Split Spoon)

Sheet: 1 of 1

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-BH505-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/21/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
		Ground Surface	268.5						
		TOPSOIL	0.0						
		FILL Loose, light brown, coarse sand and gravel with silt, some ash at 0.6 - 1.22 m, damp.	267.2 / 1.2	1	DP	50	PCBs		
		SAND Medium dense, loose, light brown, fine silt, damp.	266.0 / 2.4	2	DP	75			Backfilled with Bentonite
		SAND AND GRAVEL Medium dense, light brown, coarse gravel, moist.	265.4 / 3.0						
		End of Borehole							

Cover Type:

Notes: No noticeable staining or odours

Sheet: 1 of 1

Field Technician: KMK

Drafted by: JYM

Reviewed by: RJF

Borehole Number: MTE-MW506-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

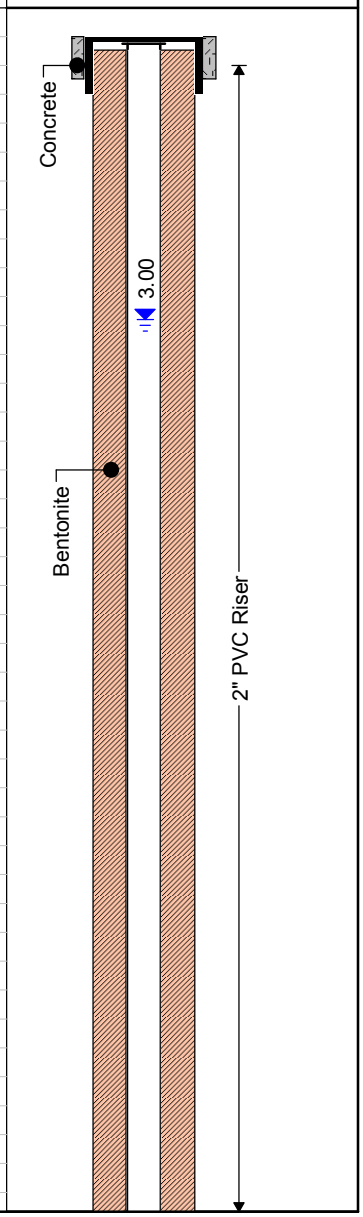
Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/21/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: Dietrich D-50 Auger Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
		Ground Surface	268.5						
		ASPHALT	0.0	1	SS				
		FILL Loose, light brown, coarse sand and gravel, trace silt, dry, no staining or odours.		2	SS				
				3	SS		PCBs		
		SAND Loose, light brown, medium silt, dry, no staining or odours.	266.2 / 2.3						
		Back staining with coal tar odour.	265.1 / 3.4	4	SS				
		Saturated, coal tar odour and sheen.	263.9 / 4.6	5	SS				
		SILT Compact, fine, wet, some coal tar odour and sheen at 6.1 to 6.4 m.	263.0 / 5.5	6	SS		PHCs, BTEX, PAHs, ABNs		
				7	SS				
		SAND AND GRAVEL Dense, light brown, coarse, moist, no staining or odours.	260.8 / 7.6	8	SS				
				9	SS		PHCs, BTEX, PAHs		
				10	SS				



Cover Type: Flushmount

Notes: SS (Split Spoon)

Sheet: 1 of 2

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW506-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

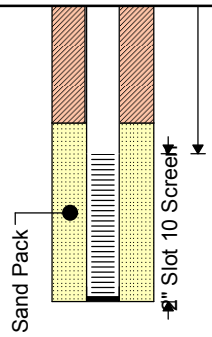
Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/21/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: Dietrich D-50 Auger Rig

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
42				11	SS				
44									
46	14			12	SS		PAHs		
48									
50			253.2 / 15.2						
52	16	End of Borehole							
54									
56									
58	18								
60									
62									
64									
66	20								
68									
70									
72	22								
74									
76									
78	24								
80									



Cover Type: Flushmount

Notes: SS (Split Spoon)

Sheet: 2 of 2

Field Technician: BIM

Drafted by: BIM

Reviewed by: RJF

Borehole Number: MTE-MW507-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

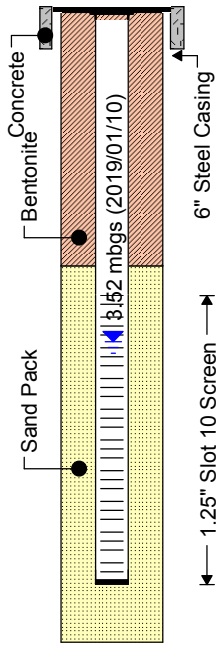
Drill Date: 2/22/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT

SUBSURFACE PROFILE				SAMPLE				HEADSPACE
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)
		Ground Surface	268.5					
		FILL Loose, light brown, coarse sand and gravel, trace silt, dry, some brick fragments at 0.3 - 0.6 m.	0.0	1	SS		PAHs, metals	
				2	SS			
			267.0					
		SAND AND GRAVEL Loose, brown, coarse, damp.	1.5	3	SS			
			266.2					
		SAND Medium dense, light brown, fine silt, moist.	2.3	4	SS		PAHs	0
				5	SS			
			263.9					
		Saturated at 4.6 m.	4.6	6	SS			0
		SILT Medium dense, light brown, fine sand, wet.	5.0					
			262.4					
		SAND AND GRAVEL Dense, brown, coarse, saturated.	6.1	7	SS			0
			261.8					
		End of Borehole	6.7					

Well Completion Details



Cover Type: Flushmount

Notes: No noticeable staining or odours

Sheet: 1 of 1

Field Technician: KMK

Drafted by: JYM

Reviewed by: RJF

Borehole Number: MTE-MW508-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/22/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
			Ground Surface	268.8
0	0		**FILL** Loose, light brown, coarse sand and gravel, some brick fragments, damp, no staining or odours.	0.0 / 268.2
			Some concrete.	0.6 / 267.3
			Some slag and wood.	1.5
			Saturated, black staining, slight coal tar odour.	3.8 / 265.0
			SAND Medium dense, grey-black, fine silt and gravel, saturated, strong coal tar odour, no staining.	4.6 / 264.2
			Some organics and wood fragments at 5.6 m.	5.3 / 263.5
			SAND AND GRAVEL Dense, light grey-black, trace silt, wet, coal tar odour.	7.6 / 261.2
			End of Borehole	11.3 / 257.5

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	SS		
2	SS		
3	SS		
4	SS		
5	SS		
6	SS		PHCs, BTEX, PAHs
7	SS		
8	SS		
9	SS		
10	SS		
11	SS		PAHs

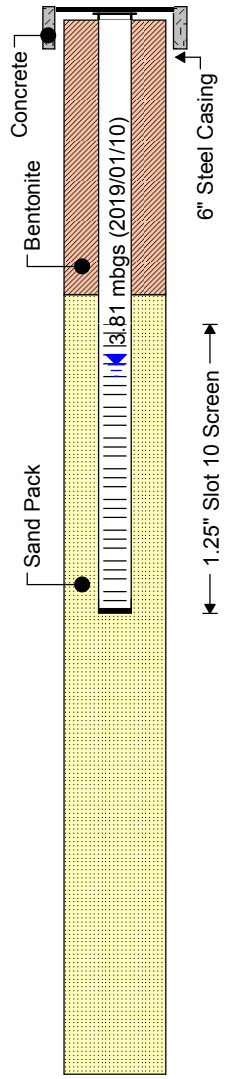
HEADSPACE

VOC ppm / Hydrocarbon ppm

100 200 300 400

Number	VOC (ppm)	Hydrocarbon (ppm)
2	0	
5	1	
6		284
7	23	
8	4	
9	3	
11	1	

Well Completion Details



Cover Type: Flushmount

Notes: Split Spoon (SS)

Sheet: 1 of 1

Field Technician: KMK

Drafted by: JM

Reviewed by: RJF

Borehole Number: MTE-BH509-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

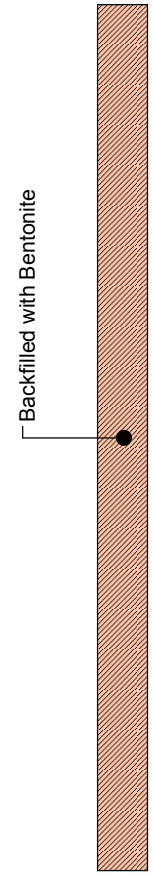
Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/22/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	Well Completion Details
		Ground Surface	269.0						
		FILL Loose, dark brown, coarse sand and gravel with some silt, cobbles and brick fragments, trace ash/slag, damp, no staining or odours.	0.0	1	SS				
				2	SS				
				3	SS				
				4	SS		PAHs, metals	0	
				5	SS				
			264.9 / 4.1	6	SS				
		SILT Medium dense, grey-black, fine clay, coarse sand layers at 5.3 - 6.9 m, some rootlets and shells of marine organisms, wet, organic odour, no staining.	264.4 / 4.6	7	SS			0	
				8	SS			0	
				9	SS				
			261.6	10	SS				
		SAND AND GRAVEL Loose, light grey-brown, coarse gravel, some cobbles, saturated, no staining or odours.	7.5	11	SS		PAHs	0	
			260.0	12	SS				
		End of Borehole	9.0						



Cover Type:

Notes: Split Spoon (SS)

Sheet: 1 of 1

Field Technician: KMK

Drafted by: JYM

Reviewed by: RJF

Borehole Number: MTE-BH510-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/21/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
0	0		Ground Surface	268.3
			TOPSOIL	0.0
2			**FILL** Loose, light, grey-brown, coarse sand and gravel with silt, damp, no staining or odours.	
4				266.8
6	2		Black at 1.5 - 2.1 m, asphalt odour.	1.5
8				
10				265.2
			Wet at 3 m.	3.0
12				
14	4			263.7
16			**SAND AND GRAVEL** Medium dense, grey-black, coarse, saturated, strong coal tar odour, no staining.	4.6
18				262.5
20	6		Sheen and coal tar droplets at 5.8 m and 7.6 - 8.2 m.	5.8
22				
24				
26	8			
28				259.4
30			Coal tar odour, no staining.	8.8
32	10			
34				
36				
38				256.7
			SILT Dense, light brown, fine silty, wet, no staining or odours.	11.6
40	12		End of Borehole	256.1
				12.2

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	SS		
2	SS		metals
3	SS		
4	SS		
5	SS		
6	SS		
7	SS		
8	SS		PHCs, BTEX, VOCs, PAHs, metals
9	SS		
10	SS		
11	DP	75	PHCs, PAHs
12	DP	70	BTEX, VOCs, PAHs
13	DP	70	PAHs

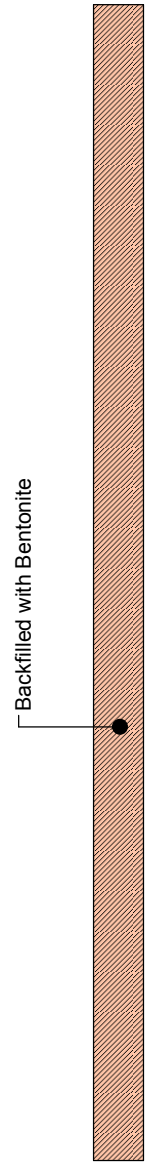
HEADSPACE

VOC ppm / Hydrocarbon ppm

100 200 300 400

Depth (m)	VOC (ppm)
2.5	0
3.5	0
4.5	1
5.5	0
7.5	3
8.5	211
9.5	6
11.5	0
12.5	2
12.5	1
13.5	1
13.5	0

Well Completion Details



Cover Type:

Notes: Split Spoon (SS)

Sheet: 1 of 1

Field Technician: KMK

Drafted by: JYM

Reviewed by: RJF

Borehole Number: MTE-BH511-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/21/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
			Ground Surface	267.8
0	0		**TOPSOIL**	0.0
2			**FILL** Loose, light gre-brown, medium silty sand with clay, some organics, dry no staining or odours	
4				266.3 / 1.5
6	2		**FILL** Some slag	
8				264.9 / 2.9
10			**SAND** medium dense, light brown, coarse gravel with some cobbles, moist, no staining or odours	
12				264.0 / 3.8
14	4		**SAND AND GRAVEL** medium dense, light brown, coarse, large cobbles, saturated, no staining or odours	
16				
18				
20	6			
22				
24				
26	8			
28				
30				
32				
34	10			257.2 / 10.7
36			End of Borehole	
38				
40	12			

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	SS	90	
2	SS	5	metals
3	SS	2	
4	SS	20	
5	SS	20	metals
6	SS	2	
7	SS	50	
8	SS	50	PHCs, VOCs, PAHs
9	SS	50	
10	SS	50	
11	SS	50	
12	SS	50	

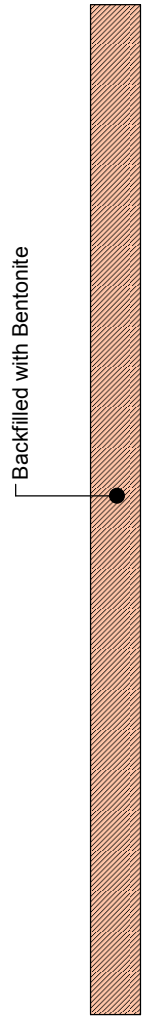
HEADSPACE

VOC ppm

Hydrocarbon ppm

100 200 300 400

Well Completion Details



Cover Type:

Notes: SS (Split Spoon)

Sheet: 1 of 1

Field Technician: KMK

Drafted by: JYM

Reviewed by: RJF

Borehole Number: MTE-BH512-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

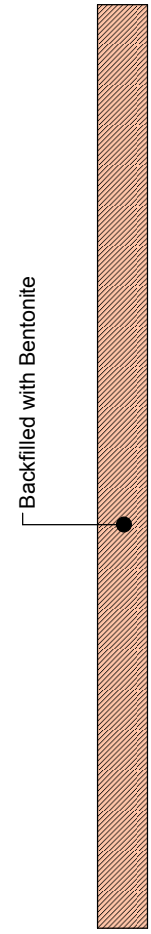
Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/22/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
		Ground Surface	267.4						
		FILL Loose, medium to dark brown, coarse sand and gravel, large cobbles at 0.8 - 1.4 m, damp, no staining.	0.0	1	SS				
				2	SS		metals		
		SAND Loose, brown, fine silt, some stones, dry, no staining.	265.8 / 1.5	3	SS				
		Wet at 2.4 m.	264.9 / 2.4	4	SS			0	
				5	SS			0	
			262.8						
		SAND AND GRAVEL Medium dense, light brown, coarse, large cobbles at 6.1 - 6.7 m, saturated, red mottling at 9.6 m.	4.6	6	SS				
				7	SS		PHCs, BTEX, PAHs	0	
				8	SS				
				9	SS		PAHs	0	
				10	SS			0	
		End of Borehole	257.6 / 9.8						



Cover Type:

Notes: No noticeable odours

Sheet: 1 of 1

Field Technician: KMK

Drafted by: JYM

Reviewed by: RJF

Borehole Number: MTE-BH513-17

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 2/21/2017

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
		Ground Surface	267.2						
		ASPHALT	0.0	1	SS		metals		
		FILL Loose, light brown, coarse sand and gravel, damp.		2	SS				
				3	SS				
		Black-brown, rust coloured sand and gravel at 2.3 - 2.6 m.	264.9 / 2.3	4	SS			0	
		SAND Medium dense, light brown, fine silt, saturated.	264.1 / 3.0	5	SS				
				6	SS				
				7	SS			0	
		SAND AND GRAVEL Dense, light grey-brown, coarse, some silt layers, saturated.	262.0 / 5.2	8	SS		PHCs, BTEX, PAHs	0	
				9	SS				
		SILT Dense, light brown, fine sand, saturated.	259.6 / 7.6	10	SS				
		End of Borehole	259.0 / 8.2						

Backfilled with Bentonite

Cover Type:

Notes: No noticeable staining or odours

Sheet: 1 of 1

Field Technician: KMK

Drafted by: JYM

Reviewed by: RJF

Borehole Number: MW601-18

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/11/2018

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Soil Description	Depth (m)
		Ground Surface	268.1
		FILL Brown sand and gravel, damp, no noticeable staining, slight odour; Grey staining; Black staining	0.0 – 267.2
		Brown sand with silt, moist, no noticeable staining	265.3 – 2.7
		Dark brown sandy silt with orange mottling, trace glass, moist, some black staining, odourous	264.4 – 3.7
		Brown, saturated, no noticeable staining; Sand; Coarse-grained; Strong coal tar odour	263.5 – 4.6
		Coal tar staining (sheen), trace glass debris	262.3 – 5.8
		SAND Grey, saturated, no noticeable staining, odourous; Coarse-grained	260.8 – 7.3
		GRAVEL Grey, saturated, no noticeable staining, odourous; Coal tar (sheen) on gravel; Grey, coarse-grained sand seam	258.9 – 9.1
		End of Borehole	

SAMPLE

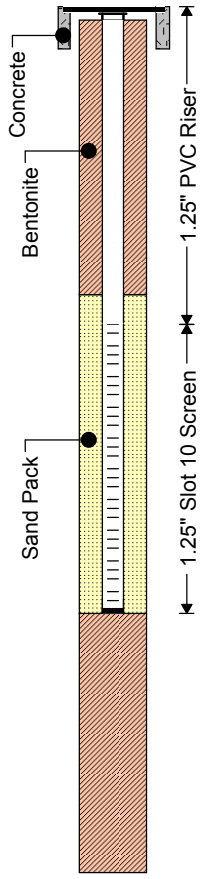
Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	50	EC/SAR
2	DP	30	pH
3	DP	75	
4	DP	100	Metals
5	DP	80	
6	DP	70	Metals + Dup

HEADSPACE

VOC ppm / Hydrocarbon ppm (100 200 300 400)

Sample	VOC (ppm)
EC/SAR	2.5
pH	0.2
3	1.2
Metals	11.4
Metals + Dup	2.9

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: JYM

Drafted by: ZXT

Reviewed by: RJF

Borehole Number: MW602-18

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/11/2018

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
			Ground Surface	268.6
0	0		**FILL**	0.0
			Dark brown sand and gravel with silt, moist, no noticeable staining/odour	
2			Light brown	267.7
4			Black staining with red brick fragments	0.9
			Brown sand, very moist, no noticeable staining	
6	2		Dark brown sand and gravel	
8			Red brick fragments	266.2 / 2.4
10				
12			Wet	265.0 / 3.7
14	4		Dark brown silty sand, saturated	
			Crushed rock	
16			Black coal tar (sheen) stained sand, saturated, very odourous	
18			Dark grey sandy silt, coal tar odour, no sheen	263.1 / 5.5
20	6		Grey sand	
			Gravel with grey sandy silt	
22			Grey sandy silt with gravel and trace wood chips, no staining, very odourous	
24				261.0
26	8		End of Borehole	7.6
28				
30				
32	10			
34				
36				
38				
40	12			

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	60	EC/SAR, pH
2	DP	30	
3	DP	30	CN-, ABNs, PAHs, PHCs, VOCs, BTEX
4	DP	70	
5	DP	50	

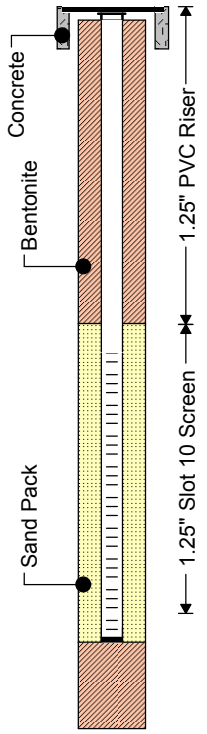
HEADSPACE

VOC ppm / Hydrocarbon ppm

100 200 300 400

1.8, 14.8, 2.1, 61.8, 4.6, 1.9

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: JYM

Drafted by: ZWT

Reviewed by: RJF

Borehole Number: MW603-18

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2018

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
			Ground Surface	268.6
0	0		**FILL** Brown sand and gravel, damp, odourous	0.0
			Dark brown silty sand, with gravel, moist	267.7 / 0.9
			Saturated seam	267.1 / 1.5
	2		Light brown sand and gravel, moist	
			Brown sand with gravel	265.5
			SAND Brown, coarse-grained, moist, no noticeable staining, odourous	3.0
	4		Saturated	264.6 / 4.0
			Black coal tar staining, very odourous	262.8 / 5.8
	6		**SILTY SAND** Greyish brown, saturated, noticeable sheen and odour	261.9
			No noticeable sheen	6.7
			End of Borehole	261.0 / 7.6

SAMPLE

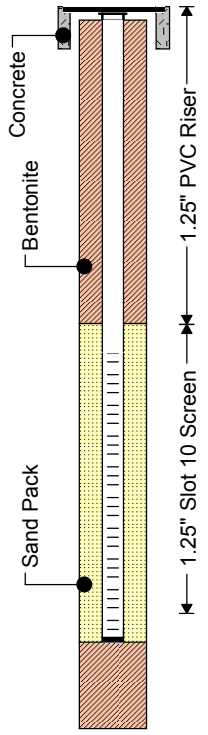
Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	70	EC/SAR, pH+Dup
2	DP	50	
3	DP	60	
4	DP	75	CN-, ABNs+Dup, PAHs+Dup, PHCs, VOCs, BTEX
5	DP	100	

HEADSPACE

VOC ppm / Hydrocarbon ppm — 100 200 300 400

Depth (m)	VOC (ppm)	Hydrocarbon (ppm)
3.5	1.0	
6.5	2.5	
13.5	0.7	
19.5		295.4
24.5	4.5	

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: JYM

Drafted by: ZWT

Reviewed by: RJF

Borehole Number: MW604-18

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/11/2018

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Soil Description	Depth (m)
		Ground Surface	268.2
		FILL	0.0
		Brown sand and gravel, damp, slight odour	
		Black stained silty sand	
		Orangy-brown	
		Gravel	
		Brown sand with some silt, moist	
		Wet	265.8 / 2.4
		Withe crushed gravel with sand	265.1
		SAND	3.0
		Brown, coarse-grained, wet, no noticeable staining, slight odour	
		Saturated	
		Odourous	263.6 / 4.6
		Black coal tar (sheen) staining, extremely odourous	262.4 / 5.8
		Grey, with silt, no noticeable staining, coal tar odour	261.8 / 6.4
		Saturated gravel seam	260.9 / 7.3
		End of Borehole	

SAMPLE

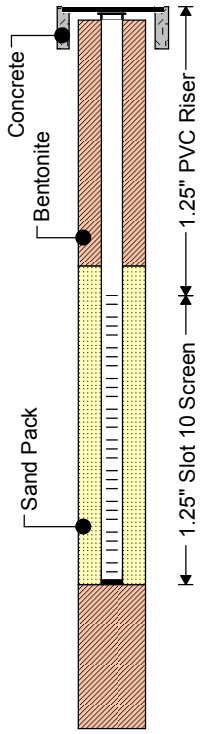
Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	85	EC/SAR+Dup
2	DP	85	
3	DP	60	
4	DP	90	CN-, PHCs, VOCs, BTEX
5	DP	50	

HEADSPACE

VOC ppm / Hydrocarbon ppm — 100 200 300 400

Depth (m)	VOC (ppm)
3.0	0.7
7.3	3.0
	0.8

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: JYM

Drafted by: ZWT

Reviewed by: RJF

Borehole Number: BH605-18

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2018

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	Well Completion Details
		Ground Surface	267.4						
		FILL Brown sand and gravel, damp, no staining, slight odour	0.0						
		Dark brown clayey silt seam	266.8 / 0.6	1	DP	60			
			265.9				EC/SAR, pH		
		SAND AND GRAVEL Brown, damp, no noticeable staining, odourous	1.5						
		Moist	264.7	2	DP	60		0.0	
		Wet	2.7					0.0	
		Saturated						0.0	
				3	DP	60			
			262.9					0.0	
		SAND Grey, fine-grained, saturated, no noticeable staining, odourous	4.6						
		Dark grey, coarse-grained	262.2 / 5.2	4	DP	90	CN-*,ABNs*, PAHs*, VOCs* BTEX*	1.1	
		SILTY SAND Grey							
		SILT Light brown, saturated, no noticeable staining, odourous							
		SAND AND GRAVEL Brown, saturated, no noticeable staining, odourous	260.4 / 7.0	5	DP	70	pH,VOCs*, BTEX*	0.0	
		Light greyish brown	259.8 / 7.6						
		End of Borehole							

Well Completion Details: Bentonite

Cover Type: Flushmount

Notes: *Duplicate collected

Sheet: 1 of 1

Field Technician: JYM

Drafted by: ZWT

Reviewed by: RJF

Borehole Number: BH606-18

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2018

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Soil Description	Depth (m)
0	0		Ground Surface	268.9
			FILL Dark brown sand and gravel, moist, no noticeable staining, odourous Brown to greyish brown, trace rock, asphalt and wood debris	0.0
4			Orangey brown silty sand and gravel, moist, no noticeable staining/odour	267.7 1.2
6	2		Black stained sand and gravel, odourous Brown	
8				266.2
			Wet	2.7
10			Greyish brown sand and gravel, red brick fragments, black staining, odourous Red brick fragments	
12	4			
14			Saturated	264.6 4.3
			Wood chip fragments	
16			**CLAYEY SILT** Black coal tar staining, with sand, very odourous	
18				
20	6			
22				262.2
			SAND AND GRAVEL Black coal tar staining, becoming more gravelly, saturated, very odourous	6.7
24				261.3
26	8		**SAND** Brown, coarse-grained, saturated, odourous	7.6 260.7
28			**GRAVEL** Brown, saturated, no noticeable staining, odourous	8.2
30			**SHALE** White, saturated, no noticeable staining, odourous	259.7 9.1
32	10		End of Borehole	
34				
36				
38				
40	12			

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	70	EC/SAR, pH
2	DP	50	pH
3	DP	40	VOCs, BTEX
4	DP	20	CN-, VOCs,BTEX
5	DP	60	VOCs, BTEX

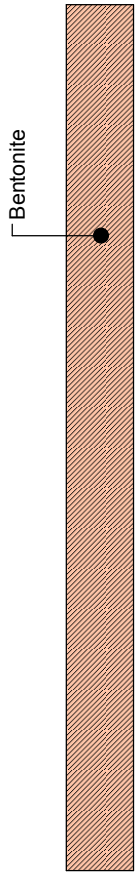
HEADSPACE

VOC ppm / Hydrocarbon ppm

100 200 300 400

Depth (m)	VOC (ppm)
4	0.5
8	0.1
14	1.4
20	245.7
22	11.2
26	20.1

Well Completion Details



Cover Type: Flushmount

Notes:

Sheet: 1 of 1

Field Technician: JYM

Drafted by: ZWT

Reviewed by: RJF

Borehole Number: BH607-18

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

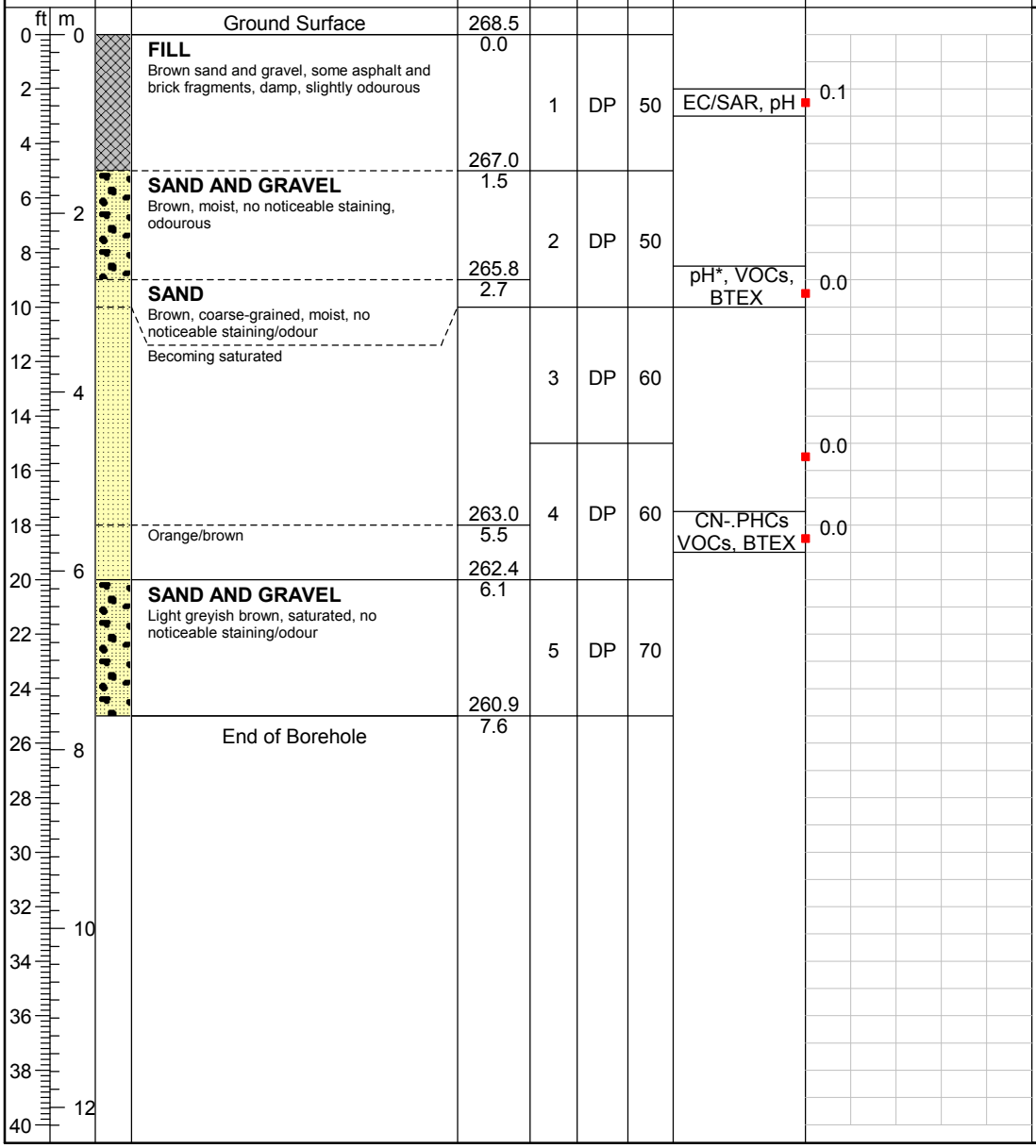
Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2018

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE				SAMPLE				HEADSPACE	Well Completion Details
Depth (ft / m)	Symbol	Soil Description	Depth (m)	Number	Type	Recovery (%)	Soil Sample Lab Analysis	VOC ppm / Hydrocarbon ppm (100 200 300 400)	
		Ground Surface	268.5						
		FILL Brown sand and gravel, some asphalt and brick fragments, damp, slightly odourous	0.0	1	DP	50	EC/SAR, pH	0.1	
			267.0						
		SAND AND GRAVEL Brown, moist, no noticeable staining, odourous	1.5	2	DP	50			
			265.8						
		SAND Brown, coarse-grained, moist, no noticeable staining/odour	2.7				pH*, VOCs, BTEX	0.0	
		Becoming saturated		3	DP	60			
								0.0	
		Orange/brown	263.0	4	DP	60	CN-.PHCs VOCs, BTEX	0.0	
			5.5						
		SAND AND GRAVEL Light greyish brown, saturated, no noticeable staining/odour	262.4 / 6.1	5	DP	70			
			260.9						
		End of Borehole	7.6						



Cover Type: Flushmount

Notes: *Duplicate collected

Sheet: 1 of 1

Field Technician: JYM

Drafted by: ZWT

Reviewed by: RJF

Borehole Number: BH608-18

Project: Phase Two ESA

Project No: 35571-400

Client: Cambridge Development Inc.

Location: 130 Water Street North, Cambridge, ON

Drill Date: 12/10/2018

Drilling Contractor: Direct Environmental Drilling

Drill Method: GeoProbe 7822DT (Direct Push)

SUBSURFACE PROFILE

Depth (ft / m)	Symbol	Soil Description	Depth (m)
		Ground Surface	268.9
		FILL Brown sand and gravel, damp, odourous	0.0
		Dark brownish black stained silty sand, some asphalt debris, odourous, stained	268.0 / 0.9
		Brown saturated seam, no noticeable odour	267.1 / 1.8
		Sand with gravel, no noticeable staining	
		Sand and gravel	265.9 / 3.0
		Dark brown with orange mottling, saturated	264.5 / 4.4
		SAND Brown, fine-grained, saturated, no noticeable staining/odour	
		Coarse-grained	263.3
		Rust colour	5.6
		SANDY SILT Brown, some clay, saturated, no noticeable staining, slightly odourous	261.9
		SILT Brown, with clay, saturated, no noticeable staining/odour	7.0 / 261.3
		End of Borehole	7.6

SAMPLE

Number	Type	Recovery (%)	Soil Sample Lab Analysis
1	DP	50	EC/SAR, pH, VOCs, BTEX
2	DP	30	pH
3	DP	40	
4	DP	NV	CN-.PHCs* VOCs*, BTEX*
5	DP	NV	pH

HEADSPACE

VOC ppm / Hydrocarbon ppm — 100 200 300 400

Depth (m)	VOC (ppm)
0.1	
0.0	
0.1	
0.0	
0.0	
0.0	

Well Completion Details

Bentonite

Cover Type: Flushmount

Notes: *Duplicate collected, NV - No value

Sheet: 1 of 1

Field Technician: JYM

Drafted by: ZWT

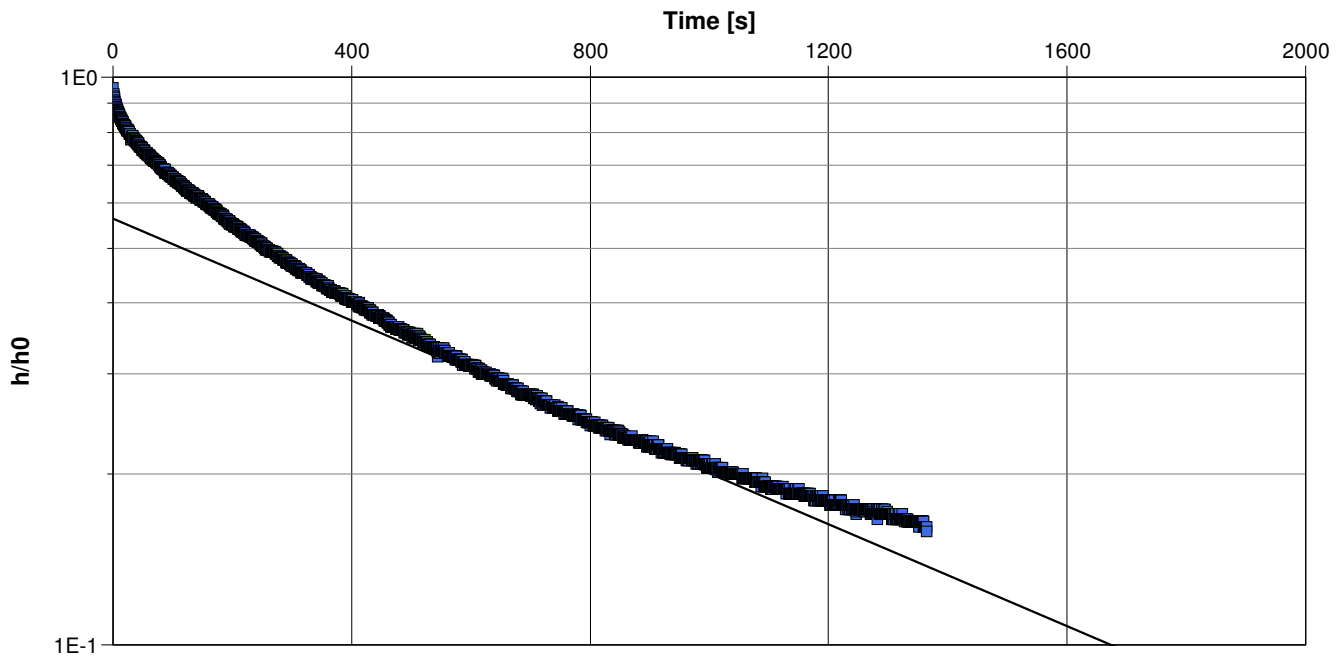
Reviewed by: RJF

Appendix B

Aquifer Test Data Sheets

MTE Consultants 520 Bingemans Centre Drive Kitchener, Ontario N2B 3X9	**Slug Test Analysis Report**
	Project: 130 Water St. North
	Number: 35571- 402
	Client: Pearle Developments

Location: Cambridge, ON	Slug Test: MW301a - Rising 1 2018	Test Well: MW301a
Test Conducted by: YXM		Test Date: 12/18/2015
Analysis Performed by: MDE	Bouwer and Rice	Analysis Date: 1/25/2016
Aquifer Thickness: 23.76 m		

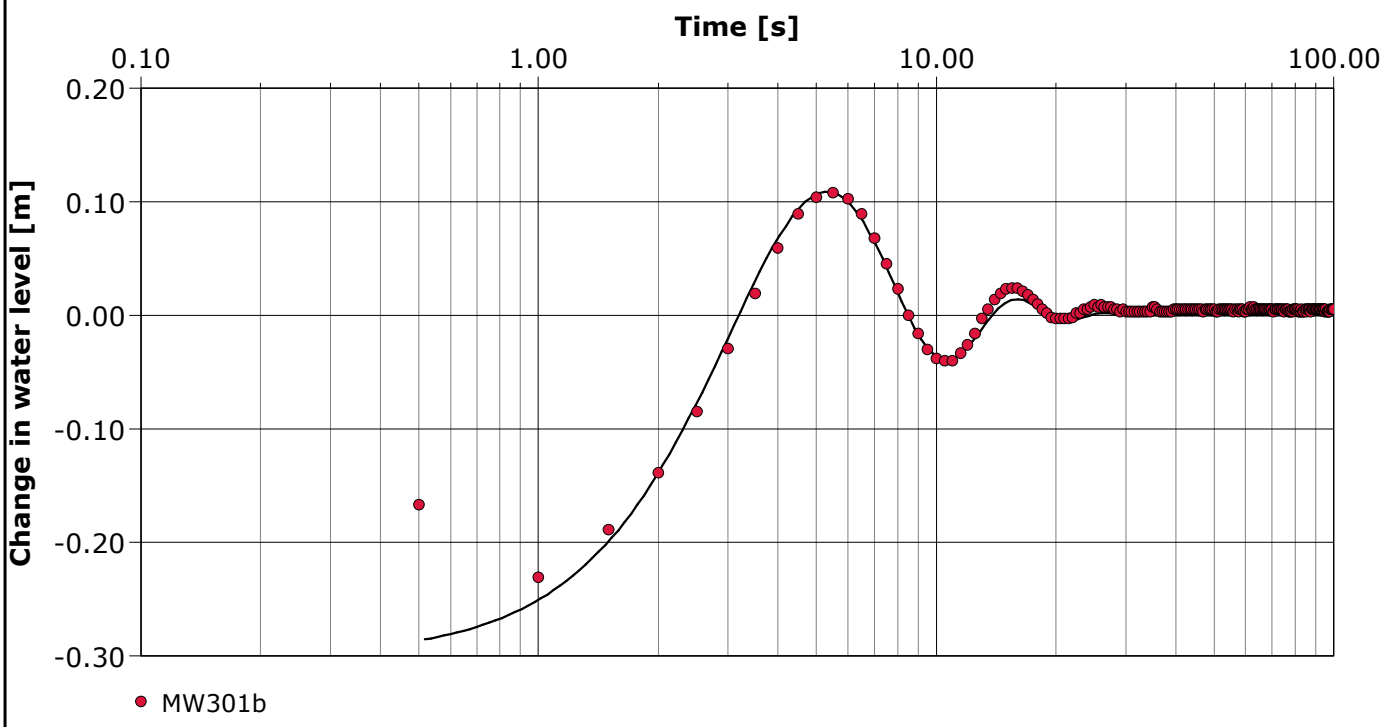


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
MW301a	6.12×10^{-7}	

MTE Consultants 520 Bingemans Centre Drive Kitchener, Ontario N2B 3X9	**Slug Test Analysis Report**
	Project: 130 Water St. North
	Number: 35571- 402
	Client: Pearle Developments

Location: Cambridge, ON	Slug Test: MW301b - Rising 3 2018	Test Well: MW301b
Test Conducted by: YXM		Test Date: 12/18/2015
Analysis Performed by: MDE	Butler High K	Analysis Date: 1/25/2016
Aquifer Thickness: 23.76 m		

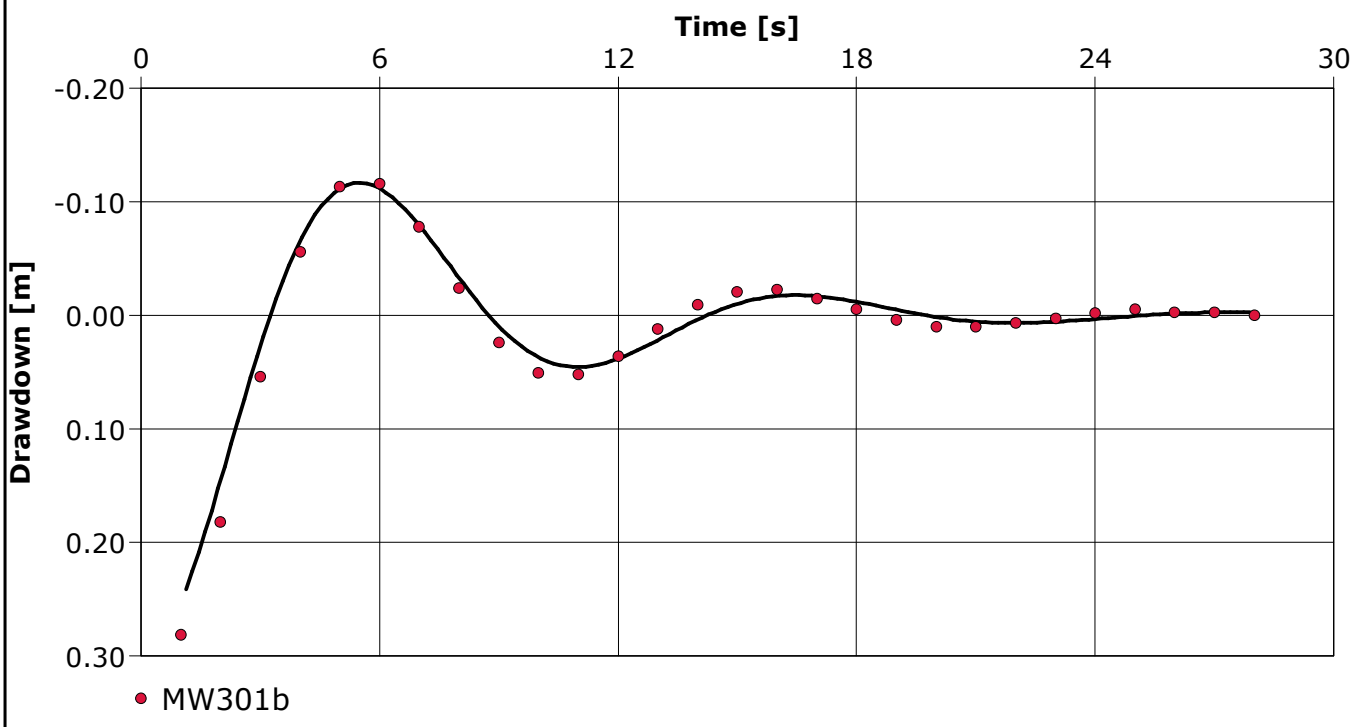


Calculation using Butler High-K

Observation Well	tD/t	Hydraulic Conductivity m/s	CD	
MW301b	6.21×10^{-1}	1.08×10^{-3}	6.14×10^{-1}	

MTE Consultants 520 Bingemans Centre Drive Kitchener, Ontario N2B 3X9	**Slug Test Analysis Report**
	Project: 130 Water St. North
	Number: 35571- 402
	Client: Pearle Developments

Location: Cambridge, ON	Slug Test: MW301b - Rising 6 2020	Test Well: MW301b
Test Conducted by: KNR		Test Date: 6/3/2020
Analysis Performed by: ATD	MW301b-15	Analysis Date: 6/8/2020
Aquifer Thickness: 23.76 m		

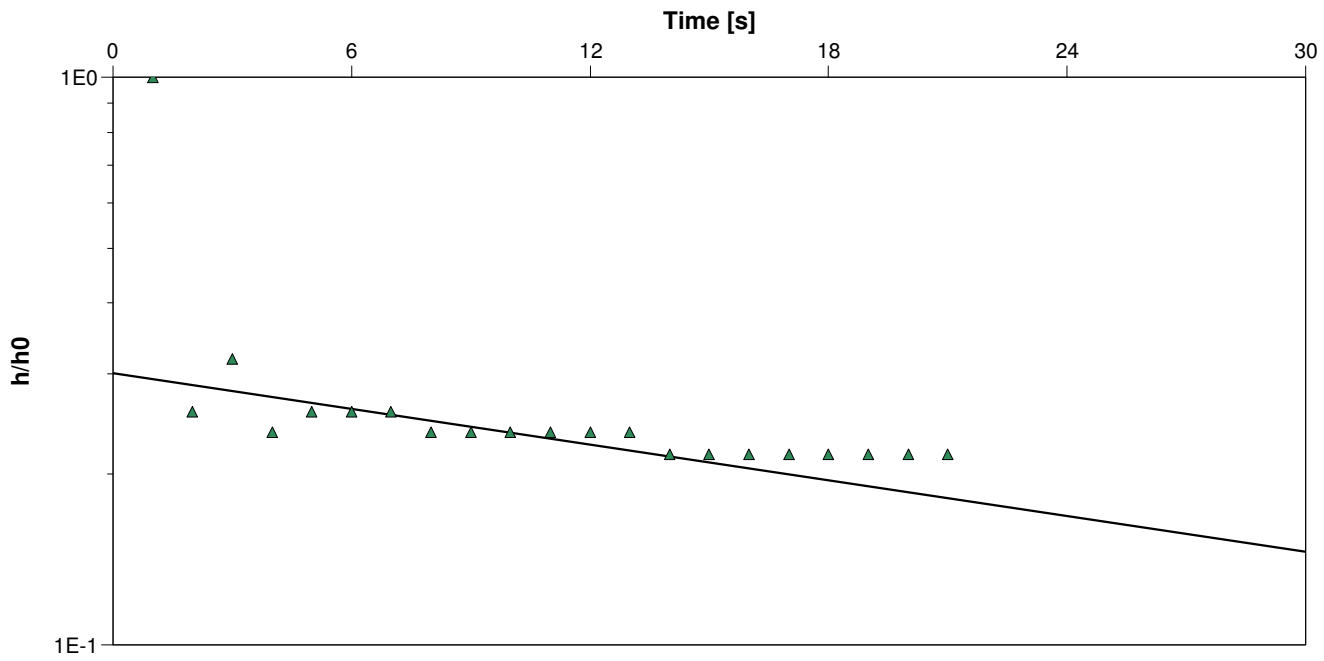


Calculation using Butler High-K

Observation Well	tD/t	Hydraulic Conductivity m/s	CD	
MW301b	5.97×10^{-1}	1.10×10^{-3}	5.75×10^{-1}	

MTE Consultants 520 Bingemans Centre Drive Kitchener, Ontario N2B 3X9	**Slug Test Analysis Report**
	Project: 130 Water St. North
	Number: 35571- 402
	Client: Pearle Developments

Location: Cambridge, ON	Slug Test: MW302-15 Rising 4	Test Well: MW302-15
Test Conducted by: KNR		Test Date: 6/3/2020
Analysis Performed by: ATD	MW302-15	Analysis Date: 6/8/2020
Aquifer Thickness: 23.76 m		

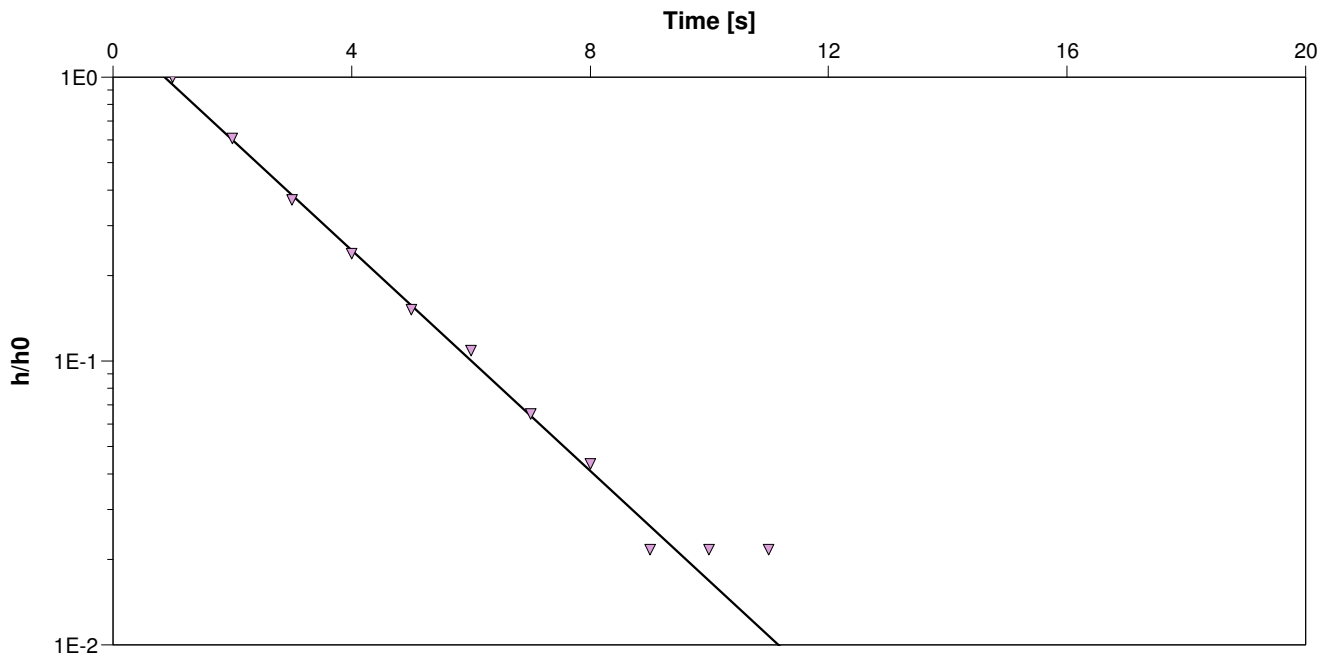


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
MW302-15	1.58×10^{-5}	

MTE Consultants 520 Bingemans Centre Drive Kitchener, Ontario N2B 3X9	**Slug Test Analysis Report**
	Project: 130 Water St. North
	Number: 35571- 402
	Client: Pearle Developments

Location: Cambridge, ON	Slug Test: MW401-16 Rising 1	Test Well: MW401-16
Test Conducted by:		Test Date: 6/3/2020
Analysis Performed by: ATD	MW401-16	Analysis Date: 6/8/2020
Aquifer Thickness: 23.76 m		

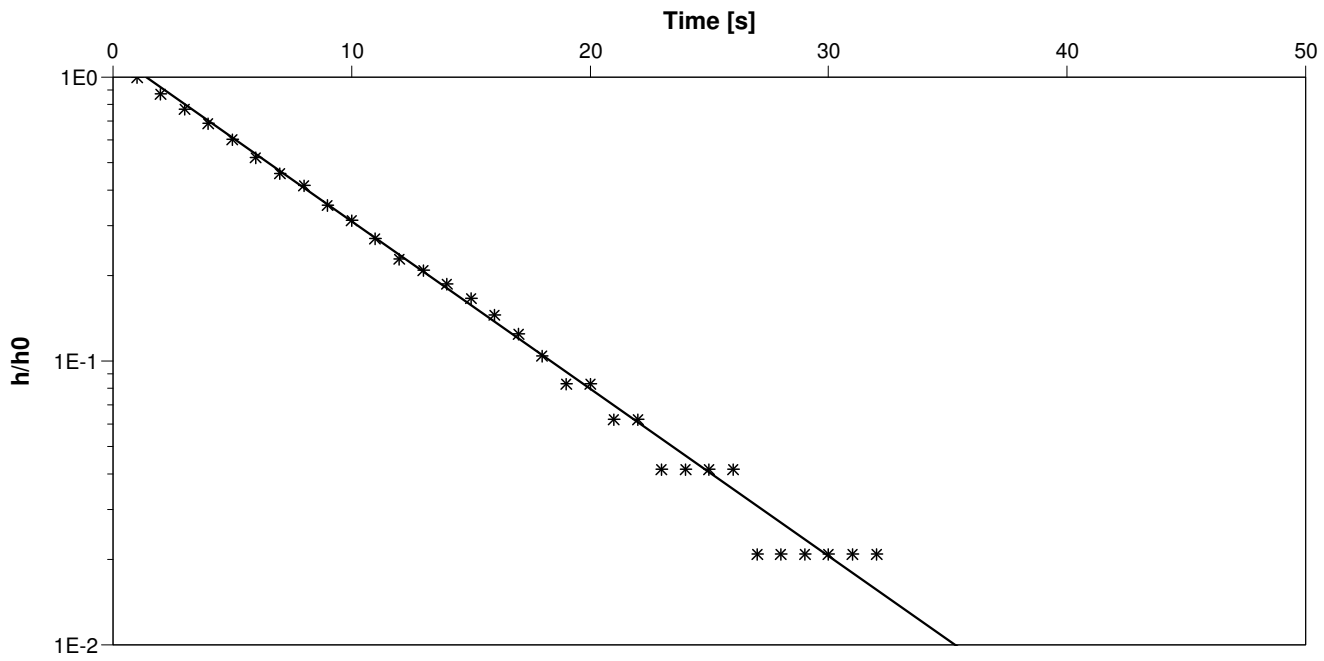


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
MW401-16	3.00×10^{-4}	

MTE Consultants 520 Bingemans Centre Drive Kitchener, Ontario N2B 3X9	**Slug Test Analysis Report**
	Project: 130 Water St. North
	Number: 35571- 402
	Client: Pearle Developments

Location: Cambridge, ON	Slug Test: Mw502-17 Rising 3	Test Well: MW502-17
Test Conducted by: KNR		Test Date: 6/3/2020
Analysis Performed by: ATD	MW502-17	Analysis Date: 6/8/2020
Aquifer Thickness: 23.76 m		



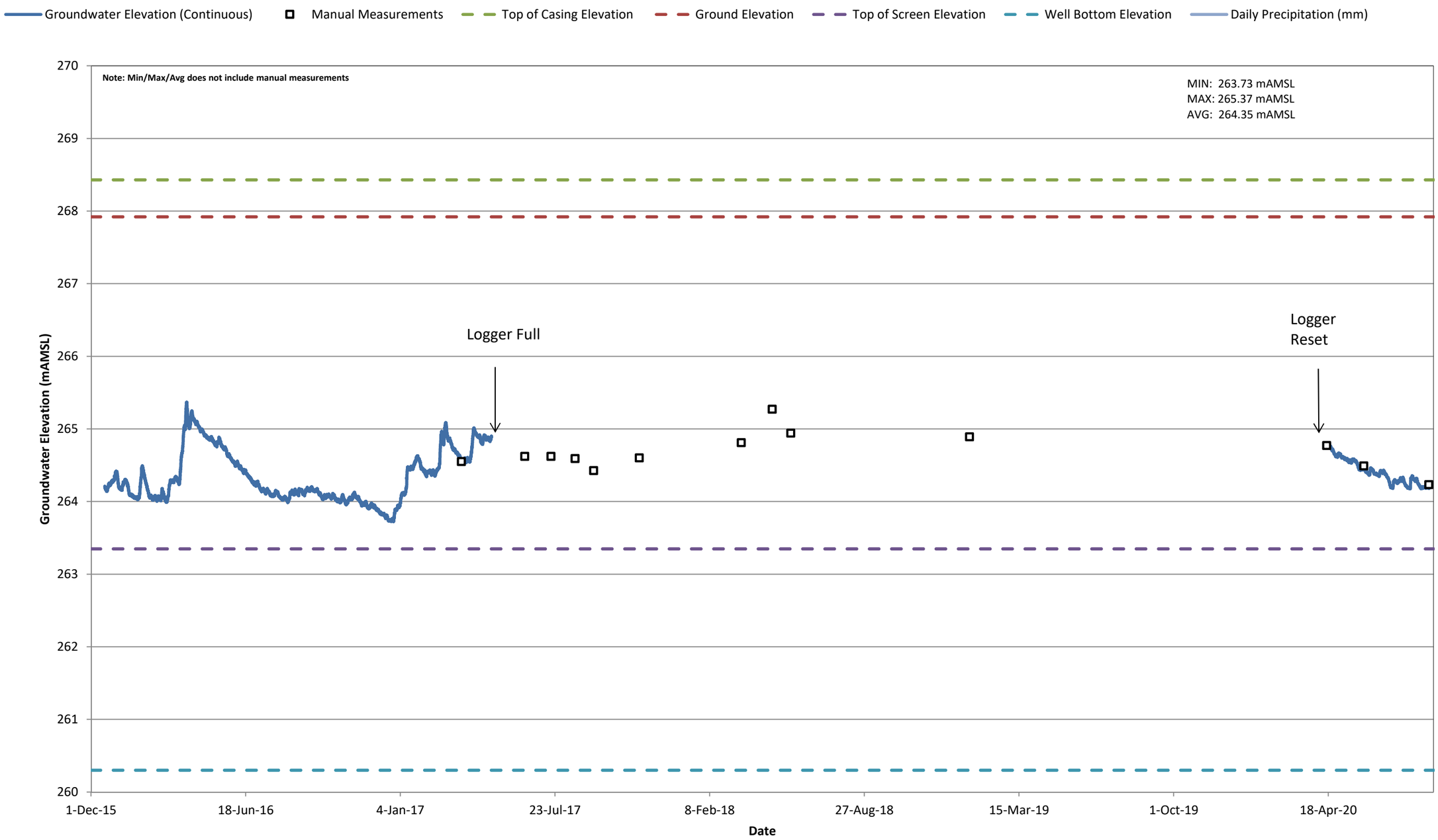
Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
MW502-17	1.03×10^{-4}	

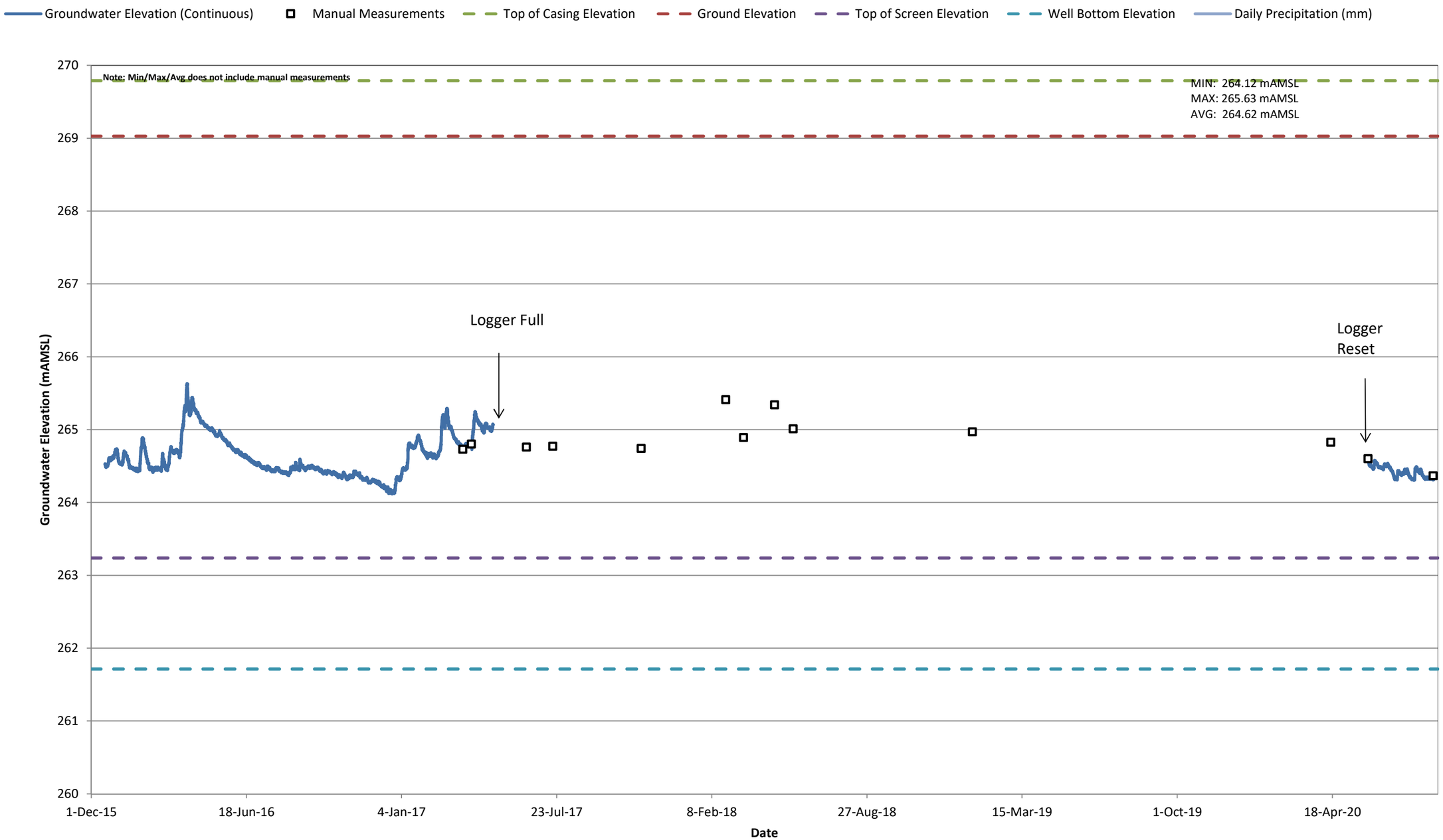
Appendix C

Hydrographs

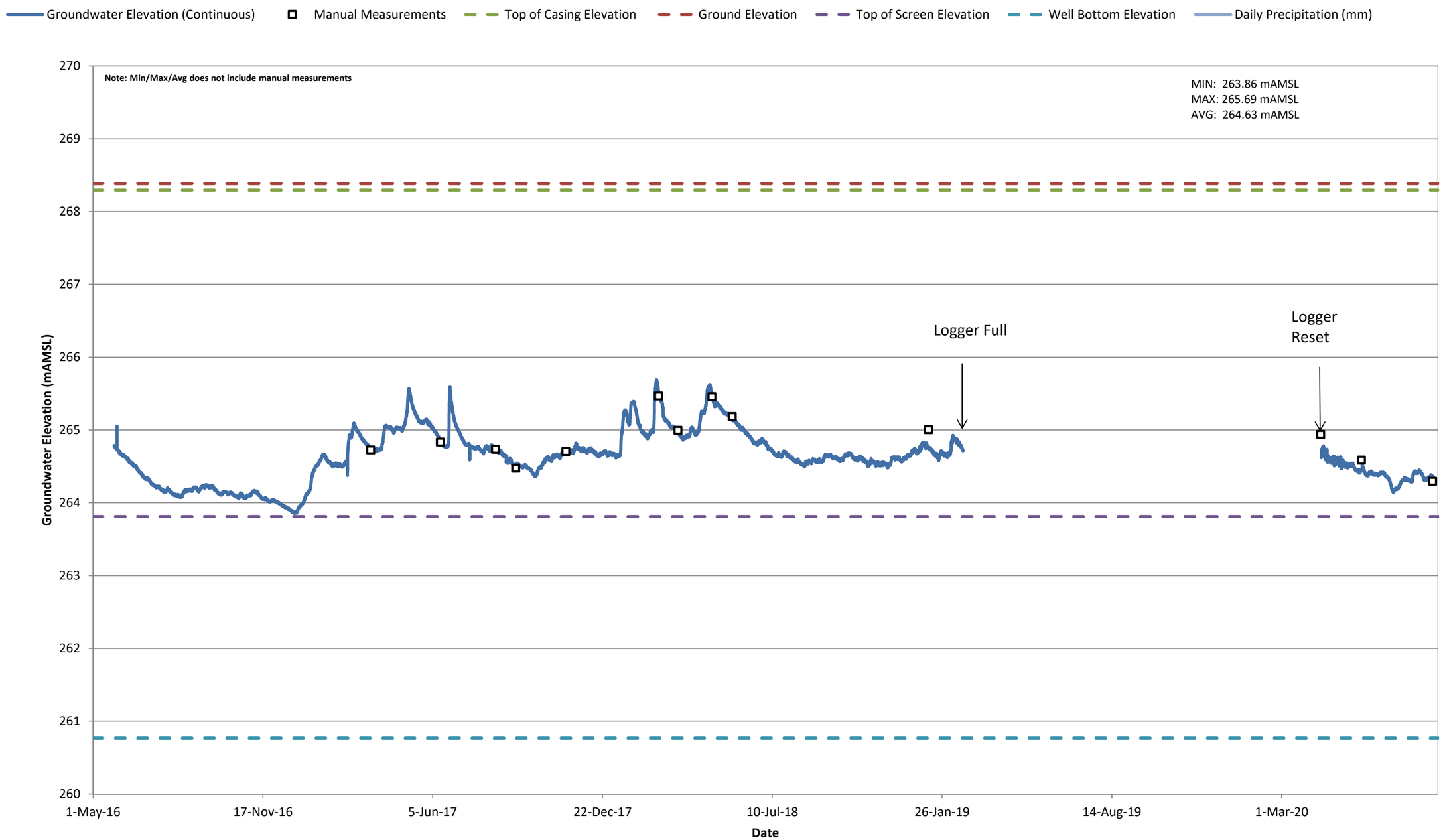
Hydrograph 1: Groundwater Elevations (mAMSL) - ETC-OW6-1S



Hydrograph 2: Groundwater Elevations (mAMSL) - MW301A-15



Hydrograph 3: Groundwater Elevations (mAMSL) - MW405-16



Appendix D

Groundwater Sampling Results

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)		Sample Location	XCG-BH14	XCG-BH14	XCG-BH14	XCG-BH17	XCG-BH17	MW301A-15	MW301B-15	MW302-15	MW402-16	MW403-16	MW406-16	MW407-16
					Sample Name	**XCG-BH14**	**XCG-BH14 Lab-Dup**	**XCG-BH1014**	**XCG-BH17**	**XCG-BH17 Lab-Dup**	**MTW-MW301A-15**	**MTE-MW301B-15**	**MTE-MW302-15**	**MTE-MW402-16**	**MTE-MW403-16**	**MTE-MW406-16**	**MTE-MW407-16**
					Lab Job #	**B941004**	**B941004**	**B941004**	**B942543**	**B942543**	**B941004**	**B941004**	**B942543**	**B696570**	**B696570**	**B696570**	**B696570**
					Laboratory ID	**IZK962**	**IZK962**	**IZK963**	**IZS370**	**IZS370**	**IZK967**	**IZK966**	**IZS375**	**CIS344**	**CIS345**	**CIS348**	**CIS349**
					Sampling Date	**14-Feb-2019**	**14-Feb-2019**	**14-Feb-2019**	**15-Feb-2019**	**15-Feb-2019**	**14-Feb-2019**	**14-Feb-2019**	**15-Feb-2019**	**11-May-2016**	**11-May-2016**	**11-May-2016**	**11-May-2016**
					Well Screen Interval (m bgs)	**33.5-36.6**	**33.5-36.6**	**33.5-36.6**	**9.8-11.3**	**9.8-11.3**	**5.8-7.3**	**26.8-28.4**	**2.7-5.8**	**1.5-4.6**	**3.4-6.4**	**4.6-7.6**	**3.0-6.1**
					Maximum Concentration		**Laboratory Duplicate**	**Field Duplicate**		**Laboratory Duplicate**							
Metals and Inorganics																	
Antimony	µg/L	0.5	6		4.9	-	-	-	-	-	-	-	-	0.58	4.9	<0.50	<0.50
Arsenic	µg/L	1	25		4.4	-	-	-	-	-	-	-	-	<1.0	4.4	2.2	1.7
Barium	µg/L	2	1000		390	-	-	-	-	-	-	-	-	15	100	280	390
Beryllium	µg/L	0.5	4	<	0.5	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50
Boron	µg/L	10	5000		260	-	-	-	-	-	-	-	-	41	140	120	260
Cadmium	µg/L	0.1	2.1		0.17	-	-	-	-	-	-	-	-	<0.10	0.17	<0.10	<0.10
Chloride	µg/L	1000 - 15000	790000		**1200000**	180000	-	180000	270000	-	140000	270000	150000	-	-	-	-
Chromium	µg/L	5	50	<	5	-	-	-	-	-	-	-	-	<5.0	<5.0	<5.0	<5.0
Cobalt	µg/L	0.5	3.8		0.92	-	-	-	-	-	-	-	-	<0.50	<0.50	0.92	<0.50
Copper	µg/L	1	69		8.2	-	-	-	-	-	-	-	-	8.2	3.6	<1.0	<1.0
Cyanide	µg/L	1	52		2	-	-	-	-	-	<1	-	<1	-	-	-	-
Lead	µg/L	0.5	10	<	0.5	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50
Molybdenum	µg/L	0.5	70		6.5	-	-	-	-	-	-	-	-	5.9	5	1.1	6.5
Nickel	µg/L	1	100		5.6	-	-	-	-	-	-	-	-	2.3	5.6	1.7	1.4
Selenium	µg/L	2	10	<	2	-	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0
Silver	µg/L	0.1	1.2	<	0.1	-	-	-	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10
Sodium	µg/L	100	490000		**750000**	110000	110000	110000	170000	170000	85000	160000	120000	-	-	-	-
Thallium	µg/L	0.05	2		0.17	-	-	-	-	-	-	-	-	<0.050	0.17	<0.050	<0.050
Uranium	µg/L	0.1	20		2.8	-	-	-	-	-	-	-	-	0.67	2.8	0.55	0.18
Vanadium	µg/L	0.5	6.2		2.4	-	-	-	-	-	-	-	-	<0.50	2.4	0.66	1.3
Zinc	µg/L	5	890		22	-	-	-	-	-	-	-	-	10	22	<5.0	<5.0
pH	pH units		NR		7.78	7.52	-	7.53	7.41	7.43	7.61	7.39	7.49	-	-	-	-

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)
Bold - Exceeds 2011 Table 8 SCS
"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW407-16	MW502-17	MW503-17	MW506-17	MW506-17	MW506-17	MW507-17	MW508-17	MW601-18	MW601-18	MW601-18	MW602-18	MW603-18	MW604-18
				MW407-16	MTE-MW502-17	MTE-MW503-17	MTE-MW506-17	MTE-MW506-17	MTE-MW506-17 Lab-Dup	MTE-MW507-17	MTE-MW508-17	MW601-18	MW601-18 Lab-Dup	MW1601-18	MW602-18	MW603-18	MW604-18
				B941004	B941004	B942543	B995927	B952348	B952348	B942543	B995927	B942543	B942543	B942543	B942543	B952348	B942543
				IZK965	IZK968	IZS376	JKV717	JBU851	JBU851	IZS378	JKV718	IZS371	IZS371	IZS372	IZS374	JBU853	IZS373
				14-Feb-2019	14-Feb-2019	15-Feb-2019	11-Apr-2019	27-Feb-2019	27-Feb-2019	15-Feb-2019	11-Apr-2019	15-Feb-2019	15-Feb-2019	15-Feb-2019	15-Feb-2019	27-Feb-2019	15-Feb-2019
				3.0-6.1	16.8-18.3	4.0-7.0	13.7-15.2	13.7-15.2	13.7-15.2	3.0-6.1	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.7-6.7	3.7-6.7	3.0-6.1
									Laboratory Duplicate				Laboratory Duplicate	Field Duplicate			
Metals and Inorganics																	
Antimony	µg/L	0.5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	µg/L	1	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium	µg/L	2	1000	-	-	-	-	-	-	-	-	-	-	-	-	140	-
Beryllium	µg/L	0.5	4	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	-
Boron	µg/L	10	5000	-	-	-	-	-	-	-	-	-	-	-	-	150	-
Cadmium	µg/L	0.1	2.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-
Chloride	µg/L	1000 - 15000	790000	**810000**	260000	640000	250000	290000	-	**1200000**	**1000000**	480000	-	490000	**1200000**	760000	**1100000**
Chromium	µg/L	5	50	-	-	-	-	-	-	-	-	-	-	-	-	<5.0	-
Cobalt	µg/L	0.5	3.8	-	-	-	-	-	-	-	-	-	-	-	-	0.51	-
Copper	µg/L	1	69	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	-
Cyanide	µg/L	1	52	-	-	<1	-	-	-	-	-	<1	<1	<1	2	<1	<1
Lead	µg/L	0.5	10	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	-
Molybdenum	µg/L	0.5	70	-	-	-	-	-	-	-	-	-	-	-	-	2.1	-
Nickel	µg/L	1	100	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-
Selenium	µg/L	2	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	µg/L	0.1	1.2	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	-
Sodium	µg/L	100	490000	**530000**	160000	**520000**	180000	170000	170000	**750000**	**640000**	300000	-	300000	**670000**	**550000**	**670000**
Thallium	µg/L	0.05	2	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	-
Uranium	µg/L	0.1	20	-	-	-	-	-	-	-	-	-	-	-	-	0.36	-
Vanadium	µg/L	0.5	6.2	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	-
Zinc	µg/L	5	890	-	-	-	-	-	-	-	-	-	-	-	-	<5.0	-
pH	pH units		NR	7.68	7.4	7.72	7.69	7.19	-	7.36	7.78	7.54	-	7.53	7.58	7.54	7.52

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)
Bold - Exceeds 2011 Table 8 SCS
"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)		Sample Location	XCG-BH14	XCG-BH17	CRA-OW17-90	MW301A-15	MW302-15	MW302-15	MW302-15	MW401-16	MW402-16	MW403-16	MW404-16	MW405-16
					Sample Name	XCG-BH14	XCG-BH17	CRA-0W17-90	MW301A-15	MW302-15	MW302-15 Lab-Dup	MTE-MW302-15	MW401-16	MW402-16	MTE-MW403-16	MTE-MW404-16	MTE-MW405-16
					Lab Job #	B743031	B942543	B768005	B768005	B768005	B768005	B942543	B768005	B768005	B6O4234	B6O4234	B739820
					Laboratory ID	DZN513	IZS370	EEB684	EEB685	EEB683	EEB683	IZS375	EEB681	EEB682	DKQ179	DKQ180	DYZ512
					Sampling Date	02-Mar-2017	15-Feb-2019	04-Apr-2017	04-Apr-2017	04-Apr-2017	04-Apr-2017	15-Feb-2019	04-Apr-2017	04-Apr-2017	09-Nov-2016	09-Nov-2016	24-Feb-2017
					Well Screen Interval (m bgs)	33.5-36.6	9.8-11.3	4.6-5.8	5.8-7.3	2.7-5.8	2.7-5.8	2.7-5.8	4.3-7.3	1.5-4.6	3.4-6.4	3.0-6.1	4.6-7.6
					Maximum Concentration						Laboratory Duplicate						
Acid/Base/Neutral Compounds (ABNs) including Chlorophenols (CPs)																	
1,1-Biphenyl	µg/L	0.05 - 2	0.5		**130**	<0.1	<0.1	<0.1	<0.1	**1.4**	**1.4**	<0.4	**12**	<0.1	<0.1	<0.1	**<2.0**
Bis(2-chloroethyl)ether	µg/L	0.5 - 4	5	<	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<2.0
Bis(2-chloroisopropyl)ether	µg/L	0.5 - 4	120	<	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<2.0
Bis(2-ethylhexyl)phthalate	µg/L	1 - 8	10	<	8	<1	<1	<1	<1	<1	<1	<4	<1	<1	<1	<1	<8.0
p-Chloroaniline	µg/L	1 - 8	10	<	8	<1	<1	<1	<1	<1	<1	<4	<1	<1	<1	<1	<4.0
2-Chlorophenol	µg/L	0.1 - 1.2	8.9	<	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<1.2
3,3'-Dichlorobenzidine	µg/L	0.5 - 4	0.5	<	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<2 R**	<0.5	<0.5	<0.5	<0.5	**<2.0 R**
2,4-Dichlorophenol	µg/L	0.1 - 1.2	20	<	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<1.2
Diethyl phthalate	µg/L	0.1 - 4	30	<	4	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<4.0
Dimethyl phthalate	µg/L	0.1 - 4	30	<	4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<4.0
2,4-Dimethylphenol	µg/L	0.5 - 4	59		15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<2.0
2,4-Dinitrophenol	µg/L	2 - 50	10	<	10	<2	<2	<2	<2	<2	<2	<8	<2	<2	<2	<2	<8.0
2,4-Dinitrotoluene	µg/L	0.3 - 2	NR	<	2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<1	<0.3	<0.3	<0.3	<0.3	<2.0
2,6-Dinitrotoluene	µg/L	0.3 - 2	NR	<	2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<1	<0.3	<0.3	<0.3	<0.3	<2.0
2,4 + 2,6-Dinitrotoluene	µg/L	0.35 - 2.8	5	<	2.8	<0.35	<0.35	<0.35	<0.35	<0.35	-	<1.4	<0.35	<0.35	<0.35	<0.35	<2.8
Pentachlorophenol	µg/L	0.1 - 4	30	<	4	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<4.0
Phenol	µg/L	0.5 - 4	890	<	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<2.0
1,2,4-Trichlorobenzene	µg/L	0.1 - 2	70	<	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<2.0
2,4,5-Trichlorophenol	µg/L	0.2 - 2	8.9	<	2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.8	<0.2	<0.2	<0.2	<0.2	<2.0
2,4,6-Trichlorophenol	µg/L	0.2 - 2	2	<	2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.8	<0.2	<0.2	<0.2	<0.2	<2.0

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS
R	- Results rejected. Refer to report text for details and rationale.

"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW406-16	MW406-16	MW407-16	MW501-17	MW502-17	MW502-17	MW503-17	MW503-17	MW503-17	MW503-17	MW504-17	MW506-17	MW506-17	MW506-17
				MTE-MW406-16	MTE-MW406-16 Lab-Dup	MTE-MW407-16	MW501-17	MW502-17	MW502-17 Lab-Dup	MTE-MW503-17	MTE-MW503D-17	MTE-MW503-17	MW503-17	MTE-MW504-17	MW506-17	MTE-MW506-17	MW506-17
				B696570	B696570	B696570	B754553	B754553	B754553	B739820	B739820	B942543	B9M5414	B739820	B768005	B995927	B9M5414
				CIS348	CIS348	CIS349	EBP087	EBP089	EBP089	DYZ515	DYZ522	IZS376	KNE112	DYZ516	EEB688	JKV717	KNE110
				11-May-2016	11-May-2016	11-May-2016	17-Mar-2017	17-Mar-2017	17-Mar-2017	24-Feb-2017	24-Feb-2017	15-Feb-2019	14-Aug-2019	24-Feb-2017	04-Apr-2017	11-Apr-2019	14-Aug-2019
				4.6-7.6	4.6-7.6	3.0-6.1	16.8-18.3	16.8-18.3	16.8-18.3	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	13.7-15.2	13.7-15.2	13.7-15.2
					Laboratory Duplicate				Laboratory Duplicate		Field Duplicate						
Acid/Base/Neutral Compounds (ABNs) including Chlorophenols (CPs)																	
1,1-Biphenyl	µg/L	0.05 - 2	0.5	**11**	**14**	<0.1	0.1	<0.1	<0.1	**59**	**58**	<0.4	**130**	**13**	**0.8**	<0.5	<0.050
Bis(2-chloroethyl)ether	µg/L	0.5 - 4	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<2	-	<2.0	<0.5	<3	-
Bis(2-chloroisopropyl)ether	µg/L	0.5 - 4	120	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<2	-	<2.0	<0.5	<3	-
Bis(2-ethylhexyl)phthalate	µg/L	1 - 8	10	<1	<1	<1	<1	<1	<1	<8.0	<8.0	<4	-	<8.0	<1	<5	-
p-Chloroaniline	µg/L	1 - 8	10	<1	<1	<1	<1	<1	<1	<4.0	<4.0	<4	-	<4.0	<1	<5	-
2-Chlorophenol	µg/L	0.1 - 1.2	8.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1.2	<1.2	<0.4	-	<1.2	<0.1	<0.5	-
3,3'-Dichlorobenzidine	µg/L	0.5 - 4	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<2.0 R**	**<2.0 R**	**<2 R**	-	**<2.0 R**	<0.5	**<3 R**	-
2,4-Dichlorophenol	µg/L	0.1 - 1.2	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1.2	<1.2	<0.4	-	<1.2	<0.1	<0.5	-
Diethyl phthalate	µg/L	0.1 - 4	30	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4.0	<4.0	<0.4	-	<4.0	<0.1	<0.5	-
Dimethyl phthalate	µg/L	0.1 - 4	30	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4.0	<4.0	<0.4	-	<4.0	<0.1	<0.5	-
2,4-Dimethylphenol	µg/L	0.5 - 4	59	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	15	-	<2.0	<0.5	<3	-
2,4-Dinitrophenol	µg/L	2 - 50	10	<2	<2	<2	<2	<2	<2	<8.0	<8.0	<8	-	<8.0	<2	**<50 R**	-
2,4-Dinitrotoluene	µg/L	0.3 - 2	NR	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<2.0	<2.0	<1	-	<2.0	<0.3	<1	-
2,6-Dinitrotoluene	µg/L	0.3 - 2	NR	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<2.0	<2.0	<1	-	<2.0	<0.3	<1	-
2,4 + 2,6-Dinitrotoluene	µg/L	0.35 - 2.8	5	<0.35	-	<0.35	<0.35	<0.35	-	<2.8	<2.8	<1.4	-	<2.8	<0.35	<1.8	-
Pentachlorophenol	µg/L	0.1 - 4	30	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4.0	<4.0	<0.4	-	<4.0	<0.1	<0.5	-
Phenol	µg/L	0.5 - 4	890	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<2	-	<2.0	<0.5	<3	-
1,2,4-Trichlorobenzene	µg/L	0.1 - 2	70	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2.0	<2.0	<0.4	-	<2.0	<0.1	<0.5	-
2,4,5-Trichlorophenol	µg/L	0.2 - 2	8.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2.0	<2.0	<0.8	-	<2.0	<0.2	<1	-
2,4,6-Trichlorophenol	µg/L	0.2 - 2	2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2.0	<2.0	<0.8	-	<2.0	<0.2	<1	-

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS
R	- Results rejected. Refer to report text for details and rationale.

"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW508-17	MW601-18	MW601-18	MW601-19	MW601-19	MW602-18	MW603-18	MW604-18
				MTE-MW508-17	MW601-18	MW1601-18	MW601-19	MW1601-19	MW602-18	MW603-18	MW604-18
				B995927	B942543	B942543	B9M5414	B9M5414	B942543	B952348	B942543
				JKV718	IZS371	IZS372	KNE109	KNE111	IZS374	JBU853	IZS373
				11-Apr-2019	15-Feb-2019	15-Feb-2019	14-Aug-2019	14-Aug-2019	15-Feb-2019	27-Feb-2019	15-Feb-2019
				3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.7-6.7	3.7-6.7	3.0-6.1
						Field Duplicate		Field Duplicate			
Acid/Base/Neutral Compounds (ABNs) including Chlorophenols (CPs)											
1,1-Biphenyl	µg/L	0.05 - 2	0.5	**2.4**	<0.4	**12**	**1.9**	**1.7**	<0.1	**22**	**9.9**
Bis(2-chloroethyl)ether	µg/L	0.5 - 4	5	<0.5	<2	<4	-	-	<0.5	<3	<2
Bis(2-chloroisopropyl)ether	µg/L	0.5 - 4	120	<0.5	<2	<4	-	-	<0.5	<3	<2
Bis(2-ethylhexyl)phthalate	µg/L	1 - 8	10	<1	<4	<8	-	-	<1	<5	<4
p-Chloroaniline	µg/L	1 - 8	10	<1	<4	<8	-	-	<1	<5	<4
2-Chlorophenol	µg/L	0.1 - 1.2	8.9	<0.1	<0.4	<0.8	-	-	<0.1	<0.5	<0.4
3,3'-Dichlorobenzidine	µg/L	0.5 - 4	0.5	<0.5	**<2 R**	**<4 R**	-	-	<0.5	**<3 R**	**<2 R**
2,4-Dichlorophenol	µg/L	0.1 - 1.2	20	<0.1	<0.4	<0.8	-	-	<0.1	<0.5	<0.4
Diethyl phthalate	µg/L	0.1 - 4	30	<0.1	<0.4	<0.8	-	-	<0.1	<0.5	<0.4
Dimethyl phthalate	µg/L	0.1 - 4	30	<0.1	<0.4	<0.8	-	-	<0.1	<0.5	<0.4
2,4-Dimethylphenol	µg/L	0.5 - 4	59	<0.5	<2	<4	-	-	<0.5	<3	<2
2,4-Dinitrophenol	µg/L	2 - 50	10	<10	<8	**<20 R**	-	-	<2	**<50 R**	<8
2,4-Dinitrotoluene	µg/L	0.3 - 2	NR	<0.3	<1	<2	-	-	<0.3	<1	<1
2,6-Dinitrotoluene	µg/L	0.3 - 2	NR	<0.3	<1	<2	-	-	<0.3	<1	<1
2,4 + 2,6-Dinitrotoluene	µg/L	0.35 - 2.8	5	<0.35	<1.4	<2.8	-	-	<0.35	<1.8	<1.4
Pentachlorophenol	µg/L	0.1 - 4	30	<0.1	<0.4	<0.8	-	-	<0.1	<0.5	<0.4
Phenol	µg/L	0.5 - 4	890	<0.5	<2	<4	-	-	<0.5	<3	<2
1,2,4-Trichlorobenzene	µg/L	0.1 - 2	70	<0.1	<0.4	<0.8	-	-	<0.1	<0.5	<0.4
2,4,5-Trichlorophenol	µg/L	0.2 - 2	8.9	<0.2	<0.8	<2	-	-	<0.2	<1	<0.8
2,4,6-Trichlorophenol	µg/L	0.2 - 2	2	<0.2	<0.8	<2	-	-	<0.2	<1	<0.8

Notes:
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Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS
R	- Results rejected. Refer to report text for details and rationale.

"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	Sample Location		MW402-16	MW403-16	MW406-16
				Sample Name		MTE-MW402-16	MTE-MW403-16	MTE-MW406-16
				Lab Job #		B696570	B696570	B696570
				Laboratory ID		CIS344	CIS345	CIS348
				Sampling Date		11-May-2016	11-May-2016	11-May-2016
				Well Screen Interval (m bgs)		1.5-4.6	3.4-6.4	4.6-7.6
				Maximum Concentration				
Organochlorine Pesticides (OCs)								
Aldrin	µg/L	0.005 - 0.05	0.35	<	0.05	<0.005	<0.005	<0.05
alpha-Chlordane	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
gamma-Chlordane	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
Chlordane (Total)	µg/L	0.005 - 0.05	0.06	<	0.05	<0.005	<0.005	<0.05
o,p-DDD	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
p,p-DDD	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
o,p-DDD + p,p-DDD	µg/L	0.005 - 0.05	1.8	<	0.05	<0.005	<0.005	<0.05
o,p-DDE	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
p,p-DDE	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
o,p-DDE + p,p-DDE	µg/L	0.005 - 0.05	10	<	0.05	<0.005	<0.005	<0.05
o,p-DDT	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
p,p-DDT	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
o,p-DDT + p,p-DDT	µg/L	0.005 - 0.05	0.05	<	0.05	<0.005	<0.005	<0.05
Dieldrin	µg/L	0.005 - 0.05	0.35	<	0.05	<0.005	<0.005	<0.05
Endosulfan I	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
Endosulfan II	µg/L	0.005 - 0.05	NR	<	0.05	<0.005	<0.005	<0.05
Total Endosulfan	µg/L	0.005 - 0.05	0.56	<	0.05	<0.005	<0.005	<0.05
Endrin	µg/L	0.005 - 0.05	0.36	<	0.05	<0.005	<0.005	<0.05
Heptachlor	µg/L	0 - 0.005	0.038	<	0.038	<0.005	<0.005	<0.038
Heptachlor epoxide	µg/L	0 - 0.005	0.038	<	0.038	<0.005	<0.005	<0.038
Hexachlorobenzene	µg/L	0.005 - 0.05	1	<	0.05	<0.005	<0.005	<0.05
Hexachlorobutadiene	µg/L	0.009 - 0.09	0.44	<	0.09	<0.009	<0.009	<0.09
gamma-Hexachlorocyclohexane (Lindane)	µg/L	0.003 - 0.03	0.95	<	0.03	<0.003	<0.003	<0.03
Hexachloroethane	µg/L	0.01 - 0.1	2.1	<	0.1	<0.01	<0.01	<0.1
Methoxychlor	µg/L	0.01 - 0.1	0.3	<	0.1	<0.01	<0.01	<0.1

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	Sample Location		MW402-16	MW406-16
				Sample Name		MTE-MW402-16	MTE-MW406-16
				Lab Job #		B696570	B6O4234
				Laboratory ID		CIS344	DKQ181
				Sampling Date		11-May-2016	09-Nov-2016
				Well Screen Interval (m bgs)		1.5-4.6	4.6-7.6
				Maximum Concentration			
Polychlorinated Biphenyls (PCBs)							
Aroclor 1242	µg/L	0.05	NR	<	0.05	<0.05	<0.05
Aroclor 1248	µg/L	0.05	NR	<	0.05	<0.05	<0.05
Aroclor 1254	µg/L	0.05	NR	<	0.05	<0.05	<0.05
Aroclor 1260	µg/L	0.05	NR	<	0.05	<0.05	<0.05
Total Polychlorinated Biphenyls	µg/L	0.05	0.2	<	0.05	<0.05	<0.05

Notes:
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Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)		Sample Location	ETC-OW06-1S	XCG-BH14	CRA-OW15-90	XCG-BH17	XCG-BH17	CRA-OW17-90	CRA-OW17-90	CRA-OW17-90	MW301A-15	MW301A-15	MW301A-15	MW301B-15
					Sample Name	ETC-MW06-1S	XCG-BH14	CRA-OW15-90	XCG-BH17	XCG-BH17	CRA-OW17-90	CRA-OW17-90	CRA-0W17-90	MTE-MW301A-15	MW301A-15	MTW-MW301A-15	MTE-MW301B-15
					Lab Job #	B5O2811	B743031	B5O2811	B5Q0859	B942543	B5O2811	B740908	B768005	B5Q0859	B768005	B941004	B5Q0859
					Laboratory ID	BKN496	DZN513	BKN497	BOA208	IZS370	BKN498	DZE380	EEB684	BOA204	EEB685	IZK967	BOA205
					Sampling Date	25-Nov-2015	02-Mar-2017	25-Nov-2015	17-Dec-2015	15-Feb-2019	25-Nov-2015	27-Feb-2017	04-Apr-2017	17-Dec-2015	04-Apr-2017	14-Feb-2019	17-Dec-2015
					Well Screen Interval (m bgs)	4.6-7.6	33.5-36.6	4.3-5.5	9.8-11.3	9.8-11.3	4.6-5.8	4.6-5.8	4.6-5.8	5.8-7.3	5.8-7.3	5.8-7.3	26.8-28.4
					Maximum Concentration												
Polycyclic Aromatic Hydrocarbons (PAHs)																	
Acenaphthene	µg/L	0.05 - 100	4.1		**1100**	<0.050	<0.2	0.3	**88**	<0.2	**5.9**	3.2	**5.4**	**16**	0.4	**4.4**	<0.050
Acenaphthylene	µg/L	0.05 - 100	1	<	**100**	<0.050	<0.2	<0.050	**1.4**	<0.2	0.097	<0.050	<0.2	0.11	<0.2	<0.050	<0.050
Anthracene	µg/L	0.05 - 30	1		**480**	<0.050	<0.05	<0.050	**4**	<0.05	0.11	0.058	0.14	1	<0.05	<0.050	<0.050
Benz(a)anthracene	µg/L	0.05 - 30	1		**300**	<0.050	<0.05	<0.050	0.13	<0.05	<0.050	<0.050	0.21	0.14	<0.05	<0.050	<0.050
Benzo(a)pyrene	µg/L	0.01 - 5	0.01		**290**	<0.010	<0.01	<0.010	**0.012**	<0.01	0.01	<0.010	**0.1**	**0.088**	**0.03**	<0.010	<0.010
Benzo(b)fluoranthene	µg/L	0.05 - 30	0.1		**260**	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050	**0.11**	0.066	<0.05	<0.050	<0.050
Benzo(g,h,i)perylene	µg/L	0.05 - 30	0.2		**150**	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050	0.07	<0.050	<0.05	<0.050	<0.050
Benzo(k)fluoranthene	µg/L	0.05 - 30	0.1		**88**	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050
Chrysene	µg/L	0.05 - 30	0.1		**250**	<0.050	<0.05	<0.050	0.075	<0.05	<0.050	<0.050	**0.16**	0.087	<0.05	<0.050	<0.050
Dibenz(a,h)anthracene	µg/L	0.05 - 50	0.2	<	**50**	<0.050	<0.1	<0.050	<0.050	<0.1	<0.050	<0.050	<0.1	<0.050	<0.1	<0.050	<0.050
Fluoranthene	µg/L	0.05 - 100	0.41		**770**	<0.050	<0.2	<0.050	**5.6**	<0.2	**0.66**	**0.42**	**1.2**	**1.4**	<0.2	0.35	<0.050
Fluorene	µg/L	0.05 - 100	120		**340**	<0.050	<0.2	<0.050	25	<0.2	0.7	0.12	0.3	3	<0.2	0.66	<0.050
Indeno(1,2,3-cd)pyrene	µg/L	0.05 - 50	0.2		**120**	<0.050	<0.1	<0.050	<0.050	<0.1	<0.050	<0.050	<0.1	<0.050	<0.1	<0.050	<0.050
1-Methylnaphthalene	µg/L	0.05 - 100	3.2		**420**	<0.050	<0.2	<0.050	**48**	<0.2	0.72	<0.050	0.3	**5.2**	<0.2	0.12	<0.050
2-Methylnaphthalene	µg/L	0.05 - 100	3.2		**590**	<0.050	<0.2	<0.050	0.52	<0.2	0.3	<0.050	<0.2	**5.2**	<0.2	<0.050	<0.050
1+2-Methylnaphthalene	µg/L	0.071 - 140	3.2		**1000**	<0.071	<0.28	<0.071	**48**	<0.28	1	<0.071	<0.28	**10**	<0.28	0.12	<0.071
Naphthalene	µg/L	0.05 - 100	11		**8000**	<0.050	0.3	<0.050	**53**	<0.2	2.7	0.073	1.7	**51**	<0.2	1.2	<0.050
Phenanthrene	µg/L	0.03 - 50	1		**1600**	<0.030	<0.1	<0.030	**49**	<0.1	0.7	0.12	0.3	**5.4**	<0.1	0.078	<0.030
Pyrene	µg/L	0.05 - 30	4.1		**1100**	<0.050	<0.05	0.074	**6**	0.12	0.72	0.46	1.7	1.7	0.16	0.38	<0.050

Notes:
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Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS

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Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW302-15	MW302-15	MW302-15	MW302-15	MW401-16	MW401-16	MW401-16	MW401-16	MW402-16	MW402-16	MW403-16	MW403-16	MW403-16	MW403-16
				MTE-MW302-15	MW302-15	MW302-15 Lab-Dup	MTE-MW302-15	MTE-MW401-16	MTE-MW401-16 Lab-Dup	MTE-MW601-16	MW401-16	MTE-MW402-16	MW402-16	MTE-MW403-16	MTE-MW403-16	MTE-MW493-16	MTE-MW403-16
				B5Q0859	B768005	B768005	B942543	B696570	B696570	B696570	B768005	B696570	B768005	B696570	B6O4234	B6O4234	B739820
				BOA206	EEB683	EEB683	IZS375	CIS343	CIS343	CIS350	EEB681	CIS344	EEB682	CIS345	DKQ179	DKQ183	DYZ511
				17-Dec-2015	04-Apr-2017	04-Apr-2017	15-Feb-2019	11-May-2016	11-May-2016	11-May-2016	04-Apr-2017	11-May-2016	04-Apr-2017	11-May-2016	09-Nov-2016	09-Nov-2016	24-Feb-2017
				2.7-5.8	2.7-5.8	2.7-5.8	2.7-5.8	4.3-7.3	4.3-7.3	4.3-7.3	4.3-7.3	1.5-4.6	1.5-4.6	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4
						Laboratory Duplicate			Laboratory Duplicate	Field Duplicate						Field Duplicate	
Polycyclic Aromatic Hydrocarbons (PAHs)																	
Acenaphthene	µg/L	0.05 - 100	4.1	**1100**	**9.3**	**9.4**	<0.8	**380**	**380**	**380**	**62**	<0.050	<0.2	0.1	<0.2	<0.050	<0.050
Acenaphthylene	µg/L	0.05 - 100	1	**<100**	0.2	0.3	<0.8	**20**	**18**	**18**	**1.8**	<0.050	<0.2	<0.050	<0.2	<0.050	<0.050
Anthracene	µg/L	0.05 - 30	1	**480**	0.63	0.61	<0.2	**22**	**22**	**23**	**10**	<0.050	<0.05	0.23	<0.05	<0.050	<0.050
Benz(a)anthracene	µg/L	0.05 - 30	1	**300**	0.22	0.23	0.9	**1.8**	**2.1**	**1.7**	0.76	<0.050	<0.05	0.23	<0.05	<0.050	<0.050
Benzo(a)pyrene	µg/L	0.01 - 5	0.01	**290**	**0.18**	**0.19**	**1.5**	**1.2**	**1.5**	**1.3**	**0.25**	<0.010	<0.01	**0.16**	<0.010	<0.010	<0.010
Benzo(b)fluoranthene	µg/L	0.05 - 30	0.1	**260**	**0.15**	**0.16**	**1.4**	**1**	**1.2**	**1.1**	**0.25**	<0.050	<0.05	**0.22**	<0.05	<0.050	<0.050
Benzo(g,h,i)perylene	µg/L	0.05 - 30	0.2	**150**	0.13	0.13	**0.6**	**0.8**	**1**	**0.79**	0.13	<0.050	<0.05	0.075	<0.05	<0.050	<0.050
Benzo(k)fluoranthene	µg/L	0.05 - 30	0.1	**88**	0.06	0.07	**0.5**	**<0.50**	**<0.50**	**<0.50**	0.09	<0.050	<0.05	0.08	<0.05	<0.050	<0.050
Chrysene	µg/L	0.05 - 30	0.1	**250**	**0.18**	**0.17**	**0.3**	**1.8**	**1.8**	**1.7**	**0.48**	<0.050	<0.05	**0.17**	<0.05	<0.050	<0.050
Dibenz(a,h)anthracene	µg/L	0.05 - 50	0.2	**<50**	<0.1	<0.1	**<0.4**	**<0.50**	**<0.50**	**<0.50**	<0.1	<0.050	<0.1	<0.050	<0.1	<0.050	<0.050
Fluoranthene	µg/L	0.05 - 100	0.41	**770**	**1.1**	**1.1**	**1.3**	**17**	**17**	**16**	**11**	<0.050	<0.2	**0.63**	<0.2	<0.050	<0.050
Fluorene	µg/L	0.05 - 100	120	**340**	1.7	1.7	<0.8	83	82	84	17	<0.050	<0.2	0.16	<0.2	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	µg/L	0.05 - 50	0.2	**120**	0.1	0.1	**0.6**	**0.68**	**0.91**	**0.7**	0.1	<0.050	<0.1	0.09	<0.1	<0.050	<0.050
1-Methylnaphthalene	µg/L	0.05 - 100	3.2	**420**	**3.7**	**3.7**	<0.8	**380**	**400**	**380**	**38**	<0.050	<0.2	0.063	<0.2	<0.050	<0.050
2-Methylnaphthalene	µg/L	0.05 - 100	3.2	**590**	1.1	1.1	<0.8	**450**	**470**	**450**	**35**	<0.050	<0.2	0.077	<0.2	<0.050	<0.050
1+2-Methylnaphthalene	µg/L	0.071 - 140	3.2	**1000**	**4.8**	-	<1.1	**830**	-	**830**	**73**	<0.071	<0.28	0.14	<0.28	<0.071	<0.071
Naphthalene	µg/L	0.05 - 100	11	**4600**	**23**	**23**	<0.8	**7700**	**8000**	**7300**	**790**	0.09	1.1	0.16	<0.2	<0.050	<0.050
Phenanthrene	µg/L	0.03 - 50	1	**1600**	**2.9**	**3**	<0.4	**130**	**130**	**130**	**60**	0.042	<0.1	0.82	<0.1	<0.030	<0.030
Pyrene	µg/L	0.05 - 30	4.1	**1100**	1.3	1.3	1.7	**19**	**20**	**18**	**13**	<0.050	<0.05	0.44	0.06	<0.050	<0.050

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS

"-" - parameter not analyzed
RDL - Reported detection limit
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW404-16	MW404-16	MW404-16	MW405-16	MW405-16	MW406-16	MW406-16	MW407-16	MW407-16	MW407-16	MW407-16	MW501-17	MW501-17	MW502-17
				MTE-MW404-16	MTE-MW404-16	MTE-MW404-16	MTE-MW405-16	MTE-MW405-16	MTE-MW406-16	MTE-MW406-16 Lab-Dup	MTE-MW407-16	MTE-MW407-16	MTE-MW407-16	MW407-16	MW501-17	MW591-17	MW502-17
				B6Q4234	B696570	B740908	B696570	B739820	B696570	B696570	B696570	B6Q4234	B739820	B941004	B754553	B754553	B754553
				DKQ180	CIS346	DZE378	CIS347	DYZ512	CIS348	CIS348	CIS349	DKQ182	DYZ514	IZK965	EBP087	EBP088	EBP089
				09-Nov-2016	11-May-2016	27-Feb-2017	11-May-2016	24-Feb-2017	11-May-2016	11-May-2016	11-May-2016	09-Nov-2016	24-Feb-2017	14-Feb-2019	17-Mar-2017	17-Mar-2017	17-Mar-2017
				3.0-6.1	3.0-6.1	3.0-6.1	4.6-7.6	4.6-7.6	4.6-7.6	4.6-7.6	3.0-6.1	3.0-6.1	3.0-6.1	3.0-6.1	16.8-18.3	16.8-18.3	16.8-18.3
										Laboratory Duplicate						Field Duplicate	
Polycyclic Aromatic Hydrocarbons (PAHs)																	
Acenaphthene	µg/L	0.05 - 100	4.1	<0.2	0.064	<0.050	**120**	**21**	**90**	**93**	1.1	2.3	**4.3**	1.1	0.8	0.97	0.8
Acenaphthylene	µg/L	0.05 - 100	1	<0.2	<0.050	<0.050	**3**	<0.80	**1.3**	**1.4**	0.2	0.16	0.13	<0.050	<0.2	<0.050	<0.2
Anthracene	µg/L	0.05 - 30	1	<0.05	<0.050	<0.050	**2.5**	<0.80	**7.2**	**8.2**	0.48	0.53	0.28	0.12	0.13	0.09	<0.05
Benz(a)anthracene	µg/L	0.05 - 30	1	<0.05	<0.050	<0.050	<0.050	<0.80	**1.4**	**1.5**	0.06	<0.050	<0.050	<0.050	<0.05	<0.050	<0.05
Benzo(a)pyrene	µg/L	0.01 - 5	0.01	<0.01	**0.012**	<0.010	<0.010	**<0.80**	**1.6**	**1.7**	**0.03**	<0.010	**0.011**	<0.010	<0.01	<0.010	**0.02**
Benzo(b)fluoranthene	µg/L	0.05 - 30	0.1	<0.05	<0.050	<0.050	<0.050	**<0.80**	**1.3**	**1.4**	<0.05	<0.050	<0.050	<0.050	<0.05	<0.050	<0.05
Benzo(g,h,i)perylene	µg/L	0.05 - 30	0.2	<0.05	<0.050	<0.050	<0.050	**<0.80**	**0.87**	**0.86**	<0.05	<0.050	<0.050	<0.050	<0.05	<0.050	<0.05
Benzo(k)fluoranthene	µg/L	0.05 - 30	0.1	<0.05	<0.050	<0.050	<0.050	**<0.80**	**0.46**	**0.48**	<0.05	<0.050	<0.050	<0.050	<0.05	<0.050	<0.05
Chrysene	µg/L	0.05 - 30	0.1	<0.05	<0.050	<0.050	<0.050	**<0.80**	**1**	**1.4**	<0.05	<0.050	<0.050	<0.050	<0.05	<0.050	<0.05
Dibenz(a,h)anthracene	µg/L	0.05 - 50	0.2	<0.1	<0.050	<0.050	<0.050	**<0.80**	0.1	0.1	<0.1	<0.050	<0.050	<0.050	<0.1	<0.050	<0.1
Fluoranthene	µg/L	0.05 - 100	0.41	<0.2	<0.050	<0.050	**1.2**	**<0.80**	**7.7**	**8.6**	<0.2	0.11	0.15	<0.050	<0.2	0.13	<0.2
Fluorene	µg/L	0.05 - 100	120	<0.2	<0.050	<0.050	24	3.3	22	28	1.3	1.5	1.1	0.69	<0.2	0.25	<0.2
Indeno(1,2,3-cd)pyrene	µg/L	0.05 - 50	0.2	<0.1	<0.050	<0.050	<0.050	**<0.80**	**0.7**	**0.7**	<0.1	<0.050	<0.050	<0.050	<0.1	<0.050	<0.1
1-Methylnaphthalene	µg/L	0.05 - 100	3.2	<0.2	<0.050	<0.050	**93**	**13**	**58**	**61**	0.3	0.44	1.6	0.11	<0.2	0.46	<0.2
2-Methylnaphthalene	µg/L	0.05 - 100	3.2	<0.2	<0.050	<0.050	0.73	<0.80	**56**	**59**	0.3	0.29	0.93	<0.050	<0.2	0.5	<0.2
1+2-Methylnaphthalene	µg/L	0.071 - 140	3.2	<0.28	<0.071	<0.071	**94**	**13**	**110**	-	0.62	0.73	2.5	0.11	<0.28	0.96	<0.28
Naphthalene	µg/L	0.05 - 100	11	<0.2	0.08	<0.050	**370**	**62**	**580**	**620**	3.5	4.9	**13**	0.25	<0.2	4.7	<0.2
Phenanthrene	µg/L	0.03 - 50	1	<0.1	0.07	<0.030	**21**	**3.8**	**37**	**39**	0.1	0.24	0.72	0.086	0.6	0.83	<0.1
Pyrene	µg/L	0.05 - 30	4.1	<0.05	<0.050	<0.050	0.8	<0.80	**8.5**	**9.3**	0.29	0.21	0.24	0.075	0.14	0.14	0.09

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)
Bold - Exceeds 2011 Table 8 SCS
Bold - Detection limit exceeds 2011 Table 8 SCS
"-" - parameter not analyzed
RDL - Reported detection limit
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW502-17	MW502-17	MW502-17	MW503-17	MW503-17	MW503-17	MW503-17	MW504-17	MW506-17	MW506-17	MW506-17	MW506-17	MW507-17	MW508-17
				MW502-17 Lab-Dup	MW502-17	MTE-MW502-17	MTE-MW503-17	MTE-MW503D-17	MTE-MW503-17	MW503-17	MTE-MW504-17	MTE-MW506-17	MW506-17	MTE-MW506-17	MW506-17	MTE-MW507-17	MTE-MW508-17
				B754553	B768005	B941004	B739820	B739820	B942543	B9M5414	B739820	B740908	B768005	B995927	B9M5414	B739820	B739820
				EBP089	EEB689	IZK968	DYZ515	DYZ522	IZS376	KNE112	DYZ516	DZE379	EEB688	JKV717	KNE110	DYZ519	DYZ517
				17-Mar-2017	04-Apr-2017	14-Feb-2019	24-Feb-2017	24-Feb-2017	15-Feb-2019	14-Aug-2019	24-Feb-2017	27-Feb-2017	04-Apr-2017	11-Apr-2019	14-Aug-2019	24-Feb-2017	24-Feb-2017
				16.8-18.3	16.8-18.3	16.8-18.3	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	13.7-15.2	13.7-15.2	13.7-15.2	13.7-15.2	3.0-6.1	3.4-6.4
				Laboratory Duplicate				Field Duplicate									
Polycyclic Aromatic Hydrocarbons (PAHs)																	
Acenaphthene	µg/L	0.05 - 100	4.1	0.9	0.84	<0.050	**190**	**180**	**210**	**440**	**48**	**75**	**13**	<1	0.055	<0.050	**91**
Acenaphthylene	µg/L	0.05 - 100	1	<0.2	<0.050	<0.050	**50**	**49**	**40**	**66**	**14**	0.99	0.4	<1	<0.050	<0.050	**62**
Anthracene	µg/L	0.05 - 30	1	<0.05	<0.050	<0.050	**15**	**15**	**7.8**	**16**	**4.6**	**4.2**	**1.9**	0.3	<0.050	<0.050	**12**
Benz(a)anthracene	µg/L	0.05 - 30	1	<0.05	<0.050	<0.050	<0.80	<0.80	0.4	<1.0	**2.1**	**1.6**	0.74	**1.1**	<0.050	<0.050	0.81
Benzo(a)pyrene	µg/L	0.01 - 5	0.01	<0.01	<0.010	<0.010	**<0.80**	**<0.80**	**0.09**	**0.27**	**4.6**	**1.5**	**0.73**	**1.9**	**0.043**	<0.010	**0.61**
Benzo(b)fluoranthene	µg/L	0.05 - 30	0.1	<0.05	<0.050	<0.050	**<0.80**	**<0.80**	**<0.2**	**<1.0**	**4.1**	**1.4**	**0.63**	**1.7**	<0.050	<0.050	**0.54**
Benzo(g,h,i)perylene	µg/L	0.05 - 30	0.2	<0.05	<0.050	<0.050	**<0.80**	**<0.80**	<0.2	**<1.0**	**4**	**0.95**	**0.4**	**1**	<0.050	<0.050	**0.36**
Benzo(k)fluoranthene	µg/L	0.05 - 30	0.1	<0.05	<0.050	<0.050	**<0.80**	**<0.80**	**<0.2**	**<1.0**	**1.4**	**0.5**	**0.22**	**0.6**	<0.050	<0.050	**0.16**
Chrysene	µg/L	0.05 - 30	0.1	<0.05	<0.050	<0.050	**<0.80**	**<0.80**	**0.3**	**<1.0**	**2.7**	**1.3**	**0.51**	**0.8**	<0.050	<0.050	**0.65**
Dibenz(a,h)anthracene	µg/L	0.05 - 50	0.2	<0.1	<0.050	<0.050	**<0.80**	**<0.80**	**<0.4**	**<1.0**	**<0.80**	0.1	<0.1	**<0.5**	<0.050	<0.050	<0.050
Fluoranthene	µg/L	0.05 - 100	0.41	<0.2	<0.050	<0.050	**9.1**	**8.9**	**8.4**	**11**	**7.1**	**9.8**	**2.9**	**1**	0.061	<0.050	**8.1**
Fluorene	µg/L	0.05 - 100	120	<0.2	0.083	<0.050	46	46	44	100	13	15	3.2	<1	<0.050	<0.050	39
Indeno(1,2,3-cd)pyrene	µg/L	0.05 - 50	0.2	<0.1	<0.050	<0.050	**<0.80**	**<0.80**	**<0.4**	**<1.0**	**3.1**	**0.73**	**0.3**	**<1**	<0.050	<0.050	**0.28**
1-Methylnaphthalene	µg/L	0.05 - 100	3.2	<0.2	0.081	<0.050	**210**	**180**	**95**	**410**	**50**	**48**	**4.2**	<1	<0.050	<0.050	**99**
2-Methylnaphthalene	µg/L	0.05 - 100	3.2	<0.2	<0.050	<0.050	**270**	**260**	**37**	**440**	**64**	**20**	0.9	<1	<0.050	<0.050	**91**
1+2-Methylnaphthalene	µg/L	0.071 - 140	3.2	-	0.081	<0.071	**480**	**450**	**130**	**860**	**110**	**68**	**5**	<1.4	<0.071	<0.071	**190**
Naphthalene	µg/L	0.05 - 100	11	<0.2	0.43	<0.050	**7700**	**7100**	**970**	**6400**	**1400**	**560**	**21**	<1	0.088	<0.050	**650**
Phenanthrene	µg/L	0.03 - 50	1	<0.1	0.15	<0.030	**80**	**80**	**18**	**130**	**31**	**48**	**3.1**	0.6	0.13	<0.030	**52**
Pyrene	µg/L	0.05 - 30	4.1	0.06	<0.050	<0.050	**11**	**10**	**10**	**12**	**9.2**	**9**	2.9	1.2	0.092	<0.050	**8.6**

Notes:
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Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS

"-" - parameter not analyzed
RDL - Reported detection limit
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW508-17	MW508-17	MW508-17	MW601-18	MW601-18	MW601-19	MW601-19	MW602-18	MW603-18	MW604-18
				MTE-MW508-17 Lab-Dup	MTE-MW508D-17	MTE-MW508-17	MW601-18	MW1601-18	MW601-19	MW1601-19	MW602-18	MW603-18	MW604-18
				B739820	B739820	B995927	B942543	B942543	B9M5414	B9M5414	B942543	B952348	B942543
				DYZ517	DYZ521	JKV718	IZS371	IZS372	KNE109	KNE111	IZS374	JBU853	IZS373
				24-Feb-2017	24-Feb-2017	11-Apr-2019	15-Feb-2019	15-Feb-2019	14-Aug-2019	14-Aug-2019	15-Feb-2019	27-Feb-2019	15-Feb-2019
				3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.7-6.7	3.7-6.7	3.0-6.1
				Laboratory Duplicate	Field Duplicate			Field Duplicate		Field Duplicate			
Polycyclic Aromatic Hydrocarbons (PAHs)													
Acenaphthene	µg/L	0.05 - 100	4.1	**89**	**94**	**8.3**	<0.8	**50**	**9.3**	**7.9**	<0.2	**96**	**140**
Acenaphthylene	µg/L	0.05 - 100	1	**59**	**73**	**12**	<0.8	**<2**	0.16	0.16	<0.2	**9**	**6.5**
Anthracene	µg/L	0.05 - 30	1	**12**	**11**	**1.7**	<0.2	**5.7**	**2.8**	**2.6**	<0.05	**5.2**	**2.3**
Benz(a)anthracene	µg/L	0.05 - 30	1	0.89	0.68	0.15	<0.2	<0.4	0.17	0.17	<0.05	<0.3	<0.2
Benzo(a)pyrene	µg/L	0.01 - 5	0.01	**0.68**	**0.47**	**0.02**	**<0.04**	**0.14**	**0.041**	**0.04**	**0.07**	**0.28**	**<0.04**
Benzo(b)fluoranthene	µg/L	0.05 - 30	0.1	**0.6**	**0.41**	<0.05	**<0.2**	**<0.4**	<0.050	<0.050	0.1	**<0.3**	**<0.2**
Benzo(g,h,i)perylene	µg/L	0.05 - 30	0.2	**0.39**	**0.26**	<0.05	<0.2	**<0.4**	<0.050	<0.050	<0.05	**<0.5**	<0.2
Benzo(k)fluoranthene	µg/L	0.05 - 30	0.1	**0.18**	**0.12**	<0.05	**<0.2**	**<0.4**	<0.050	<0.050	<0.05	**<0.3**	**<0.2**
Chrysene	µg/L	0.05 - 30	0.1	**0.76**	**0.55**	0.08	**<0.2**	**<0.4**	**0.15**	**0.14**	<0.05	**<0.3**	**<0.2**
Dibenz(a,h)anthracene	µg/L	0.05 - 50	0.2	<0.050	<0.050	<0.1	**<0.4**	**<0.8**	<0.050	<0.050	<0.1	**<0.5**	**<0.4**
Fluoranthene	µg/L	0.05 - 100	0.41	**8.1**	**7.7**	**1.7**	**<0.8**	**6**	**3.4**	**3.2**	0.2	**6**	**1.9**
Fluorene	µg/L	0.05 - 100	120	38	39	4.5	<0.8	14	3.3	2.9	<0.2	25	22
Indeno(1,2,3-cd)pyrene	µg/L	0.05 - 50	0.2	**0.32**	**0.21**	<0.1	**<0.4**	**<0.8**	<0.050	<0.050	<0.1	**<0.5**	**<0.4**
1-Methylnaphthalene	µg/L	0.05 - 100	3.2	**96**	**110**	**8.7**	<0.8	**28**	**3.3**	2.8	<0.2	**81**	**55**
2-Methylnaphthalene	µg/L	0.05 - 100	3.2	**89**	**100**	0.6	<0.8	**38**	2.2	1.8	<0.2	**88**	**37**
1+2-Methylnaphthalene	µg/L	0.071 - 140	3.2	-	**220**	**9.3**	<1.1	**66**	**5.5**	**4.6**	<0.28	**170**	**92**
Naphthalene	µg/L	0.05 - 100	11	**630**	**690**	1	<0.8	**290**	11	8.7	<0.2	**1900**	**1200**
Phenanthrene	µg/L	0.03 - 50	1	**52**	**54**	**8.1**	<0.4	**37**	**21**	**19**	<0.1	**30**	**12**
Pyrene	µg/L	0.05 - 30	4.1	**8.7**	**8.1**	1.4	<0.2	**7.5**	4.1	3.9	0.21	**6.5**	1.8

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS

"-" - parameter not analyzed
RDL - Reported detection limit
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)		Sample Location	ETC-OW06-1S	XCG-BH14	CRA-OW15-90	XCG-BH17	XCG-BH17	CRA-OW17-90	CRA-OW17-90	MW301A-15	MW301A-15	MW301A-15	MW301A-15	MW301B-15
					Sample Name	ETC-MW06-1S	XCG-BH14	CRA-OW15-90	XCG-BH17	XCG-BH17	CRA-OW17-90	CRA-OW17-90	MTE-MW301A-15	MTE-MW103A-15	MW301A-15	MTW-MW301A-15	MTE-MW301B-15
					Lab Job #	B5O2811	B743031	B5O2811	B5Q0859	B942543	B5O2811	B740908	B5Q0859	B5Q0859	B768005	B941004	B5Q0859
					Laboratory ID	BKN496	DZN513	BKN497	BOA208	IZS370	BKN498	DZE380	BOA204	BOA207	EEB685	IZK967	BOA205
					Sampling Date	25-Nov-2015	02-Mar-2017	25-Nov-2015	17-Dec-2015	15-Feb-2019	25-Nov-2015	27-Feb-2017	17-Dec-2015	17-Dec-2015	04-Apr-2017	14-Feb-2019	17-Dec-2015
					Well Screen Interval (m bgs)	4.6-7.6	33.5-36.6	4.3-5.5	9.8-11.3	9.8-11.3	4.6-5.8	4.6-5.8	5.8-7.3	5.8-7.3	5.8-7.3	5.8-7.3	26.8-28.4
					Maximum Concentration									Field Duplicate			
Petroleum Hydrocarbons (PHCs)																	
F1 (C6 to C10)	µg/L	25 - 2500	NR		25000	<25	<25	<25	26	37	<25	<25	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	25 - 2500	420		**3800**	<25	<25	<25	<25	26	<25	<25	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	100	150		**29000**	<100	<100	<100	**450**	**430**	<100	<100	**190**	**180**	<100	<100	<100
F3 (C16 to C34)	µg/L	200	500		**1900**	<200	<200	<200	<200	210	<200	<200	<200	<200	<200	<200	<200
F4 (C34 to C50)	µg/L	200	500	<	200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Reached Baseline at C50	unitless		NR		NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold - Exceeds 2011 Table 8 SCS
"-" - parameter not analyzed
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NA - Not Applicable
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW302-15	MW302-15	MW401-16	MW402-16	MW403-16	MW404-16	MW405-16	MW406-16	MW406-16	MW407-16	MW407-16	MW407-16	MW407-16	MW501-17
				MTE-MW302-15	MTE-MW302-15	MTE-MW401-16	MTE-MW402-16	MTE-MW403-16	MTE-MW404-16	MTE-MW405-16	MTE-MW406-16	MTE-MW606-16	MTE-MW407-16	MTE-MW407-16	MTE-MW407-16	MW407-16	MW501-17
				B6O4234	B942543	B696570	B696570	B696570	B696570	B696570	B696570	B696570	B696570	B6A5556	B6O4234	B941004	B754553
				DKQ178	IZS375	CIS343	CIS344	CIS345	CIS346	CIS347	CIS348	CIS352	CIS349	CKL836	DKQ182	IZK965	EBP087
				09-Nov-2016	15-Feb-2019	11-May-2016	11-May-2016	11-May-2016	11-May-2016	11-May-2016	11-May-2016	11-May-2016	11-May-2016	25-May-2016	09-Nov-2016	14-Feb-2019	17-Mar-2017
				2.7-5.8	2.7-5.8	4.3-7.3	1.5-4.6	3.4-6.4	3.0-6.1	4.6-7.6	4.6-7.6	4.6-7.6	3.0-6.1	3.0-6.1	3.0-6.1	3.0-6.1	16.8-18.3
												Field Duplicate					
Petroleum Hydrocarbons (PHCs)																	
F1 (C6 to C10)	µg/L	25 - 2500	NR	370	230	4100	<25	<25	<25	1500	590	680	52	64	65	35	<25
F1 (C6 to C10) minus BTEX	µg/L	25 - 2500	420	<25	67	**1700**	<25	<25	<25	<50	290	380	47	62	65	35	<25
F2 (C10 to C16)	µg/L	100	150	**980**	**1900**	**16000**	<100	<100	<100	**1600**	**3700**	**4600**	-	**270**	**180**	100	<100
F3 (C16 to C34)	µg/L	200	500	<200	**1900**	390	<200	<200	<200	<200	460	**1400**	-	210	<200	<200	<200
F4 (C34 to C50)	µg/L	200	500	<200	<200	<200	<200	<200	<200	<200	<200	<200	-	<200	<200	<200	<200
Reached Baseline at C50	unitless		NR	YES	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES	YES	YES

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold - Exceeds 2011 Table 8 SCS
"-" - parameter not analyzed
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NA - Not Applicable
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW502-17	MW503-17	MW503-17	MW503-17	MW504-17	MW506-17	MW506-17	MW506-17	MW506-17	MW507-17	MW508-17	MW508-17	MW601-18	MW601-18
				MW502-17	MTE-MW503-17	MTE-MW503D-17	MTE-MW503-17	MTE-MW504-17	MTE-MW506-17	MW506-17	MTE-MW506-17	MW506-17	MTE-MW507-17	MTE-MW508-17	MTE-MW508-17 Lab-Dup	MW601-18	MW601-18 Lab-Dup
				B754553	B739820	B739820	B942543	B739820	B740908	B768005	B995927	B9M5414	B739820	B739820	B739820	B942543	B942543
				EBP089	DYZ515	DYZ522	IZS376	DYZ516	DZE379	EEB688	JKV717	KNE110	DYZ519	DYZ517	DYZ517	IZS371	IZS371
				17-Mar-2017	24-Feb-2017	24-Feb-2017	15-Feb-2019	24-Feb-2017	27-Feb-2017	04-Apr-2017	11-Apr-2019	14-Aug-2019	24-Feb-2017	24-Feb-2017	24-Feb-2017	15-Feb-2019	15-Feb-2019
				16.8-18.3	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	13.7-15.2	13.7-15.2	13.7-15.2	13.7-15.2	3.0-6.1	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4
						Field Duplicate									Laboratory Duplicate		Laboratory Duplicate
Petroleum Hydrocarbons (PHCs)																	
F1 (C6 to C10)	µg/L	25 - 2500	NR	<25	24000	25000	6700	4600	220	<25	28	<25	<25	380	390	95	-
F1 (C6 to C10) minus BTEX	µg/L	25 - 2500	420	<25	**3800**	**3800**	**2100**	**960**	140	<25	28	<25	<25	140	150	59	-
F2 (C10 to C16)	µg/L	100	150	<100	**25000**	**29000**	**9800**	**4700**	**1100**	**200**	<100	<100	<100	**2200**	-	**920**	**900**
F3 (C16 to C34)	µg/L	200	500	<200	330	290	430	<200	490	360	<200	<200	<200	330	-	<200	<200
F4 (C34 to C50)	µg/L	200	500	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	-	<200	<200
Reached Baseline at C50	unitless		NR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	-	YES	YES

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold - Exceeds 2011 Table 8 SCS
"-" - parameter not analyzed
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Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW601-18	MW602-18	MW603-18	MW604-18	TRIP BLANK
				MW1601-18	MW602-18	MW603-18	MW604-18	TRIP BLANK
				B942543	B942543	B952348	B942543	B5O2811
				IZS372	IZS374	JBU853	IZS373	BKN495
				15-Feb-2019	15-Feb-2019	27-Feb-2019	15-Feb-2019	25-Nov-2015
				3.4-6.4	3.7-6.7	3.7-6.7	3.0-6.1	N/A
				Field Duplicate				Trip Blank
Petroleum Hydrocarbons (PHCs)								
F1 (C6 to C10)	µg/L	25 - 2500	NR	110	70	3700	2200	<25
F1 (C6 to C10) minus BTEX	µg/L	25 - 2500	420	69	<25	**750**	**580**	<25
F2 (C10 to C16)	µg/L	100	150	**860**	**420**	**5700**	**5400**	-
F3 (C16 to C34)	µg/L	200	500	<200	<200	220	270	-
F4 (C34 to C50)	µg/L	200	500	<200	<200	<200	<200	-
Reached Baseline at C50	unitless		NR	YES	YES	YES	YES	-

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold - Exceeds 2011 Table 8 SCS
"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
NA - Not Applicable
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)		Sample Location	ETC-OW06-1S	XCG-BH14	XCG-BH14	XCG-BH14	XCG-BH14	XCG-BH14	CRA-OW15-90	XCG-BH17	XCG-BH17	XCG-BH17	CRA-OW17-90	CRA-OW17-90
					Sample Name	ETC-MW06-1S	XCG_BH14	XCG-BH14	XCG-BH14	XCG-BH1014	XCG-BH1014 Lab-Dup	CRA-OW15-90	XCG-BH17	XCG-BH17	XCG-BH17	CRA-OW17-90	CRA-OW17-90
					Lab Job #	B5O2811	B605490	B743031	B941004	B941004	B941004	B5O2811	B5Q0859	B768005	B942543	B5O2811	B740908
					Laboratory ID	BKN496	BQH546	DZN513	IZK962	IZK963	IZK963	BKN497	BOA208	EEB687	IZS370	BKN498	DZE380
					Sampling Date	25-Nov-2015	11-Jan-2016	02-Mar-2017	14-Feb-2019	14-Feb-2019	14-Feb-2019	25-Nov-2015	17-Dec-2015	04-Apr-2017	15-Feb-2019	25-Nov-2015	27-Feb-2017
					Well Screen Interval (m bgs)	4.6-7.6	33.5-36.6	33.5-36.6	33.5-36.6	33.5-36.6	33.5-36.6	4.3-5.5	9.8-11.3	9.8-11.3	9.8-11.3	4.6-5.8	4.6-5.8
					Maximum Concentration					Field Duplicate	Laboratory Duplicate						
Volatile Organic Compounds (VOCs)																	
Acetone	µg/L	10 - 1000	2700	<	1000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	µg/L	0.2 - 20	5		**670**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.95	**16**	**11**	0.47	0.21	<0.20
Bromodichloromethane	µg/L	0.5 - 2	16	<	2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	µg/L	1 - 4	25	<	4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	µg/L	0.5	0.89	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	µg/L	0.2	0.79	<	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	µg/L	0.2	30	<	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	µg/L	0.2 - 2	2.4	<	2	<0.20	0.49	0.54	0.46	0.46	0.46	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	µg/L	0.5 - 2	25	<	2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	µg/L	0.5	3	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	µg/L	0.5	59	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	µg/L	0.5	1	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	µg/L	1 - 100	590	<	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	µg/L	0.2 - 0.8	5		**6.1**	<0.20	4	**5.4**	**5.6**	**5.8**	**5.8**	<0.20	1.6	1.1	**6.1**	<0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	1.6	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	µg/L	0.2	1.6		**4.4**	<0.20	**4.4**	**4.3**	**3.7**	**3.9**	**3.9**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.2 - 20	2.4		**11000**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.71	**5.3**	1.4	**8.2**	<0.20	<0.20
cis-1,2-Dichloroethylene	µg/L	0.5	1.6		**2.3**	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	1.3	<0.50	<0.50
trans-1,2-Dichloroethylene	µg/L	0.5	1.6		0.67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	µg/L	0.2	5	<	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,3-Dichloropropene	µg/L	0.3	NR	<	0.3	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	µg/L	0.4	NR	<	0.4	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,3-Dichloropropene	µg/L	0.5	0.5	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylene Dibromide	µg/L	0.2	0.2	<	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane (n)	µg/L	1 - 4	51		14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone	µg/L	10 - 250	1800	<	250	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	µg/L	5 - 500	640	<	500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl Tert-Butyl Ether	µg/L	0.5 - 10	15	<	10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	µg/L	2	50	<	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Styrene	µg/L	0.5 - 25	5.4	<	**25**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	µg/L	0.5	1.1	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	µg/L	0.5	1	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	µg/L	0.2	1.6	<	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	0.2 - 20	22		**4400**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.28	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.2	200		63	<0.20	63	38	27	27	28	<0.20	<0.20	<0.20	0.75	<0.20	<0.20
1,1,2-Trichloroethane	µg/L	0.5	4.7	<	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	µg/L	0.2	1.6		**34**	<0.20	**15**	**7.9**	**5.8**	**5.8**	**5.8**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	0.5 - 50	150	<	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
Vinyl Chloride	µg/L	0.2	0.5		**4.1**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**1.7**	**1.3**	**4.1**	<0.20	<0.20
o-Xylene	µg/L	0.2 - 20	NR		1500	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1.5	0.96	2.1	<0.20	<0.20
m+p-Xylene	µg/L	0.2 - 20	NR		4200	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1.3	0.49	0.5	<0.20	<0.20
Xylene Mixture	µg/L	0.2 - 20	300		**5700**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	2.8	1.4	2.6	<0.20	<0.20

Notes:

2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS

"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW301A-15	MW301A-15	MW301A-15	MW301A-15	MW301B-15	MW301B-15	MW301B-15	MW301B-15	MW302-15	MW302-15	MW302-15	MW302-15	MW401-16	MW402-16
				MTE-MW301A-15	MTE-MW103A-15	MW301A-15	MTW-MW301A-15	MTE-MW301B-15	MTE_MW301B-15	MTE_MW301C-15	MTE-MW301B-15	MTE-MW302-15	MTE-MW302-15	MTE-MW302-15	MTE-MW302-15	MTE-MW401-16	MTE-MW402-16
				B5Q0859	B5Q0859	B768005	B941004	B5Q0859	B605490	B605490	B941004	B5Q0859	B6A5556	B6Q4234	B942543	B696570	B696570
				BOA204	BOA207	EEB685	IZK967	BOA205	BQH544	BQH545	IZK966	BOA206	CKL837	DKQ178	IZS375	CIS343	CIS344
				17-Dec-2015	17-Dec-2015	04-Apr-2017	14-Feb-2019	17-Dec-2015	11-Jan-2016	11-Jan-2016	14-Feb-2019	17-Dec-2015	25-May-2016	09-Nov-2016	15-Feb-2019	11-May-2016	11-May-2016
				5.8-7.3	5.8-7.3	5.8-7.3	5.8-7.3	26.8-28.4	26.8-28.4	26.8-28.4	26.8-28.4	2.7-5.8	2.7-5.8	2.7-5.8	2.7-5.8	4.3-7.3	1.5-4.6
					Field Duplicate					Field Duplicate							
Volatile Organic Compounds (VOCs)																	
Acetone	µg/L	10 - 1000	2700	71	-	-	<10	<10	<10	<10	<10	-	<10	-	<10	<200	<10
Benzene	µg/L	0.2 - 20	5	3	3.3	<0.20	1.5	<0.20	<0.20	<0.20	<0.20	**290**	**43**	**140**	**54**	**77**	<0.20
Bromodichloromethane	µg/L	0.5 - 2	16	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Bromoform	µg/L	1 - 4	25	<1.0	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	<1.0
Bromomethane	µg/L	0.5	0.89	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Carbon Tetrachloride	µg/L	0.2	0.79	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20	<0.20
Chlorobenzene	µg/L	0.2	30	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20	<0.20
Chloroform	µg/L	0.2 - 2	2.4	<0.20	-	-	<0.20	0.49	0.44	0.43	0.62	-	<0.20	-	<0.20	<0.20	<0.20
Dibromochloromethane	µg/L	0.5 - 2	25	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	µg/L	0.5	3	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	µg/L	0.5	59	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	µg/L	0.5	1	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Dichlorodifluoromethane	µg/L	1 - 100	590	<1.0	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0	<20	<1.0
1,1-Dichloroethane	µg/L	0.2 - 0.8	5	0.34	-	-	1.1	0.82	0.69	0.67	1.1	-	<0.20	-	<0.20	<0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	1.6	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
1,1-Dichloroethylene	µg/L	0.2	1.6	<0.20	-	-	<0.20	0.75	0.58	0.57	1.2	-	<0.20	-	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.2 - 20	2.4	0.57	0.58	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**620**	**31**	**160**	**73**	**2100**	<0.20
cis-1,2-Dichloroethylene	µg/L	0.5	1.6	<0.50	-	-	1.4	0.66	0.58	0.58	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	µg/L	0.5	1.6	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
1,2-Dichloropropane	µg/L	0.2	5	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20	<0.20
cis-1,3-Dichloropropene	µg/L	0.3	NR	<0.30	-	-	<0.30	<0.30	<0.30	<0.30	<0.30	-	<0.30	-	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	µg/L	0.4	NR	<0.40	-	-	<0.40	<0.40	<0.40	<0.40	<0.40	-	<0.40	-	<0.40	<0.40	<0.40
1,3-Dichloropropene	µg/L	0.5	0.5	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Ethylene Dibromide	µg/L	0.2	0.2	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20	<0.20
Hexane (n)	µg/L	1 - 4	51	<1.0	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	1.1	-	1.3	4.1	<1.0
Methyl Ethyl Ketone	µg/L	10 - 250	1800	<10	-	-	<10	<10	<10	<10	<10	-	<10	-	<10	<200	<10
Methyl Isobutyl Ketone	µg/L	5 - 500	640	<5.0	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	-	<5.0	<100	<5.0
Methyl Tert-Butyl Ether	µg/L	0.5 - 10	15	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<10	<0.50
Methylene Chloride	µg/L	2	50	<2.0	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	-	<2.0	<2.0	<2.0
Styrene	µg/L	0.5 - 25	5.4	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<1.7	<0.50
1,1,1,2-Tetrachloroethane	µg/L	0.5	1.1	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	µg/L	0.5	1	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Tetrachloroethylene	µg/L	0.2	1.6	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20	<0.20
Toluene	µg/L	0.2 - 20	22	2.4	1.8	<0.20	<0.30	<0.20	<0.20	<0.20	<0.20	**170**	6.6	5.3	10	**320**	<0.20
1,1,1-Trichloroethane	µg/L	0.2	200	<0.20	-	-	0.37	15	13	12	24	-	<0.20	-	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	µg/L	0.5	4.7	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Trichloroethylene	µg/L	0.2	1.6	<0.20	-	-	0.35	**34**	**28**	**28**	**30**	-	<0.20	-	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	0.5 - 50	150	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<10	<0.50
Vinyl Chloride	µg/L	0.2	0.5	<0.20	-	-	**0.59**	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20	<0.20
o-Xylene	µg/L	0.2 - 20	NR	0.66	0.7	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	68	12	17	8.9	390	<0.20
m+p-Xylene	µg/L	0.2 - 20	NR	1.6	1.7	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	240	14	16	13	1000	<0.20
Xylene Mixture	µg/L	0.2 - 20	300	2.2	2.4	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	300	25	33	21	**1400**	<0.20

Notes:
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Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS

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Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW402-16	MW403-16	MW404-16	MW405-16	MW405-16	MW405-16	MW405-16	MW406-16	MW406-16	MW406-16	MW406-16	MW407-16	MW407-16	MW407-16
				MTE-MW402-16 Lab-Dup	MTE-MW403-16	MTE-MW404-16	MTE-MW405-16	MTE-MW605-16	MTE-MW405-16	MTE-MW405D-16	MTE-MW406-16	MTE-MW606-16	MTE-MW406-16	MW406-16	MTE-MW407-16	MTE-MW407-16	MTE-MW407-16
				B696570	B696570	B696570	B696570	B696570	B739820	B739820	B696570	B696570	B739820	B768005	B696570	B6A5556	B6O4234
				CIS344	CIS345	CIS346	CIS347	CIS351	DYZ512	DYZ520	CIS348	CIS352	DYZ513	EEB686	CIS349	CKL836	DKQ182
				11-May-2016	11-May-2016	11-May-2016	11-May-2016	11-May-2016	24-Feb-2017	24-Feb-2017	11-May-2016	11-May-2016	24-Feb-2017	04-Apr-2017	11-May-2016	25-May-2016	09-Nov-2016
				1.5-4.6	3.4-6.4	3.0-6.1	4.6-7.6	4.6-7.6	4.6-7.6	4.6-7.6	4.6-7.6	4.6-7.6	4.6-7.6	4.6-7.6	3.0-6.1	3.0-6.1	3.0-6.1
				Laboratory Duplicate				Field Duplicate		Field Duplicate		Field Duplicate					
Volatile Organic Compounds (VOCs)																	
Acetone	µg/L	10 - 1000	2700	<10	<10	<10	<100	<100	<40	<40	<10	-	<10	<10	<10	-	-
Benzene	µg/L	0.2 - 20	5	<0.20	<0.20	<0.20	**670**	**640**	**330**	**380**	2.5	2.5	**21**	4.2	4	1.7	<0.20
Bromodichloromethane	µg/L	0.5 - 2	16	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<0.50	-	<0.50	<0.50	<0.50	-	-
Bromoform	µg/L	1 - 4	25	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	-	<1.0	<1.0	<1.0	-	-
Bromomethane	µg/L	0.5	0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
Carbon Tetrachloride	µg/L	0.2	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	-
Chlorobenzene	µg/L	0.2	30	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	-
Chloroform	µg/L	0.2 - 2	2.4	<0.20	<0.20	<0.20	<2.0	<2.0	<0.80	<0.80	0.41	-	<0.20	<0.20	<0.20	-	-
Dibromochloromethane	µg/L	0.5 - 2	25	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<0.50	-	<0.50	<0.50	<0.50	-	-
1,2-Dichlorobenzene	µg/L	0.5	3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
1,3-Dichlorobenzene	µg/L	0.5	59	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
1,4-Dichlorobenzene	µg/L	0.5	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
Dichlorodifluoromethane	µg/L	1 - 100	590	<1.0	<1.0	<1.0	<10	<10	<4.0	<4.0	<1.0	-	<1.0	<1.0	<1.0	-	-
1,1-Dichloroethane	µg/L	0.2 - 0.8	5	<0.20	<0.20	<0.20	<0.20	<0.20	0.75	0.86	0.66	-	1.2	<0.20	<0.20	-	-
1,2-Dichloroethane	µg/L	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
1,1-Dichloroethylene	µg/L	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	-
Ethylbenzene	µg/L	0.2 - 20	2.4	<0.20	<0.20	<0.20	**780**	**760**	**260**	**300**	**190**	**170**	**76**	**160**	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	µg/L	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	1.6	<0.50	-	1.4	<0.50	<0.50	-	-
trans-1,2-Dichloroethylene	µg/L	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
1,2-Dichloropropane	µg/L	0.2	5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	-
cis-1,3-Dichloropropene	µg/L	0.3	NR	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	-	<0.30	<0.30	<0.30	-	-
trans-1,3-Dichloropropene	µg/L	0.4	NR	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	-	-
1,3-Dichloropropene	µg/L	0.5	0.5	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
Ethylene Dibromide	µg/L	0.2	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	-
Hexane (n)	µg/L	1 - 4	51	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	1.3	-	<1.0	<1.0	<1.0	-	-
Methyl Ethyl Ketone	µg/L	10 - 250	1800	<10	<10	<10	<100	<100	<40	<40	<10	-	<10	<10	<10	-	-
Methyl Isobutyl Ketone	µg/L	5 - 500	640	<5.0	<5.0	<5.0	<50	<50	<20	<20	<5.0	-	<5.0	<5.0	<5.0	-	-
Methyl Tert-Butyl Ether	µg/L	0.5 - 10	15	<0.50	<0.50	<0.50	<5.0	<5.0	<2.0	<2.0	<0.50	-	<0.50	<0.50	<0.50	-	-
Methylene Chloride	µg/L	2	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	-	-
Styrene	µg/L	0.5 - 25	5.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
1,1,2,2-Tetrachloroethane	µg/L	0.5	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
Tetrachloroethylene	µg/L	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	-
Toluene	µg/L	0.2 - 20	22	<0.20	<0.20	<0.20	9.9	11	6.9	7.9	10	12	2.9	8.6	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.2	200	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	3.1	-	<0.20	<0.20	<0.20	-	-
1,1,2-Trichloroethane	µg/L	0.5	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	-
Trichloroethylene	µg/L	0.2	1.6	<0.20	0.22	<0.20	0.21	0.28	<0.20	<0.20	**6.6**	-	0.51	<0.20	0.22	-	-
Trichlorofluoromethane	µg/L	0.5 - 50	150	<0.50	<0.50	<0.50	<5.0	<5.0	<2.0	<2.0	<0.50	-	<0.50	<0.50	<0.50	-	-
Vinyl Chloride	µg/L	0.2	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	0.35	0.37	<0.20	-	**0.52**	<0.20	<0.20	-	-
o-Xylene	µg/L	0.2 - 20	NR	<0.20	<0.20	<0.20	78	75	24	27	36	37	21	28	<0.20	<0.20	<0.20
m+p-Xylene	µg/L	0.2 - 20	NR	<0.20	<0.20	<0.20	7.8	7.4	11	13	81	81	11	62	0.25	<0.40	<0.40
Xylene Mixture	µg/L	0.2 - 20	300	<0.20	<0.20	<0.20	86	83	35	40	120	120	32	90	0.25	<0.40	<0.40

Notes:

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NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW407-16	MW407-16	MW501-17	MW502-17	MW502-17	MW503-17	MW503-17	MW503-17	MW504-17	MW506-17	MW506-17	MW506-17	MW506-17	MW506-17
				MTE-MW407-16	MW407-16	MW501-17	MW502-17	MTE-MW502-17	MTE-MW503-17	MTE-MW503D-17	MTE-MW503-17	MTE-MW504-17	MTE-MW506-17	MW506-17	MTE-MW506-17	MTE-MW506-17	MW506-17
				B739820	B941004	B754553	B754553	B941004	B739820	B739820	B942543	B739820	B740908	B768005	B952348	B995927	B9M5414
				DYZ514	IZK965	EBP087	EBP089	IZK968	DYZ515	DYZ522	IZS376	DYZ516	DZE379	EEB688	JBU851	JKV717	KNE110
				24-Feb-2017	14-Feb-2019	17-Mar-2017	17-Mar-2017	14-Feb-2019	24-Feb-2017	24-Feb-2017	15-Feb-2019	24-Feb-2017	27-Feb-2017	04-Apr-2017	27-Feb-2019	11-Apr-2019	14-Aug-2019
				3.0-6.1	3.0-6.1	16.8-18.3	16.8-18.3	16.8-18.3	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	13.7-15.2	13.7-15.2	13.7-15.2	13.7-15.2	13.7-15.2
										Field Duplicate							
Volatile Organic Compounds (VOCs)																	
Acetone	µg/L	10 - 1000	2700	<10	<10	<10	<10	<10	<1000	<1000	-	<250	<10	<10	<10	<10	-
Benzene	µg/L	0.2 - 20	5	<0.20	<0.20	<0.20	0.42	<0.20	**300**	**310**	**35**	**92**	1.4	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	µg/L	0.5 - 2	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Bromoform	µg/L	1 - 4	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	-
Bromomethane	µg/L	0.5	0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Carbon Tetrachloride	µg/L	0.2	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	-
Chlorobenzene	µg/L	0.2	30	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	-
Chloroform	µg/L	0.2 - 2	2.4	<0.20	<0.20	0.58	<0.20	0.89	<0.20	<0.20	-	0.81	0.52	0.62	0.6	0.56	-
Dibromochloromethane	µg/L	0.5 - 2	25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
1,2-Dichlorobenzene	µg/L	0.5	3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
1,3-Dichlorobenzene	µg/L	0.5	59	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
1,4-Dichlorobenzene	µg/L	0.5	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichlorodifluoromethane	µg/L	1 - 100	590	<1.0	<1.0	<1.0	<1.0	<1.0	<100	<100	-	<25	<1.0	<1.0	<1.0	<1.0	-
1,1-Dichloroethane	µg/L	0.2 - 0.8	5	<0.20	<0.20	1.9	3.9	0.62	0.2	<0.40	-	<0.20	3.2	0.97	0.84	0.67	-
1,2-Dichloroethane	µg/L	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
1,1-Dichloroethylene	µg/L	0.2	1.6	<0.20	<0.20	0.45	0.49	0.39	<0.20	<0.20	-	<0.20	0.39	0.37	0.62	0.64	-
Ethylbenzene	µg/L	0.2 - 20	2.4	<0.20	<0.20	0.39	0.37	<0.20	**9800**	**11000**	**2600**	**1800**	**50**	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	µg/L	0.5	1.6	<0.50	<0.50	0.7	**2.3**	<0.50	<0.50	<0.50	-	<0.50	**2.2**	0.62	0.68	<0.50	-
trans-1,2-Dichloroethylene	µg/L	0.5	1.6	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
1,2-Dichloropropane	µg/L	0.2	5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	-
cis-1,3-Dichloropropene	µg/L	0.3	NR	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	-	<0.30	<0.30	<0.30	<0.30	<0.30	-
trans-1,3-Dichloropropene	µg/L	0.4	NR	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	<0.40	<0.40	-
1,3-Dichloropropene	µg/L	0.5	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Ethylene Dibromide	µg/L	0.2	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	-
Hexane (n)	µg/L	1 - 4	51	<1.0	<1.0	<1.0	<1.0	<1.0	14	13	-	1.2	<1.0	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone	µg/L	10 - 250	1800	<10	<10	<10	<10	<10	<10	<10	-	<250	<10	<10	<10	<10	-
Methyl Isobutyl Ketone	µg/L	5 - 500	640	<5.0	<5.0	<5.0	<5.0	<5.0	<500	<500	-	<130	<5.0	<5.0	<5.0	<5.0	-
Methyl Tert-Butyl Ether	µg/L	0.5 - 10	15	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Methylene Chloride	µg/L	2	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	-
Styrene	µg/L	0.5 - 25	5.4	<0.50	<0.50	<0.50	<0.50	<0.50	**<20**	**<21**	-	<4.0	<0.50	<0.50	<0.50	<0.50	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
1,1,2,2-Tetrachloroethane	µg/L	0.5	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Tetrachloroethylene	µg/L	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	-
Toluene	µg/L	0.2 - 20	22	<0.20	<0.20	<0.20	0.3	<0.20	**4400**	**4400**	**450**	**800**	2.3	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.2	200	<0.20	<0.20	10	5	10	<0.20	<0.20	-	<0.20	6.6	15	13	13	-
1,1,2-Trichloroethane	µg/L	0.5	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Trichloroethylene	µg/L	0.2	1.6	<0.20	<0.20	**29**	**19**	**27**	<0.20	<0.20	-	<0.20	**19**	**29**	**26**	**23**	-
Trichlorofluoromethane	µg/L	0.5 - 50	150	<0.50	<0.50	<0.50	<0.50	<0.50	<50	<50	-	<13	<0.50	<0.50	<0.50	<0.50	-
Vinyl Chloride	µg/L	0.2	0.5	<0.20	<0.20	<0.20	**0.55**	<0.20	<0.20	<0.20	-	<0.20	**0.66**	<0.20	<0.20	<0.20	-
o-Xylene	µg/L	0.2 - 20	NR	<0.20	<0.20	<0.20	<0.20	<0.20	1400	1500	440	270	10	0.54	<0.20	<0.20	<0.20
m+p-Xylene	µg/L	0.2 - 20	NR	<0.20	<0.20	<0.20	<0.20	<0.20	3800	4200	1000	690	19	0.72	<0.20	<0.20	<0.40
Xylene Mixture	µg/L	0.2 - 20	300	<0.20	<0.20	<0.20	<0.20	<0.20	**5200**	**5700**	**1500**	**960**	29	1.3	<0.20	<0.20	<0.40

Notes:

2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS

"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	MW507-17	MW507-17	MW508-17	MW508-17	MW508-17	MW601-18	MW601-18	MW602-18	MW603-18	MW604-18	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
				MTE-MW507-17	MW507-17	MTE-MW508-17	MTE-MW508-17 Lab-Dup	MTE-MW508-17	MW601-18	MW1601-18	MW602-18	MW603-18	MW604-18	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
				B739820	B941004	B739820	B739820	B995927	B942543	B942543	B942543	B952348	B942543	B5O2811	B5Q0859	B605490	B696570
				DYZ519	IZK964	DYZ517	DYZ517	JKV718	IZS371	IZS372	IZS374	JBU853	IZS373	BKN495	BOA209	BQH547	CIS353
				24-Feb-2017	14-Feb-2019	24-Feb-2017	24-Feb-2017	11-Apr-2019	15-Feb-2019	15-Feb-2019	15-Feb-2019	27-Feb-2019	15-Feb-2019	25-Nov-2015	17-Dec-2015		11-May-2016
				3.0-6.1	3.0-6.1	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.4-6.4	3.7-6.7	3.7-6.7	3.0-6.1	N/A	N/A	N/A	N/A
							Laboratory Duplicate			Field Duplicate				Trip Blank	Trip Blank	Trip Blank	Trip Blank
Volatile Organic Compounds (VOCs)																	
Acetone	µg/L	10 - 1000	2700	<10	<10	<10	<10	<10	<10	<10	<10	<10	<200	<10	<10	<10	<10
Benzene	µg/L	0.2 - 20	5	<0.20	<0.20	**110**	**110**	**30**	<0.20	<0.20	**24**	**18**	**37**	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	µg/L	0.5 - 2	16	<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
Bromoform	µg/L	1 - 4	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	µg/L	0.5	0.89	<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
Carbon Tetrachloride	µg/L	0.2	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	µg/L	0.2	30	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	µg/L	0.2 - 2	2.4	<0.20	0.43	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	µg/L	0.5 - 2	25	<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
1,2-Dichlorobenzene	µg/L	0.5	3	<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
1,3-Dichlorobenzene	µg/L	0.5	59	<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
1,4-Dichlorobenzene	µg/L	0.5	1	<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
Dichlorodifluoromethane	µg/L	1 - 100	590	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	µg/L	0.2 - 0.8	5	<0.20	0.38	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	1.6	<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
1,1-Dichloroethylene	µg/L	0.2	1.6	<0.20	0.28	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.2 - 20	2.4	<0.20	<0.20	**59**	**60**	**20**	**21**	**25**	**9.9**	**1500**	**1000**	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	µg/L	0.5	1.6	<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
trans-1,2-Dichloroethylene	µg/L	0.5	1.6	<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
1,2-Dichloropropane	µg/L	0.2	5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,3-Dichloropropene	µg/L	0.3	NR	<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
trans-1,3-Dichloropropene	µg/L	0.4	NR	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,3-Dichloropropene	µg/L	0.5	0.5	<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
Ethylene Dibromide	µg/L	0.2	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane (n)	µg/L	1 - 4	51	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	1.9	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone	µg/L	10 - 250	1800	<10	<10	<10	<10	<10	<10	<10	<10	<10	<200	<10	<10	<10	<10
Methyl Isobutyl Ketone	µg/L	5 - 500	640	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<100	<5.0	<5.0	<5.0	<5.0
Methyl Tert-Butyl Ether	µg/L	0.5 - 10	15	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	µg/L	2	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Styrene	µg/L	0.5 - 25	5.4	<0.50	<0.50	**5.8**	**5.9**	1.6	<0.50	<0.50	<0.50	**<25**	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	µg/L	0.5	1.1	<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
1,1,2,2-Tetrachloroethane	µg/L	0.5	1	<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
Tetrachloroethylene	µg/L	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	0.2 - 20	22	0.38	<0.20	**25**	**25**	8	0.53	0.59	2.3	**690**	**75**	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.2	200	1	7.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	µg/L	0.5	4.7	<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
Trichloroethylene	µg/L	0.2	1.6	**2.1**	**9.7**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	0.5 - 50	150	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	0.2	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	µg/L	0.2 - 20	NR	<0.20	<0.20	14	14	5.1	5.8	6.6	3.9	220	140	<0.20	<0.20	<0.20	<0.20
m+p-Xylene	µg/L	0.2 - 20	NR	0.24	<0.20	26	26	7.4	8.6	10	5.6	550	340	<0.20	<0.20	<0.20	<0.20
Xylene Mixture	µg/L	0.2 - 20	300	0.24	<0.20	40	41	13	14	17	9.5	**760**	**480**	<0.20	<0.20	<0.20	<0.20

Notes:

2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold	- Exceeds 2011 Table 8 SCS
Bold	- Detection limit exceeds 2011 Table 8 SCS

"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

Parameters	Unit	RDL	2011 Table 8 SCS (R/P/I or I/C/C, Coarse)	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
				TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
				B6A5556	B739820	B941004	B942543	B952348	B995927
				CKL838	DYZ518	IZK969	IZS377	JBU855	JKV719
					24-Feb-2017	14-Feb-2019	15-Feb-2019		11-Apr-2019
				N/A	N/A	N/A	N/A	N/A	N/A
				Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Volatile Organic Compounds (VOCs)									
Acetone	µg/L	10 - 1000	2700	<10	<10	<10	<10	<10	<10
Benzene	µg/L	0.2 - 20	5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	µg/L	0.5 - 2	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	µg/L	1 - 4	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	µg/L	0.5	0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	µg/L	0.2	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	µg/L	0.2	30	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	µg/L	0.2 - 2	2.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	µg/L	0.5 - 2	25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	µg/L	0.5	3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	µg/L	0.5	59	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	µg/L	0.5	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	µg/L	1 - 100	590	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	µg/L	0.2 - 0.8	5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	µg/L	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.2 - 20	2.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	µg/L	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	µg/L	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	µg/L	0.2	5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,3-Dichloropropene	µg/L	0.3	NR	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	µg/L	0.4	NR	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,3-Dichloropropene	µg/L	0.5	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylene Dibromide	µg/L	0.2	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane (n)	µg/L	1 - 4	51	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone	µg/L	10 - 250	1800	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	µg/L	5 - 500	640	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl Tert-Butyl Ether	µg/L	0.5 - 10	15	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	µg/L	2	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Styrene	µg/L	0.5 - 25	5.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	µg/L	0.5	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	µg/L	0.5	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	µg/L	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	0.2 - 20	22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.2	200	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	µg/L	0.5	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	µg/L	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	0.5 - 50	150	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	0.2	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	µg/L	0.2 - 20	NR	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
m+p-Xylene	µg/L	0.2 - 20	NR	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylene Mixture	µg/L	0.2 - 20	300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Notes:
2011 Site Condition Standards (SCS) - As identified in 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act' (as amended April 15, 2011)

Bold	- Exceeds 2011 Table 8 SCS
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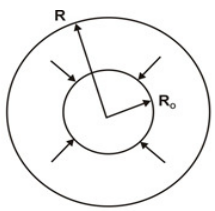
"-" - parameter not analyzed
RDL - Reported detection limit
NR - Not Relevant
"<" - Less than the Reporting Detection Limit

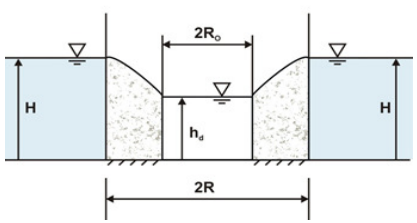
Appendix E

Dewatering Calculations

APPENDIX E
35571-402 130 Water Street, Cambridge
Dewatering Calculations
Calculated by: ATD
Checked by: ALB

	Symbol	*Units*	*Value*
Hydraulic Conductivity	K	m/sec	1.43E-05
Aquifer Head	H	m	5.83
Excavation Head	h_d	m	2
Area of Excavation	A	m^2	42888
Storage Coefficient	S	unitless	0.25
Initial Dewatering Duration	t_1	days	7.0
Total Construction Duration	t_2	days	182.5
Factor of Safety	FS	unitless	1.5





Neville, 2013

At early time (i.e. While drying the work area):

	T	S	R_o	t	c	R [1]	Q [2]
Construction Duration (days)	Transmissivity (m^2/sec)	Storage Coefficient (unitless)	Equivelent Radius of Excavation (m)	Time Pumped (min)	Emperical Constant (unitless)	Radius of Influence from Well Centre (m)	Pumping Rate (m^3/day)
7	8.31E-05	0.25	117	10080	7.41E-03	138.1	694

At later time (i.e. While keeping the work area dry):

	T	S	R_o	t	c	R [1]	Q [2]
Construction Duration (days)	Transmissivity (m^2/sec)	Storage Coefficient (unitless)	Equivelent Radius of Excavation (m)	Time Pumped (min)	Emperical Constant (unitless)	Radius of Influence from Well Centre (m)	Pumping Rate (m^3/day)
182.5	8.31E-05	0.25	117	262800	7.41E-03	225.5	177

$$R = R_o + \sqrt{\frac{Tt}{cS}}$$

$$Q = \frac{\pi K(H^2 - h_d^2)}{\ln(\frac{R}{R_o})}$$

[1] Equation 6.11 (Powers, 2011)

[2] Equation 6.3 (Powers, 2007)

c = 135^{-1} (Table 4-3, Powers 2007)

Assumptions:

Unconfined aquifer extends horizontally in all directions without encountering recharge or other boundaries

Uniform saturated thickness

Isotropic (horizontal and vertical hydraulic conductivity are equal and do not vary)

Well is frictionless, small diameter, and fully penetrates aquifer

To account for the lack of ideal conditions, a factor of safety has been applied in the summary below

Time to dewater the excavation at a rate of			**1,041,278**	**L/d is**	**7.00**	**days**
Long term rate after	**7.00**	**days is**	**264,954**	**L/d for**	**182.5**	**days**
Approval Required:	**Category 3 PTTW**					

References:

Neville, Christopher J. Analytical solutions for the preliminatry estimation of long-term rates of groundwater inflow into excavations. 2007.

Powers, J. Patrick; Corwin, Arthur; Schmall, Paul; Kaeck, Walter. Construction Dewatering and Groundwater Control: New Methods and Applications, Third Edition. 2007.