Westwood Village (Phase 2) Community
Brian Domm Subdivision
Hallman Subdivision

Hydrogeological Assessment

Project Location:

North of Blenheim Road, West of Newman Drive
Township of North Dumfries

Prepared for:

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1.0 Introduction

MTE Consultants Inc. (MTE) was retained by Hallman Construction Limited (Hallman) and Brian Domm (Domm) to complete a Hydrogeological Assessment in support of an Official Plan Amendment, Plans of Subdivision, and Zoning By-law Amendment applications. Although separate subdivisions are proposed for each property, the lands have been comprehensively evaluated together to ensure a coordinated approach to the design and development of the Hallman and Domm lands.

The Hallman and Domm lands are located in the Township of North Dumfries and are immediately adjacent to a comprehensively planned community located in the City of Cambridge and referred to as "Westwood Village – Phase 1". The lands owned by Hallman and Domm are generally in the northwestern portion of the Westwood Village Community. Refer to **Figure 1** in **Appendix A** for more details. These lands represent the logical extension and second phase of the Westwood Village Community. For the purpose of this report, the two Draft Plans will be reviewed as one cohesive development herein referred to as the 'Subject Lands'.

This hydrogeological assessment is required to support the proposed development under the Township of North Dumfries' Official Plan Policy 2.1.4.

1.1 Purpose and Objectives

The purpose of this Hydrogeological Assessment is to develop a Hydrogeological Conceptual Site Model (HCSM) to aid in the evaluation of potential impacts on the existing groundwater system, existing groundwater users (private and municipal) and the natural ecosystem functions as a result of the proposed development of the Subject Lands.

The objectives for this Hydrogeological Assessment are the following:

1. Describe the hydrogeology and geology.
2. Evaluate potential impacts of the proposed development on the water table, adjacent natural areas, private well water users, and municipal wells with respect to Wellhead Protection Areas (WHPAs).
3. Recommend mitigation measures including an infiltration strategy as development proceeds.
4. Recommend a pre-development, during construction and post-development monitoring program for the Subject Lands.

In order to meet the objectives described above, MTE completed a review of publically available geological and hydrogeological information including reviewing Ontario Base Mapping, and Ministry of Environment, Conservation and Parks (MECP) water well records (WWRs). Historical field data was used from other consultant reports (LVM, Peto MacCallum, WSP [see Section 1.2]) in addition to more recent field investigations conducted by MTE, which is discussed further in Section 3.0.

1.2 Background Information Review

MTE reviewed seven consultant reports as part of this Hydrogeological Assessment. These reports include:

- LVM. November 15, 2013. *Cambridge West Community Master Environmental Servicing Plan, Roseville/Blenheim Road, Cambridge, Ontario*. LVM File No. 160-P-036589-0300-HD-R-0001-00.

- MHBC. November 2013. *Cambridge West Master Environmental Servicing Plan.*
- MTE Consultants Inc. March 31, 2016. *Cambridge West Community, Domm Farms and Hallman Subdivisions Supplemental Hydrogeological Investigation*. MTE File No. 2534-100.
- Peto MacCallum Ltd. August 22, 2019. *Geotechnical Investigation, Cambridge West Land Development, Hallman and Domm Farms, Cambridge, Ontario*.
- MTE Consultants Inc. April 15, 2020. *Cambridge West Community, Domm Subdivision (30T-16103) and Hallman Subdivision (30T-16104). Final Stormwater Management Report*. MTE File No. 44719-114, 44720-114.
- MTE Consultants Inc. April 2021. *Cambridge West Community, Westwood Village Phase 2, Domm Subdivision and Hallman Subdivision Draft Functional Servicing Report.*
- MTE Consultants Inc. April 2021. *Cambridge West Community, Westwood Village Phase 2, Domm Subdivision and Hallman Subdivision Draft Preliminary Stormwater Management Report.*

2.0 Site Description

The Subject Lands are located adjacent to the easterly boundary of North Dumfries Township and immediately west of the City of Cambridge as illustrated on **Figure 2.** The Subject Lands are generally bounded by the Westwood Village (Phase 1) Community to the east including the Newman Lands, the Cachet Lands (30T-16103), and the Hallman Lands (30T-16104). Agricultural lands and Barrie's Lake are located to the south, and the wetland areas known as Wetlands 4 and 5 to the west and Wetlands 1 and 6 to the north. This wetland naming is consistent with the "Collector Road Network Class Environmental Assessment Environmental Study Report" competed by MHBC in 2018. **Figure 2** identifies the wetlands.

The Subject Lands have a total area of approximately 25.43ha. For the purposes of this Hydrogeological Assessment, the Study Area is defined as a 500m radius surrounding the Subject Lands as depicted on **Figure 2**. Historically, the Subject Lands were used for agricultural purposes; however, during the summer of 2020, area grading activities took place across the Subject Lands. It is understood that no private wells, septic systems or buildings exist on the Subject Lands.

Surface water runoff will generally flow radially from the central portion of the Subject Lands where topography is high to Wetland 2 to the east, Wetlands 4 and 5 to the west and Wetlands 1 and 6 to the north.

2.1 Development Considerations

A copy of the proposed Consolidated Draft Plan (dated February 4, 2021) for the Hallman and Domm lands is attached in **Appendix B**. The combined proposed development will include a mix of residential blocks, park blocks, a wildlife corridor, emergency access, 0.3m reserves and roadways.

It is noted that the RMOW began its 5-year review of the Regional Official Plan (ROP) in 2020. At the time this current Hydrogeological Assessment was written (April 2021), the ROP had not been formally updated. Based on the 2015 ROP, Map 3a – Urban Area, the Subject Lands fall within Urban Designated Greenfield Areas (RMOW, 2015). According to the RMOW's 2015 ROP Map 7 – The Countryside, the Countryside Line is located west of the Subject Lands.

According to Map 2 of the Township of North Dumfries Official Plan, the Subject Lands are designated as Greenfield Area and identified as Special Policy Area 2.5. (b) (iv) (Township of North Dumfries, 2018).

A Master Environmental Servicing Plan (MESP) was undertaken for the Cambridge West Community by the City of Cambridge and the area landowners. The MESP was completed in November 2013 and approved by City Council on March 17, 2014. The purpose of the MESP was to guide the development of the remaining designated greenfield lands on the west side of the City. The MESP integrated environmental, servicing, transportation, and land use planning components to provide the basis for the preparation of a Community Plan for the Cambridge West Area, and for the preparation and processing of future development applications.

The MESP outlined a preliminary municipal servicing strategy for the area, which included: sanitary, storm, and watermain servicing, along with a stormwater management (SWM) strategy. The recommended solution consisted of multiple types of SWM infrastructure, including lot-level and conveyance infiltration facilities, along with several extended detention end-of-pipe SWM facilities.

The preliminary design strategies of the sanitary, storm, and watermain servicing have been developed to be in accordance with the recommended solutions within the MESP and are described within MTE's Functional Servicing Report (FSR), April 2021.

It is understood that the stormwater for the Subject Lands will be conveyed to a constructed SWM facility located east of the Subject Lands on the Cachet Lands (30T-16103). This SWM facility was constructed in the summer and fall of 2020 and will be referred to here on as SWMF2. The location of SWMF2 is depicted on **Figure 3**. More details related to SWMF2 and the proposed SWM strategy for the Subject Lands can be found in the Preliminary Stormwater Management Report (MTE, April 2021).

The Subject Lands were considered in the area grading design for Hallman Subdivision (30T-16104) and Cachet Subdivision (30T-16103) design, wherein the Subject Lands were designed and were included in the area grading contract that was executed in the Summer and Fall of 2020. Upon completion of the area grading activities, the Subject Lands will be covered in topsoil and returned to an interim agricultural use pending development.

2.2 Topography and Drainage

In 2005 an initial topographical survey was completed. A detailed topographical survey was completed in 2010 for the Subject Lands as well as the Cambridge West Lands. Supplementary surveys were completed in 2013, 2014 and 2017 to 2020. The topographical contours are displayed on **Figure 3**.

The Subject Lands are moderately sloped throughout the majority of the Subject Lands with a topographic high located near BH13-10. Existing ground surface elevations range between 307.0m amsl near the Wetland 6 boundary to 316.0m amsl near the boundary between the Domm Township Lands boundary and Hallman Township Lands boundary.

2.3 Physiography

The Subject Lands are located within the Guelph Drumlin Fields physiographic region (Chapman and Putnam, 1984; Chapman and Putnam, 2007). The Guelph Drumlin Fields occupy an approximate area of 830km^2, and these drumlins are generally broad and oval in shape. The drumlins mainly consist of loamy and calcareous till derived from the dolostone of the Amabel Formation. Within this physiographic region, the materials encountered are stony tills which are sand rich based on grain sizes (Chapman and Putman, 1984; Chapman and Putnam, 2007).

The Subject Lands are located within a spillway physiographic landform associated with the Grand River. Chapman and Putnam (1984) describe a typical spillway as a broad trough floored wholly or in part by gravel beds at one or more levels often with a cedar swamp at the lowest part of the valley.

2.4 Geology

2.4.1 Quaternary Geology

An extensive amount of work on the Quaternary geology in the RMOW has been completed since the 1950's. The current regional Quaternary geologic review is based primarily on the following information:

- Quaternary Geology of the Stratford-Conestogo Area (Karrow, 1993);
- Quaternary Geology of the Hamilton-Cambridge Area (Karrow, 1987); and
- Ontario Geological Survey (OGS) Three-Dimensional (3-D) Geological Conceptual Model (Bajc and Shirota, 2007).

The RMOW has a relatively thick glacial overburden deposits (that overlay bedrock) attaining thicknesses in excess of 100m. In general, silt to clay tills were deposited as extensive sheets during different periods of glacial ice advance. Granular materials such as outwash and kame sands and gravels and glaciolacustrine fine-grained deposits (such as silt and clay) were deposited during the ice retreat (Karrow, 1993). According to Bajc and Shirota, overburden at the Subject Lands are anticipated to be between 31m and 42m thick (Bajc, and Shirota, 2007).

Quaternary geology is displayed on **Figure 4**. The majority of the Subject Lands are overlain by surficial ice-contact sand and gravels deposits with minor silt, clay and till (Map Unit 6). The eastern portion of the Subject Lands is mapped as organic deposits including peat, muck and marl which is interpreted to be associated with Wetland 4 and Wetland 5 (Map Unit 20). A small portion located at the north end of the property is mapped as gravelly glaciofluvial river deposits (Map Unit 7b).

There is one additional mapped Quaternary deposit within the Study Area, which is identified as stone-poor sandy silt to silty sand textured till associated with the Wentworth Till (Map Unit 5b).

Important hydrostratigraphic units (from a groundwater recharge and flow perspective) that underlie the Subject Lands are as follows:

- Shallow regional overburden water table unit represented by the Upper Waterloo Moraine Aquifer (Regional Aquifer 1);
- Lower, older till units represented by the Lower Maryhill Till and Catfish Creek Till; and
- Deep regional bedrock aquifer units (Regional Aquifer 4).

The shallow overburden water table is comprised primarily of the Upper Waterloo Moraine aquifer materials and equivalents and forms Regional Aquifer 1. This shallow aquifer unit consists primarily of fine to medium sand with localized accumulations of gravel and isolated lenses of muddy glaciolacustrine sediments and diamicton (Bajc and Shirota, 2007). The Upper Waterloo Moraine Aquifer is anticipated to be encountered at depth elevations between 311 and 323m amsl on the Subject Lands (Bajc and Shirota, 2007).

The Maryhill Till is described as a fine textured clay rich till which is closely associated with glaciolacustrine sediments and is subdivided into three units (Upper, Middle, and Lower Maryhill Till). The Maryhill Till is considered to be a regionally significant aquitard and will "act as a significant barrier to vertical water movement where present in a thickness greater than 5 meters" (Terraqua Ltd., 1995). The Maryhill Till is compositionally distinct and can be observed to a large degree across the RMOW (Farvolden et. al., 1987). Based on the Bajc and Shirota geological conceptual model (2007) the Upper and Middle Maryhill Till deposits are not anticipated to be encountered beneath the Subject Lands. The Lower Maryhill Till is anticipated to be encountered between approximately 286 and 312m amsl (Bajc and Shirota, 2007).

Underlying the younger tills is the Catfish Creek Till, a stoney, silty to sandy diamicton, which is often over consolidated and forms an important marker horizon within the RMOW (Karrow, 1987). As a result of these characteristics, it is often referred to as "hardpan" by water well drillers. The Catfish Creek Till acts as an important relatively continuous regional aquitard that is compositionally distinct and is widely distributed across the RMOW (Terraqua Ltd., 1995); CH2M Gore & Storrie et. al.,1997); Bajc and Shirota, 2007; AquaResource Inc., 2009). The Upper/Main Catfish Creek Till deposits beneath the Subject Lands are anticipated between 276 and 290m amsl (Bajc and Shirota, 2007).

Previously drilled boreholes (LVM, 2010; LVM, 2014; Peto, 2019) and existing site-specific borehole logs were used to interpret the local hydrostratigraphic units and depict a geological cross-section through the Subject Lands on **Figure 5** and **Figure 6**.

*Geological Cross-Section A-A' (**Figure 5**)*

- Extends west to east approximately 1,400m from BH108-10 to BH05-10, which is located west of Wetland 7 as identified on **Figure 2**.
- Pre-grading topography is highest around BH-04-14 with an estimated ground surface elevation of 317m amsl and falls to the east with estimated elevations around 299m amsl.
- Finer grained till material interpreted to be the Lower Maryhill Till is discontinuous beneath the Subject Lands.
- The water table is interpreted to exist within the Upper Waterloo Moraine deposits and is interpreted to exist between elevations ranging between 302.97m amsl at BH05-10 and 309.07m amsl at BH108-10.
- Based on these measured water elevations and the topography, the shallow groundwater system appears to mimic topography.

*Geological Cross-Section B-B' (**Figure 6**)*

- Extends north to south approximately 1,450m from Wetland 6 to BH18A-10 located south of Roseville Road as identified on **Figure 2**.
- Topography is highest around the intersection of A-A' and B-B' (south of BH105-10 and north of BH13-10) with an estimated ground surface elevation of 316m amsl and falls to the south with estimated elevations around 311m amsl and to the north with an estimated elevation around 309m amsl.

- Finer grained till material interpreted to be the Lower Maryhill Till is discontinuous beneath the Subject Lands.
- The water table is interpreted to exist within the Upper Waterloo Moraine deposits and is interpreted to exist between elevations ranging between 308.65m amsl at BH18A-10 and 308.98m amsl at BH15-10.
- The groundwater elevation of 309.16m amsl at BH14-10 was not considered as the offset from the cross-section line was over 100m.

2.4.2 Bedrock Geology

The RMOW is located on the eastern rim of the Michigan Basin. The Paleozoic bedrock dips gently to the southwest towards the centre of the basin. The RMOW is underlain east to west, and oldest to youngest by the Silurian aged Guelph (dolostone), Salina (dolostone, shale, salt and gypsum) and Bass Islands (dolostone) Formations (Armstrong and Dodge, 2007). Directly beneath the Subject Lands lies the Middle Silurian aged dolostone of the Guelph and Gasport (formerly known as the Amabel) Formations, interlayered by the Lockport Formation.

The mapping describes the Guelph Formation (an aquifer) as being comprised of cream and brown, fine to medium crystalline dolostone that contains numerous bioherm reefs (Armstrong and Carter, 2010). As described in LVM's 2013 report, the Lockport Formation (an aquitard) is situated between the Guelph and Gasport Formations, and is comprised of two Members; the Eramosa and Goat Island Members, which is also an aquitard (LVM, 2013).

The depth to bedrock is estimated to be 19.5m (WWR No. 6507937 located in Domm Park) to 45.1m (WWR No. 6507650 near Barrie's Lake) beneath the Subject Lands. Bedrock elevations are interpreted to be between 272m amsl and 287m amsl, which is in consistent with what was described in the abovementioned WWRs.

3.0 Field Program

3.1 Borehole Drilling and Monitoring Well Installation

MTE used existing borehole and monitoring well information completed for the Subject Lands and Cambridge West Lands (LVM, 2010; LVM, 2014; Peto, 2019) to aid with completing the Hydrogeological Assessment.

Four different drilling programs were executed on the Subject Lands and Cambridge West Lands (Table 3.1.1 below). Table 3.1.1 identifies the consultant who drilled the boreholes and/or installed the monitoring wells, the report number, and the associated borehole/ monitoring well/ mini piezometer number.

Table 3.1.1 – Consultant Boreholes and Monitoring Wells

Consultant	Year Drilled	Report Reference	Report Title and Year	Borehole/ Monitoring Well/ Mini Piezometer
LVM	2010	160-P-036589-0300-HD-R-0001-00	Cambridge West Community Master Environmental Servicing Plan, Roseville/Blenheim Road, Cambridge ON November 2013	BH-01-10 to BH-27-10 BH-101-10 to BH-115A-10 MP1 to MP35

Consultant	Year Drilled	Report Reference	Report Title and Year	Borehole/ Monitoring Well/ Mini Piezometer
LVM	2014	160-P-0003455-0-09-100-GE-R-0001-00	Geotechnical Investigation, Cambridge West Development, Blenheim Road, Cambridge, ON February 2016	BH-01-14 to BH-31-14(*)
Peto MacCallum	2019	18KF062	Geotechnical Investigation, Cambridge West Land Development, Hallman and Domm Farms, Cambridge, Ontario	BH19-1 to BH19-14(*)
MTE	2021	02534-800	Preliminary Hydrogeological Investigation, Cambridge West Community, Westwood Village Phase 2, Brian Domm Subdivision, Hallman Subdivision	MW101-21, MW102-21

Notes: (*) The 2014 LVM investigation and 2019 Peto MacCallum Investigation each have a monitoring well denoted "BH-19-14/ BH19-14". The boreholes drilled in their respective years have been colour coded on appropriate Figures to help distinguish specific boreholes.

Groundwater monitoring wells at the Subject Lands were identified by monument style covers and were observed to consist of 50mm diameter Schedule 40 PVC riser pipes. Available borehole logs indicate that monitoring wells were construction with a 50mm diameter Schedule 40 PVC well screen which was surrounded by a filter sand pack and sealed to the surface with bentonite grout. Several monitoring wells installed by LVM in 2010 were nested with a 19mm diameter rise pipe and screen. The purpose of the monitoring wells was to allow for the collection of stabilized (i.e. static) groundwater levels, conduct in-situ hydraulic conductivity testing, and obtain representative groundwater quality samples.

In total, 92 boreholes were drilled across the Subject Lands and Cambridge West Lands and Newman Lands to depth elevations between 290.66m amsl (BH18-10) and 311.95 (BH01-14). Thirty-five mini piezometers were installed by LVM in 2010 around the on-site wetland features to assess groundwater/surface water interactions.

Borehole, monitoring well and mini piezometer locations are illustrated on **Figure 3**. Borehole logs are provided in **Appendix C**.

3.2 Surface Water Monitoring Stations

A comprehensive monitoring program was developed as part of the MESP study (MHBC, 2013), including hydrological, groundwater and biological components. The hydrological monitoring program included climate monitoring (weather station), stream temperature monitoring, water quality (wetland and stream) sampling, wetland water level monitoring, baseflow rate sampling, continuous streamflow rate monitoring, and ambient air temperature monitoring.

A surface water monitoring station was installed in Wetland 2 (Sta. 76P), Wetland 3 (Sta. 77P), and Barrie's Lake (Sta. 125P) in 2011. In 2019, a surface water monitoring station was installed within Wetland 4 (Sta. 78P) and Wetland 5 (Sta. 79P). In March 2021, a surface water monitoring station was installed in Vernal Pool 1 (VP1) (Sta. 265P) and Vernal Pool 7 (VP7) (Sta. 264P). Please refer to WSP's "Scoped Environmental Impact Study (EIS) Report" (April 2021) for the other Vernal Pool locations.

A datalogger has been installed within each of these stations to continuously record surface water levels within the respective wetland. An on-site barologger is used to correct for atmospheric pressure. Dataloggers are generally removed from the wetlands during the late fall/early winter until early to mid-spring to avoid damage to the datalogger.

The location of these surface water monitoring stations is located on **Figure 3**.

3.3 Water Well Record Search

Hydrogeological data related to private water supplies within a 500m radius of the Subject Lands were obtained from water well records on-file with the MECP. Based on the data in the MECP Water Well Information System (WWIS), a total of 23 water well records (WWRs) were obtained within 500m of the Subject Lands. Of the 23 well records:

- Two unknown wells;
- Five domestic wells; and
- 16 monitoring and/or observation wells.

Well records classified as monitoring or observation wells have been excluded from further discussion as they are not considered to be water users.

WWR Nos. 6507807 and 6507669 were identified as domestic water users within a 500m radius of the Subject Lands; however, these two records are actually mapped incorrectly within the MECP WWIS based on the address or map location on the actual WWR and were not considered any further in the Hydrogeological Assessment.

Two wells were classified as having an unknown use. The actual WWR for WWR No. 6507937 identifies this record as belonging to "TW-5B-Cambridge" which is assumed to be a test well. Current municipal mapping does not identify this as a municipal well; therefore, it is assumed to be a monitoring well. The remaining well record that was classified as unknown use (WWR No. 7267227) is likely the WWR associated with the monitoring well installation at the Cambridge West Lands completed by LVM in 2014. This assumption is based on the mapped location of the record and the date of completion of the record (May 27, 2014). These wells and their associated records will not be discussed further as they are not considered to be water users.

Of the remaining records, three potential water users (WWR No. 6500655, 6507266 and 6507650) exist within 500m of the Subject Lands based on their coordinates within the MECP WWIS. One of the three wells are completed within the overburden material to an approximate depth of 39.9 metres below ground surface (m bgs) (WWR No. 6500655) with approximate depth elevation of 270.1m amsl. The remaining two well records are completed within bedrock at approximate depths between 39.6m bgs (WWR No. 6507266) and 48.2m bgs (WWR No. 6507650) with approximate depth elevations ranging between 266.8m amsl and 275.4m amsl.

It is noted that WWR 6500655 is mapped in the middle of an agricultural field. A review of aerial imagery indicates no well is located at the MECP WWIS mapped location. It is likely; however, that a private well does exist in the vicinity of the area and this well may be associated with 1058 Roseville Road as no water well record is mapped for this address.

Well records identified as domestic water well users are provided in **Appendix D** and are depicted on **Figure 7**. It is noted that there are no private wells within a 100m radius of the Subject Lands.

3.4 Groundwater and Surface Water Levels

3.4.1 Groundwater Levels

During the 2010 drilling program, 44 monitoring wells were installed across the Subject Lands and Cambridge West Lands along with 35 mini piezometer installations in and around the wetland features. In 2014, seven additional monitoring wells were installed by LVM on the Cambridge West Lands. In 2019, another seven monitoring wells were installed across the Cambridge West Lands and Lands south of the Cambridge West Lands.

Manually measured groundwater levels have been collected since 2010. MTE has completed the monitoring program for the Subject Lands and Cambridge West Lands since 2014. A total of 15 monitoring wells were instrumented with electronic pressure transducers (dataloggers) and was programmed to collect a water level every hour for the purpose of evaluating seasonal water level trends in order to establish groundwater level highs. The datalogger data is corrected for atmospheric pressure using a barologger. Given the diameter of the mini-piezometers (19mm), a datalogger could not be installed within them to record shallow groundwater levels.

Prior to the area grading, 19 monitoring wells across the Subject Lands and Cambridge West Lands were decommissioned in June 2020 as they were no longer required. The wells that were decommissioned are described in Table 3.4.1, below.

Table 3.4.1 – Decommissioned Monitoring Wells in 2020

Monitoring Well	Location	Part of MESP Monitoring Program?
BH02-10	Cambridge West – Hallman Lands (30T-16104)	Yes
BH03-10	Cambridge West – Hallman Lands (30T-16104)	No
BH04-10	Cambridge West – Cachet Lands (30T-16103)	Yes
BH05-10	Cambridge West – Cachet Lands (30T-16103)	Yes
BH07-10	Subject Lands – Hallman Lands	No
BH20-10	Cambridge West – Cachet Lands (30T-16103)	No
BH26-10	Cambridge West – Hallman Lands (30T-16104)	No
BH27-10	Cambridge West – Hallman Lands (30T-16104)	No
BH105-10	Subject Lands – Hallman Lands	No
BH111-10	Subject Lands – Hallman Lands	No
BH06-14	Cambridge West – Hallman Lands (30T-16104)	No
BH08-14	Cambridge West – Hallman Lands (30T-16104)	No
BH10-14	Cambridge West Cachet Lands (30T-16103)	No
BH12-14	Cambridge West Cachet Lands (30T-16103)	No
BH14-14	Cambridge West Cachet Lands (30T-16103)	No
BH19-14 (LVM)	Cambridge West – Hallman Lands (30T-16104)	No

Monitoring Well	Location	Part of MESP Monitoring Program?
BH22-14	Cambridge West – Hallman Lands (30T-16104)	No
BH19-13	Freure Lands(*)	No
BH19-14 (Peto)	Cambridge West – Hallman Lands (30T-16104)	No

(*) BH19-13 decommissioned on behalf of Freure Homes in July 2020 by CMT Engineering.

Monitoring wells BH-09-10 (Hallman Lands) and BH-13-10 (Domm Lands) were damaged during earth moving activities and have been reinstalled within the vicinity of their current location depicted on **Figure 3.** These locations will allow water levels to be monitored during the development process.

Groundwater level information from the Subject Lands has been collected by MTE since 2014 and is presented in **Table 1A, Table 1B and Table 1C** in **Appendix E**. **Table 1D**, **Table 1E** and **Table 1F** present the groundwater level information collected on the Cambridge West Lands since 2014. **Table 1G** and **Table 1H** present the groundwater level information collected from the mini piezometers across the Subject Lands and Cambridge West Lands since 2014. Groundwater level information collected by LVM from 2010 to 2013 is also located in **Appendix E**. **Tables 1A, 1B and 1C** displays the measured groundwater levels in metres below top of pipe (m btop), metres below ground surface (m bgs) and metres above mean sea level (m amsl) respectively.

Table 3.4.2 describes the monitoring wells located on the Subject Lands and whether they were decommissioned and part of the MESP pre-development monitoring program.

Table 3.4.2 – Monitoring Wells on Subject Lands

Monitoring Well	Decommissioned?	Part of MESP Monitoring Program?
BH07-10	Yes	No
BH09-10	Yes (*)	No
BH11-10	No	Yes
BH12-10	No	No
BH13-10	Yes (*)	Yes
BH14-10	No	Yes
BH15-10	No	No
BH19-10	No	Yes
BH104-10	No	No
BH105-10	Yes	No
BH110-10	No	No
BH112-10	No	Yes
BH113-10	No	No

(*) these monitoring wells were reinstalled in January 2021 near their original locations and are depicted on **Figure 3**

Of these 13 monitoring wells, five of them have been instrumented with a datalogger.

Groundwater levels versus time hydrographs for the Subject Lands are illustrated on **Hydrograph 1** through **Hydrograph 5**. **Hydrograph 6** through **Hydrograph 13** depict monitoring wells located on the Cambridge West and Freure Lands, which are part of the MESP pre-development monitoring program. The hydrographs are located within **Appendix F**.

Where possible, the groundwater levels from monitoring wells installed at a common depth elevations and formations are used to interpret the water table elevation and groundwater flow direction at the Subject Lands. Based on the borehole logs, BH11-10, BH14-10 and BH112-10 are installed within what is interpreted to be the Upper Waterloo Moraine sediments (or Regional Aquifer 1).

The water table interpretation appears to mimic topography across the Subject Lands. The average water table elevation based on **Hydrograph 4** (BH19-10) and **Hydrograph 5** (BH112-10) is between 308.36m amsl to 308.65m amsl, respectively. Groundwater is interpreted to flow north toward Cruikston Creek and Wetland 6 as well as north and east toward the Grand River and Devil's Creek. These hydrographs were selected as they have the longest continuous groundwater level record for the Subject Lands. Manual groundwater level measurements in other monitoring wells across the Subject Lands generally align with these elevations.

It is noted that BH19-10 showed a response to the dewatering activities related to the installation of SWMF2 on the Cachet Lands (30T-16103) based on continuous groundwater levels depicted on **Hydrograph 4**. Groundwater levels depicted on **Hydrograph 4** during the dewatering activities (late September 2020 to early November 2020) mimic the groundwater levels in monitoring wells BH06-10 (**Hydrograph 10**) and BH16-10 (**Hydrograph 11**), which are located adjacent to SWMF2. It is likely that BH14-10 also responded to the dewatering activities for SWMF2 based on the **Hydrograph 3**.

Lastly, adequate separation has been achieved between the seasonally high groundwater levels and the underside of footing elevations provided in the Functional Servicing Report (MTE, 2021).

3.4.2 Surface Water Levels

As discussed in Section 3.2, a surface water level monitoring station was installed in 2019 within the wetlands adjacent to the Subject Lands (Wetland 4 identified as 78P and Wetland 5 identified as 79P), as well as within wetlands located on the Cambridge West Lands (Wetland 2) and Lands south of the Subject Lands (Wetland 3 and Barrie's Lake) since 2011. An additional surface water monitoring station has also been installed within VP1 and VP7. Table 3.4.2.1 identifies the average, maximum and minimum water levels recorded within Wetland 4 and Wetland 5 between 2019 and 2020.

Table 3.4.2.1 – Surface Water Elevations 2019 and 2020

Wetland	Average Water Elevation (m amsl)	Maximum Water Elevation (m amsl)	Minimum Water Elevation
4	308.1	309.0	308.1
5	308.8	309.1	308.3

The manual water level measurements in mini piezometers MP10, MP11 and MP12 installed either in or adjacent to Wetland 4 indicate that this wetland is likely a depression focused recharge feature. There is no outlet to Wetland 4 and it appears to be hydraulically connected to Wetland 5 which also has no outlet. These wetland features are largely sustained by surface water runoff from the adjacent lands.

3.5 Groundwater Flow

Groundwater flow direction is interpreted by interpolating the measured groundwater elevations collected at (or around) the same measurement event. The measured water levels obtained from the monitoring wells on the Subject Lands and Cambridge West Lands from April 24 & April 25, 2020 were used to interpret the groundwater flow direction displayed on **Figure 8**. Groundwater is interpreted to flow north toward Cruikston Creek and Wetland 6 and flow north and east toward the Grand River and Devil's Creek.

3.6 Hydraulic Conductivity Testing

3.6.1 In-Situ Hydraulic Conductivity Testing

LVM conducted single well hydraulic response tests (slug testing) in 2010 on 13 monitoring wells located on the Subject Lands (see Table 3.5.2 in Section 3.5.1). According to the 2013 LVM Report, each monitoring well was developed prior to slug testing.

LVM analyzed a single test from each well using the Hvorslev (1951) model in the Schlumberger Water Services AquiferTest© Version 4.2 software to estimate the horizontal hydraulic conductivity of the saturated materials adjacent to each well screen. The LVM produced AquiferTest© data sheets are presented in **Appendix G**.

3.6.2 Hydraulic Conductivity Results

Based on a review of the borehole logs and particle size distribution analyses, analyzed sediment types generally range from silt with trace sand and gravel to sand and gravel with trace silt. Altogether, 13 samples were analyzed with the results of the in-situ testing completed and analyzed by LVM. These results are summarized in **Table 2**.

The estimated horizontal hydraulic conductivity of the silt with trace sand and gravel to gravelly sand with trace silt and clay material encountered at the Subject Lands ranges from to $4.7x10^{-4}$ m/sec to $1.5x10^{-8}$ m/sec based on slug testing completed by LVM. These estimated K values are consistent with published values (Freeze & Cherry, 1979).

3.7 Pre-Development Infiltration

The preferred stormwater management solution for the Subject Lands requires the implementation of at-source roof infiltration facilities throughout the Subject Lands. Lot level infiltration facilities are proposed to be connected to the majority of roof areas within the proposed development. All lot-level infiltration systems for single family lots will be located in the backyards and are to be designed to accept 25mm of roof runoff.

In order to ensure that pre-development infiltration rates would be meet in the post-development condition, the Subject Lands were generally filled with sandy, sand and gravel material as part of the area grading contract in 2020.

A grab sample from three locations across the Subject Lands were obtained and submitted for particle size distribution analysis. The estimated location of these grab samples are identified on **Figure 3**. The particle size distribution analyses confirmed the sediment types ranged from sand and gravel with trace silt to sand with trace silt and gravel. The particle size distribution analysis test results are located in **Appendix H**.

Empirically derived infiltration rates using the particle size distribution graphs were calculated and are described in **Table 3.7.1 – Estimated Infiltration Rates.**

Table 3.7.1 – Estimated Infiltration Rates

Sample	Sediment Description[1]	Northing[2] (m)	Easting[2] (m)	Estimated Elevation of Sample[3] (m amsl)	Estimated Unfactored Infiltration Rate (mm/hr)
SS1	Sand and Gravel, trace Silt	4801714	552890	312.5	2412
SS2	Sand and Gravel, trace Silt	4801704	552734	314.8	504
SS3	Sand, trace Silt and Gravel	4801758	552632	314.8	720

1. Sediment description based on particle size distribution analysis.
2. Locations provided in NAD83 UTM Zone17.
3. Ground surface elevations estimated from 2020 Area Grading surface.

It is noted that the grab samples are consistent with the sediments encountered in the borehole logs for the Subject Lands.

3.8 Groundwater Sampling

During the preparation of the technical studies (FSR, SWM, Hydrogeology Study, etc.) included within the MESP (2013), WSP (formally known as Ecoplans a member of MMM Group) MTE and LVM devised a comprehensive surface and groundwater monitoring program for water courses, SWM facilities, wetland features, groundwater and biological features. Minor modifications to the monitoring program(s) were implemented in 2017.

The groundwater sampling program included the collection of general chemistry parameters including dissolved metals, major cations and anions, and other physical tests (pH, turbidity). A total of 12 monitoring wells were sampled as part of the monitoring program (BH-01-10, BH-02-10, BH-04-10, BH-05-10, BH-06-10, BH-11-10, BH-13-10, BH-14-10, BH-16-10, BH-18A-10, BH19-10, BH-23-10 and BH-112-10). Of the 12 monitoring wells, five are located within the Subject Lands (BH11-10, BH13-10, BH-14-10, BH19-10 and BH-112-10).

On May 21 and 22, 2020, groundwater samples were collected from the 12 monitoring wells stated above. Prior to water sample collection, the monitoring wells were purged to remove stagnant water from the monitoring well and surrounding sand pack to allow for a representative formation sample to be collected.

Samples were collected using dedicated Waterra^{TM} inertial pumps, foot valves and tubing, placed into laboratory supply jars and transported in ice-packed coolers under chain-of-custody to ALS Laboratories-Environmental Division in Waterloo, Ontario. Samples were analyzed for select total and dissolved metals, anions, nutrients and other general chemistry parameters. Unabbreviated laboratory certificates of analysis are presented in **Appendix I**. Analytical results collected from the Subject Lands in 2020 are summarized in appended **Table 3A.** Analytical results collected by MTE from wells located on Cambridge West Lands or Freure Lands are summarized in **Table 3B. Table 3C** summarizes the groundwater chemistry results collected by LVM in 2013**.**

The constituents nitrate (NO_3^--N), sodium (Na^+), and chloride (Cl^-) are useful as tracers of groundwater movement due to their anthropogenic (man induced) nature and their widespread or “non-point” source use.

Nitrate is used in agricultural fertilizers, while sodium and chloride are found in winter road de-icing compounds. Sodium is widely used across southwestern Ontario to soften hard water. Nitrate and chloride are useful tracers to help delineate recharge areas to the groundwater systems. The use of nitrate and chloride as tracers for delineating groundwater movement within the Waterloo Moraine has been used in previous studies (Johnston, 1994; Robertson et al., 1996; and, Stotler et al., 2011).

Based on the water chemistry analysis results, it appears there have been minimal sodium or chloride impacts at the Subject Lands (**Table 3A**). These analytical results are consistent with historical results collected by LVM in 2010 and 2013 and summarized in the appended **Table 3C**. This is likely due to the historical land use of the Subject Lands (agricultural) with no roadways that require deicing in the winter months.

It was observed that there are minimal nitrate impacts at the Subject Lands as the highest nitrate concentration is measured in 2020 was 2.76mg/L at BH13-10. Historical groundwater chemistry results collected by LVM in 2010 and 2013 indicate nitrate concentrations were much higher in 2010 (11.5mg/L) at BH13-10.

There are no reported metals exceedances (**Table 3A**). MTE interprets the difference in concentrations between the total metals and dissolved metals as a result of the sample preserve (HNO_3) leaching metals that were adsorbed to the sediment within the groundwater sample, and that the total concentration is biased high.

3.9 Pre-Development Water Balance

The natural cyclic process by which water moves from the atmosphere, on to and through the ground into streams/rivers before reaching the oceans and returning to the atmosphere is called the hydrologic cycle. The hydrologic cycle has no beginning or end and the amount of water moving through the hydrologic cycle is in constant change.

The hydrologic cycle may be assessed through an analysis of the water budget that attempts to balance water inputs with water outputs. Water budget components are affected by a number of features including:

- Physiography;
- Topography;
- Geology;
- Groundwater;
- Surface Water;
- Evaporation; and
- Precipitation.

Water interacting and/or moving through each of these features determines water balance changes.

The pre-development water balance was completed by MTE and is described in in Section 3.3 of MTE's Preliminary Stormwater Management Report (MTE, 2021).

3.10 Source Water Protection

The closest municipal wells to the Subject Lands are the Blair Road (G4 and G4A) as depicted of **Figure 9**, and the Middleton Street (G1, G1A, G2, G3 and G14) well fields. Table 2.1, below, identifies the municipal well, its' approximate distance from the Subject Lands and the well's open hole interval.

Table 3.10.1 – Municipal Wells in Proximity to the Subject Lands

Municipal Well Field	Municipal Well ID	Proximity to Subject Lands (km)	Open Hole Interval (m bgs)	Approximate Open Hole Interval (m amsl) (top to bottom)	Within Study Area
Blair Road	G4	1.1 Northeast	31-83	255.0 – 203.0	No
	G4A	1.1 Northeast			No
Middleton Street	G1	2.8 Southeast	29-60	235.4 - 204.9	No
	G1A	2.8 Southeast		235.2 – 204.2	No
	G2	2.7 Southeast		234.3 – 214.8	No
	G3	2.7 Southeast		227.5 – 212.6	No
	G14	2.8 Southeast		225.0 – 209.2	No

All of these municipal water supply wells obtain groundwater from the deep Regional Bedrock aquifer (described as Regional Aquifer 4 in the RMOW).

The Subject Lands are within mapped wellhead protection area (WHPAs) Zones B and C for the Blair Road well field. The mapped intrinsic vulnerability of the Subject Lands was medium to low. The Subject Lands are also located within a mapped Significant Groundwater Recharge Area (SGRA) with mapped vulnerability scores ranging between 2 to 4. The Subject Lands are located outside of mapped wellhead water quantity zones and a Highly Vulnerable Aquifer (HVA) designation. The Subject Lands are located outside the mapped Issue Contributing Area (ICA) for chloride and trichloroethylene (TCE) or another dense non-aqueous phase liquid (DNAPL) (GRCA, 2020; MECP, 2020).

The appended **Figure 9** depicts the municipal well WHPA Vulnerability mapping for the Study Area which has an associated WHPA Vulnerability scores between 2 and 6. The Subject Lands are located within a WHPA Vulnerability area with associated scores of 4 and 6.

A small portion of the Subject Lands along the eastern boundary is within a mapped Groundwater Under Direct Influence (GUDI) vulnerability area with an associated vulnerability score of 8.1. This is displayed in the appended **Figure 10**.

MTE reviewed the MECP on-line interactive Source Water Protection Information Atlas (MECP, 2020) to determine any applicable Source Water Protection policies for the Subject Lands. Based on the Policy search tab on the Source Protection Information Atlas, up to 19 threats subcategories may be applicable for portions of the Subject Lands.

These threats generally relate to farming activities and sewage treatment. Many of these threats are not applicable to the proposed development. Some potential Source Water Protection policies that may be of concern include:

- Storage and Handling of a Dense Non-Aqueous Phase Liquid (DNAPL);
- Application of pesticides to Land; and
- Sewage System or Sewage Works – Stormwater Management Facility.

The RMOW does not require a Risk Management Plan (RMP) for DNAPLs and pesticides for single urban residential land use (Per. Comm. Eric Thuss, RMO, December 2020). In addition, the Province of Ontario has banned the cosmetic use of pesticides which would apply to single urban residential land use. Based on this, these two threats are not applicable to the proposed development.

Lastly, Chapter 10 of the Grand River Source Protection Plan (June 2020) defines a stormwater management facility as "*Any stormwater infrastructure for the treatment, retention, infiltration or control of stormwater including but not limited to ponds, unlined trenches, etc. but excluding piped stormwater sewers."* Based on this definition and the current stormwater management solution proposed for the Subject Lands, the conveyance infiltration gallery may be flagged during screening due to its location within the GUDI vulnerability area. The ECA may call for measures to be put into place to ensure the discharge from the stormwater management facility does not become a significant drinking water threat. It is noted that the location of the conveyance infiltration gallery has not been finalized and will likely be relocated closer to a right of way to allow for future maintenance. The final location will be located outside of the GUDI designated lands, in which case, this threat would not be applicable to the proposed development.

3.11 Permit to Take Water and Environmental Activity and Sector Registry

MTE reviewed the MECP on-line interactive Permit to Take Water (PTTW) map (MECP, 2020) to determine if any PTTWs exist in the Study Area. No active permits exist within 1000m radius of the Subject Lands based on the current available data. It is noted that the MECP last updated this map on January 24, 2020. MTE is aware of two active PTTWs that were approved in Winter 2021 for construction site dewatering activities on the Westwood Village Phase 1 Lands (Cachet Lands and Hallman Lands). Details of the two PTTWs are located in Table 3.12.1, Active PTTWs within 1000m Radius of the Subject Lands**,** below.

Table 3.11.1 – Active PTTWs Within 1000M Radius of Subject Lands.

Permit Number[1]	Permit Holder Name	Purpose	Expiry Date	Maximum Litres per Day	Source Type	Distance from civic address (km)
7708-BWYU22	Cachet Developments (Cam West) Inc.	Construction Dewatering	NA	1,600,000	Ground Water	0.40
6550-BYGSYY	Hallman Construction Limited	Construction Dewatering	Feb. 3, 2022	5,891,000[2]	Ground Water	0.50

1. Issued PTTW No.
2. Allowed to take up to 8,100,000L/day for up to 30 days per calendar year to account for seasonally high groundwater and/or adverse construction conditions

It is noted that another PTTW was acquired in the summer of 2020 for the construction of the SWMF2 located on the Cachet Lands. The Permit (No. 8156-BQPKBH) had a maximum allowable pumping rate of 9,000,000L/day and expired on February 28, 2021.

MTE also reviewed the MECP on-line interactive Environmental Activity and Sector Registry (EASR) map (MECP, 2020) to determine if any EASRs for road construction or construction site dewatering exist in the Study Area. No EASRs were found within a 1000m area of the Subject Lands.

4.0 Impact Assessment

4.1 Municipal Wellfield

As noted in Table 3.10.1 above, the closest municipal well (G4 and G4A) are located approximately 1.1 km northeast of the Subject Lands. Both of these municipal wells are completed within the upper bedrock aquifer and have open hole ranges between 31m bgs and 83m bgs (GRCA, 2020) with an estimated open hole elevation between 203.0m amsl and 255.0m amsl.

While the Subject Lands are within a mapped SGRA and WHPA, none of the significant drinking water threat policies apply to this combined development and therefore will not impact the drinking source water supply.

4.2 Private Well Users

Based on the interpreted groundwater flow direction (**Figure 8**), all private wells are located up-gradient of the Subject Lands and therefore are not exposed to further impacts from the proposed combined development, which is located down-gradient of the private well users. Furthermore, based on these well records, two of the private wells are screened within bedrock (6507650 and 6507266) and would not be exposed to further impacts related to the proposed combined development.

The private well associated with WWR No. 6500655 is completed in the overburden material; however, at a depth of approximately 40m bgs (or an estimated elevation of 272m amsl based on the WWR). According to the OGS mapping, the Lower Maryhill Till and Catfish Creek Till are interpreted to exist at elevations between 286 to 312m amsl and 276 to 290m amsl respectively at this location. The estimated thicknesses based on the isopach mapping from the OGS for the Lower Maryhill Till and Catfish Creek Till are between 15.5m and 25.1m and 0.3m to 4.6m respectively. Based on this information, it is not anticipated that this well would be impacted by the proposed development.

4.3 Construction Dewatering Considerations

Based on a review of the proposed servicing invert elevations, some dewatering may be required in areas that have deeper servicing, such as Street G and Newman Drive, Street A and Newman Drive and Street F and Street A. A dewatering assessment should be completed during the detailed design stage to confirm potential dewatering requirements.

4.4 Surface Water Features

The nearest surface water features to the Subject Lands are Wetland 4 and Wetland 5 located west of the Subject Lands, and Wetland 1 and Wetland 6 located north of the Subject Lands. The headwaters of Cruikston Creek are located within the mapped Wetland 1 and Wetland 6 area. Wetland 3 and Barrie's Lake are located directly south of the Subject Lands, approximately 150m and 500m respectively with Wetland 2 located approximately 80m east of the Subject Lands.

As mentioned in Section 3.4.2, Wetland 4 and Wetland 5 are likely a depression focused recharge features as there is no outlet from these surface water features. Wetland 4 and Wetland 5 appear to be hydraulically connected based on aerial imagery and site visits. These wetland features are largely sustained by surface water runoff from the adjacent lands.

As part of the post-development stormwater management solution for the proposed development, a combination of measures is proposed for the Subject Lands to ensure that surface water inputs into the wetland features are maintained. This includes roof areas and backyard areas for lots that are adjacent to the features, and a 'third-pipe' system to direct roof runoff via a storm sewer system. Refer to the *Westwood Village (Phase 2) - Preliminary Stormwater Management Report* for more details.

Impacts to the wetland features will be mitigated based on these post-development stormwater solutions.

5.0 Conclusions

Based on the above Hydrogeological Assessment, MTE offers the following conclusions:

- Sediments encountered at the Subject Lands range from silt with trace sand and gravel to gravelly sand with trace silt and clay.
- Groundwater is interpreted to flow north toward Cruikston Creek and Wetland 6 as well as north and east toward the Grand River and Devil's Creek as displayed in **Figure 8**.
- The horizontal hydraulic conductivity of the silt with trace sand and gravel to gravelly sand with trace silt and clay material encountered at the Subject Lands ranges from to $4.6x10^{-4}$ m/sec to $1.5x10^{-8}$ m/sec based on slug testing completed by LVM.
- No outlets were observed at Wetland 4 and Wetland 5. These two surface water features appear to be hydraulically connected. These wetland features are largely sustained by surface water runoff from the adjacent lands.
- Surface water inputs to the wetland features will be maintained in the post-development condition.
- The Subject Lands are located within a WHPA B and C with an associated vulnerability score between 4 and 6. Portions of the Subject Lands are also located within a WHPA E with an associated vulnerability score of 8.1.
- No significant drinking water threat policies apply to this combined development and therefore will not impact the drinking source water supply.
- There are no private and/or municipal wells located within a 100m radius of the Subject Lands.
- Long-term impacts to private water well users and/or municipal wells are not anticipated.
- Adequate separation between the underside of basement and the groundwater table.

6.0 Recommendations

Based on the above information described in this Hydrogeological Assessment, MTE recommends the following:

- An amendment to the pre-development monitoring program established and approved in 2013 as part of the MESP process should be made, including the following components:
  - Continuous water level measurements using dataloggers and manual water level measurements completed on a quarterly basis to monitor seasonal water level fluctuations in the shallow groundwater flow system for all current monitoring wells.
  - Collection of a groundwater sample from a pre-determined set of monitoring wells for general chemistry parameters including dissolved metals, anions, nutrients and other physical tests.
- If it is determined that some monitoring wells need to be decommissioned during the construction of the proposed subdivision, the decommissioning should be decommissioned in accordance with O. Reg. 903 (as amended) prior to construction.
- A dewatering assessment should be completed during the final design process to determine the need for an Environmental Activity and Sector Registry (EASR) or Category 3 Permit to Take Water (PTTW) for construction dewatering for the proposed servicing.

7.0 Limitations

Services performed 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.

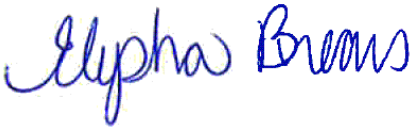
This report was completed for the sole use of MTE and the Clients. It was completed in accordance with the Scope of Work referred to in Section 1.1. As such, this report may not deal with all issues potentially applicable to the Site and may omit issues, which are or may be of interest to the reader. 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 Scope of Work. 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 or new information become available, MTE recommends that it be brought to our attention in order that we may re-assess the contents of this report.

Respectfully Submitted,

MTE Consultants Inc.



2021-04-23

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Appendix A

Figures

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GWR1.1
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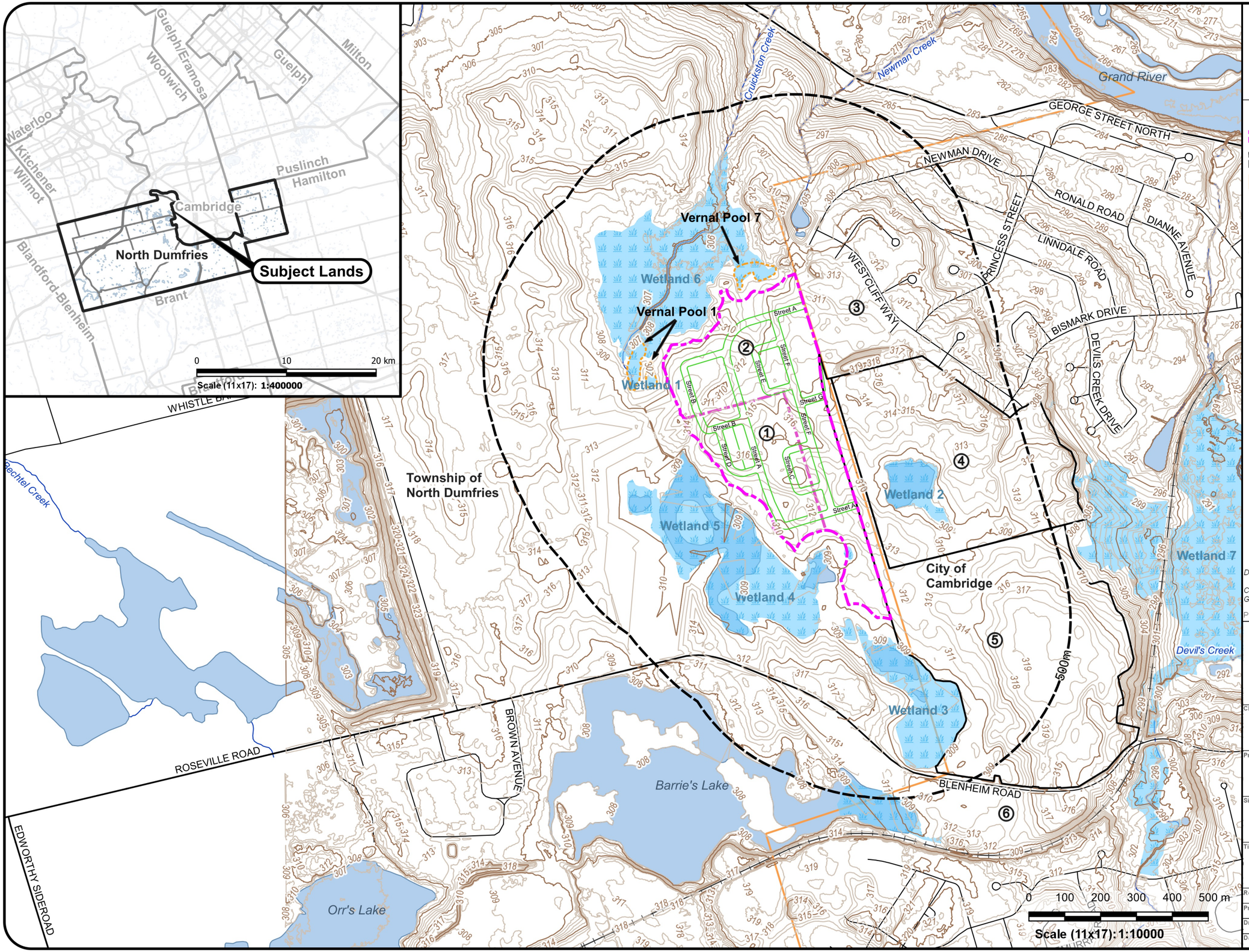

NORTH

PROJECT NORTH

Legend

- Subject Lands
- 500m Study Area
- Municipal Boundary
- 1m Contours (MTE, 2020)
- Proposed Roads (MHBC, Jan 20, 2021)
- Roads
- Railroad
- Provincially Significant Wetland
- Waterbody
- Water Courses
- (1) Brian Domm Lands
- (2) Hallman Construction Lands
- (3) Newman Lands
- (4) Cachet Lands (30T-16103)
- (5) Hallman Construction Lands (30T-16104)
- (6) Freure Lands

Data Sources:

Contains information licensed under the Open Government License Ontario.

Project CRS: NAD83 / UTM zone 17N

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

Client: Brian Domm + Hallman Construction Limited

Project: Westwood Village Phase 2 Scoped Hydrogeological Assessment

Site: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

Title: **Location Plan**

Reviewed By	RBM		
Prepared By	EMB	Project No	02534-800
Drawn By	SAR	Figure No	1
Date	April 2021		

Project No: 02534-800 P:\P\02534\800\02534-800_gwr1.qgz

GWR1.2

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N NORTH

N PROJECT NORTH

Legend

- Subject Lands
- 500m Study Area
- Municipal Boundary
- Geological Cross Section Location (A – A')
- 5m Contours (MTE, 2020)
- Proposed Roads (MHBC, Jan 20, 2021)
- Roads
- Railroad
- Provincially Significant Wetland
- Waterbody
- Water Courses

Monitoring Locations

- Monitoring Wells (MTE, 2021)
- 2019 Borehole Investigation Peto MacCallum, 2019 (Ref. 18KF062)
- 2014 Boreholes/Monitoring Wells LVM, 2014 (Ref. P-0003455-0-09-100-GE-R-0001-00)
- 2010 Mini Piezometer Install LVM, 2010 (Ref. 160-P-036589-0300-HD-R-0001-00)
- 2010-2 Series Boreholes LVM, 2010 (Ref. 160-P-036589-0300-HD-R-0001-00)
- 2010-1 Series Boreholes Citation LVM, 2010 (Ref. 160-P-031655-0300-HD-R-0001-00)
- (1) Brian Domm Lands
- (2) Hallman Construction Lands
- (3) Newman Lands
- (4) Cachet Lands (30T-16103)
- (5) Hallman Construction Lands (30T-16104)
- (6) Freure Lands

* Indicates the monitoring well has been decommisioned

Project CRS: NAD83 / UTM zone 17N

Data Sources:

0 80 160 240 320 400 m

Scale (11x17): 1:9000

MTE

Engineers,Scientists, Surveyors

Ph. (519) 743-6500

Client: Brian Domm + Hallman Construction Limited

Project: Westwood Village Phase 2 Scoped Hydrogeological Assessment

Site: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

Title: **Site Plan**

Reviewed By	RBM		
Prepared By	EMB	Project No	02534-800
Drawn By	SAR	Figure No	2
Date	April 2021		

Project No: 02534-800 P:\P\02534\800\02534-800_gwr1.qgz

GWR1.3

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Vernal Pool 7

Vernal Pool 1

Wetland 6

Wetland 5

Wetland 4

Wetland 2

Wetland 3

Township of North Dumfries

City of Cambridge

Barrie's Lake

Cruickston Creek

WESTCLIFF WAY

PRINCESS STREET

OSSLINN ROAD

LINNDALE ROAD

BISMARK DRIVE

DEVILS CREEK DRIVE

WHISTLE BARE ROAD

BROWN AVENUE

OAKWOOD DRIVE

Street A

Street B

Street D

Street E

Street F

Street G

Street S

MW101-21

MW102-21

MW111-10*

MW19-11

MW19-9

MW19-14

BH101-10

BH102-10

BH103-10

BH104-10

BH105-10*

BH106-10

BH107-10

BH108-10

BH109-10

BH110-10

BH111-10

BH112-10

BH113-10

BH114-10

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BH04-10*

BH05-10

BH06-10

BH07-10*

BH08-10

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BH11-10

BH12-10

BH13-10

BH14-10

BH15-10

BH16-10

BH17-10

BH18-10

BH18A-10

BH19-10

BH20-10*

BH21-10

BH22-10

BH23-10

BH24-10

BH25-10

BH26-10*

BH27-10*

BH28-10

BH29-10

BH30-10

BH31-10

BH01-14

BH02-14

BH03-14

BH04-14

BH05-14

BH06-14*

BH07-14

BH08-14*

BH09-14

BH10-14*

BH11-14

BH12-14*

BH13-14

BH14-14*

BH15-14

BH16-14

BH17-14

BH18-14

BH19-14*

BH19-6

BH19-5

BH20-14

BH22-14

BH25-14

BH26-14

BH27-14

BH28-14

BH29-14

BH30-14

MP1

MP2

MP3

MP4

MP5

MP6

MP7

MP8

MP9

MP10

MP11

MP12

MP13

MP14

MP15

MP16

MP17

MP18

MP19

MP20

MP21

MP22

MP23

MP25

MP26

MP27

MP28

MP30

MP31

MP33

MP34

264P**

265P**

76P

78P

79P

77P

125P

SS1

SS2

SS3

BH9

BH7

A

A'

B

B'

1

2

3

4

5

6

NORTH

PROJECT NORTH

Legend

- Subject Lands
- 500m Study Area
- Municipal Boundary
- 1m Contours (MTE, 2020)
- Proposed Roads (MHBC, Jan 20, 2021)
- Roads
- Geological Cross Section Location
- Provincially Significant Wetland
- Waterbody
- Water Courses

Monitoring Locations

- Monitoring Wells (MTE, 2021)
- 2019 Borehole Investigation Peto MacCallum, 2019 (Ref. 18KF062)
- 2014 Boreholes/Monitoring Wells LVM, 2014 (Ref. P-0003455-0-09-100-GE-R-0001-00)
- 2010 Mini Piezometer Install LVM, 2010 (Ref. 160-P-036589-0300-HD-R-0001-00)
- 2010-2 Series Boreholes LVM, 2010 (Ref. 160-P-036589-0300-HD-R-0001-00)
- 2010-1 Series Boreholes Citation LVM, 2010 (Ref. 160-P-031655-0300-HD-R-0001-00)
- Sediment Sample
- Surface Water Monitoring Location
- (1) Brian Domm Lands
- (2) Hallman Construction Lands
- (3) Newman Lands
- (4) Cachet Lands (30T-16103)
- (5) Hallman Construction Lands (30T-16104)
- (6) Freure Lands

* Indicates the monitoring well has been decommissioned

** Indicates estimated location

Project CRS: NAD83 / UTM zone 17N

Data Sources:

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0 50 100 150 200 250 m

Scale (11x17): 1:6000

MTE

Engineers,Scientists, Surveyors

Ph. (519) 743-6500

Client: Brian Domm + Hallman Construction Limited

Project: Westwood Village Phase 2 Scoped Hydrogeological Assessment

Site: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

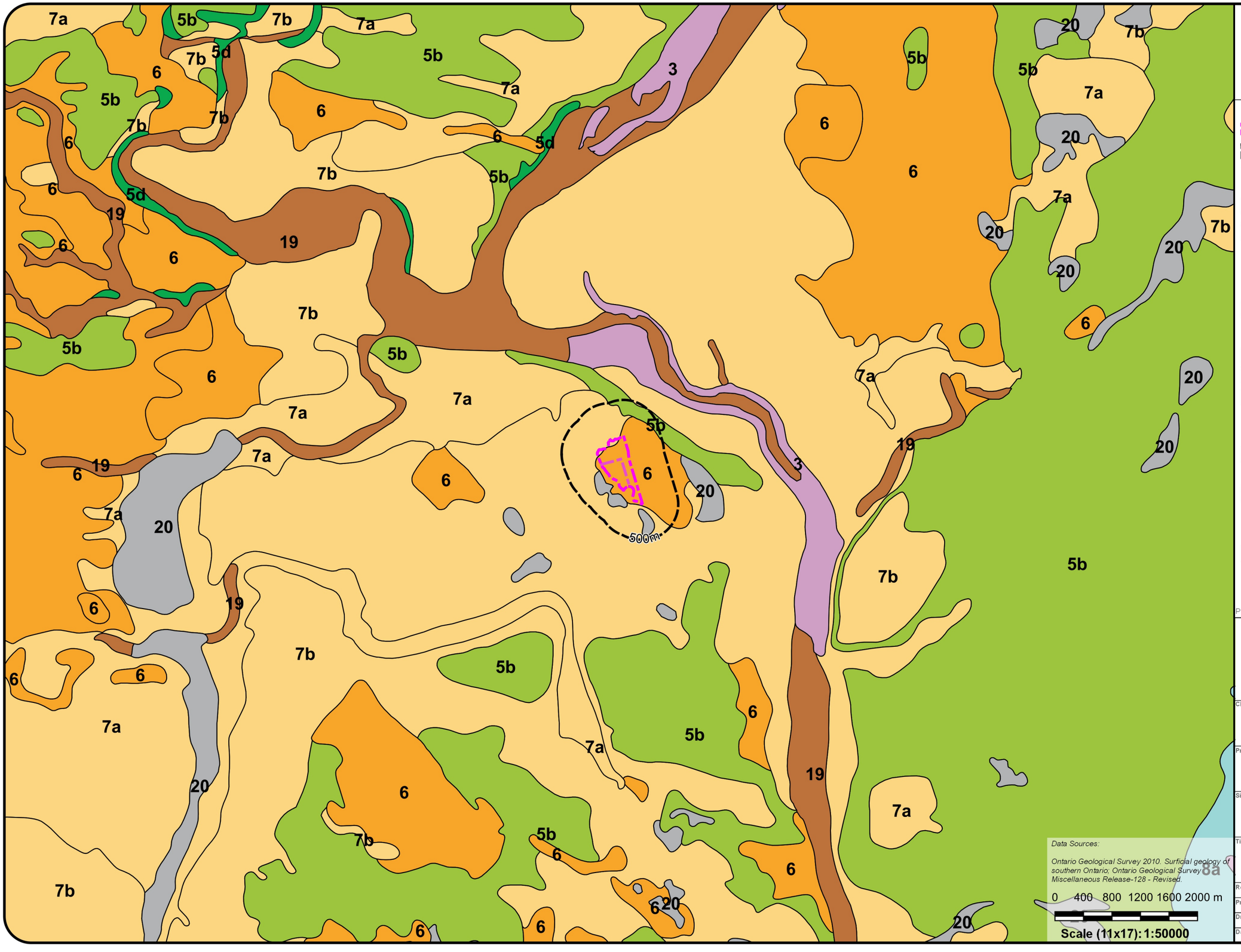
Title: **Existing Locations**

Reviewed By	RBM		
Prepared By	EMB	Project No	02534-800
Drawn By	SAR	Figure No	3
Date	April 2021		

Project No: 02534-800 P:\P\P02534\800\02534-800_gwr1.qgz

GWR1.4

April 08, 2021 - 23:31 - Plotted By: SRederer



NORTH

PROJECT NORTH

Legend

Subject Lands

500m Study Area

Quaternary Geology

Quaternary

20. Organic Deposits: peat, muck, marl

19. Modern alluvial deposits: clay, silt, sand, gravel, may contain organic remains

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

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

Data Sources:

Ontario Geological Survey 2010. Surficial geology of southern Ontario; Ontario Geological Survey Miscellaneous Release-128 - Revised.

0 400 800 1200 1600 2000 m

Scale (11x17): 1:50000

MTE

Engineers,Scientists, Surveyors

Ph. (519) 743-6500

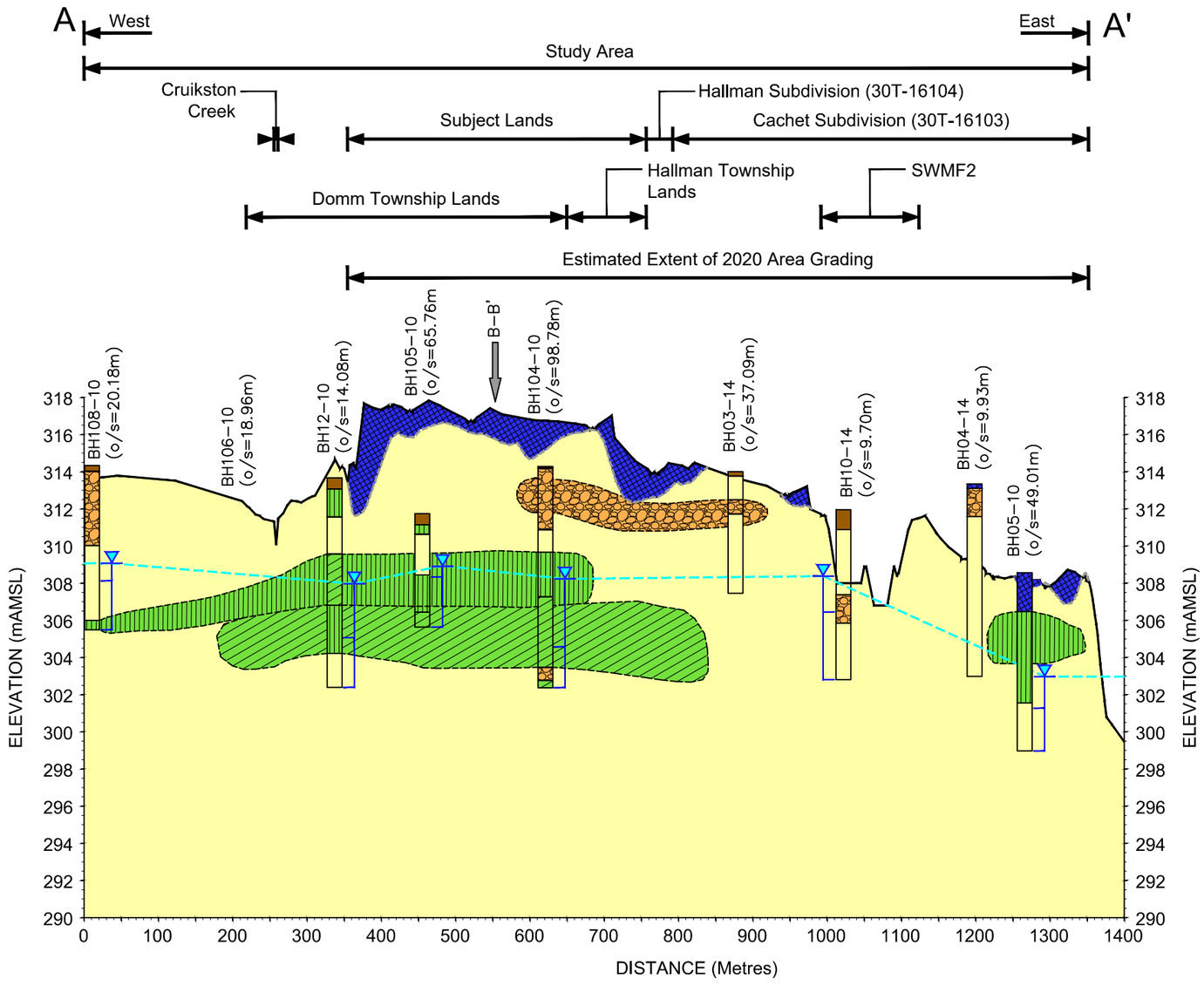
Client: Brian Domm + Hallman Construction Limited

Project: Westwood Village Phase 2 Scoped Hydrogeological Assessment

Site: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

Title: **Quaternary Geology**

Reviewed By	RBM		
Prepared By	EMB	Project No	02534-800
Drawn By	SAR	Figure No	4
Date	April 2021		



Legend

- Ground Surface (2015/2020)
- Pre-Development Ground Surface (SWOOP 2015)

Borehole Lithology

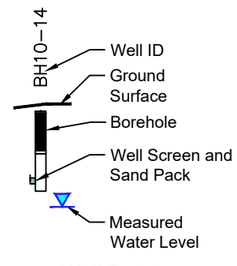
- Topsoil
- Fill
- Sand / Silty Sand
- Silt
- Sand & Gravel
- Silt Till
- Gravel

- Groundwater Elevation (mAMSL)
- Interpreted Water Table

Vertical Exaggeration 25x

Notes:

1. Geological sequence is based on professional interpretation from sediments encountered during drilling and borehole logs reviewed as part of other reports for this Scoped Hydrogeological Assessment. Actual geological conditions can vary between tested locations.
2. Ground surface (2015/2020) is based on the 2020 area grading contract grades.
3. Pre-development ground surface based on 2015 SWOOP data.
4. Water levels for on-site monitoring wells were measured April 24, 2020.
5. Property boundaries, road locations and surface water features are approximate.
6. Wells further from the cross-section line may, in some places, be displayed as having the well top lying above or below the ground surface due to the differences in offsets. Similarly, static water levels at individual wells may be situated above or below interpreted water table / potentiometric surface due to this offset.
7. Offsets may show 0.00m, but the well may be above or below interpreted ground surface due to different sources of information and their accuracy (i.e. MTE survey vs. the SWOOP data vs. MECP interpreted ground surfaces).
8. Sediment descriptions obtained from borehole logs from LVM, 2010; LVM, 2014.
9. Location of BH106-10 shown along cross-section; however, GSE depicted on LVM borehole log was incorrect and therefore stratigraphy not depicted.



Well Detail

Scale(11x17): As Noted

MTE
Engineers, Scientists, Surveyors
Ph. (519) 743-6500 www.mte85.com

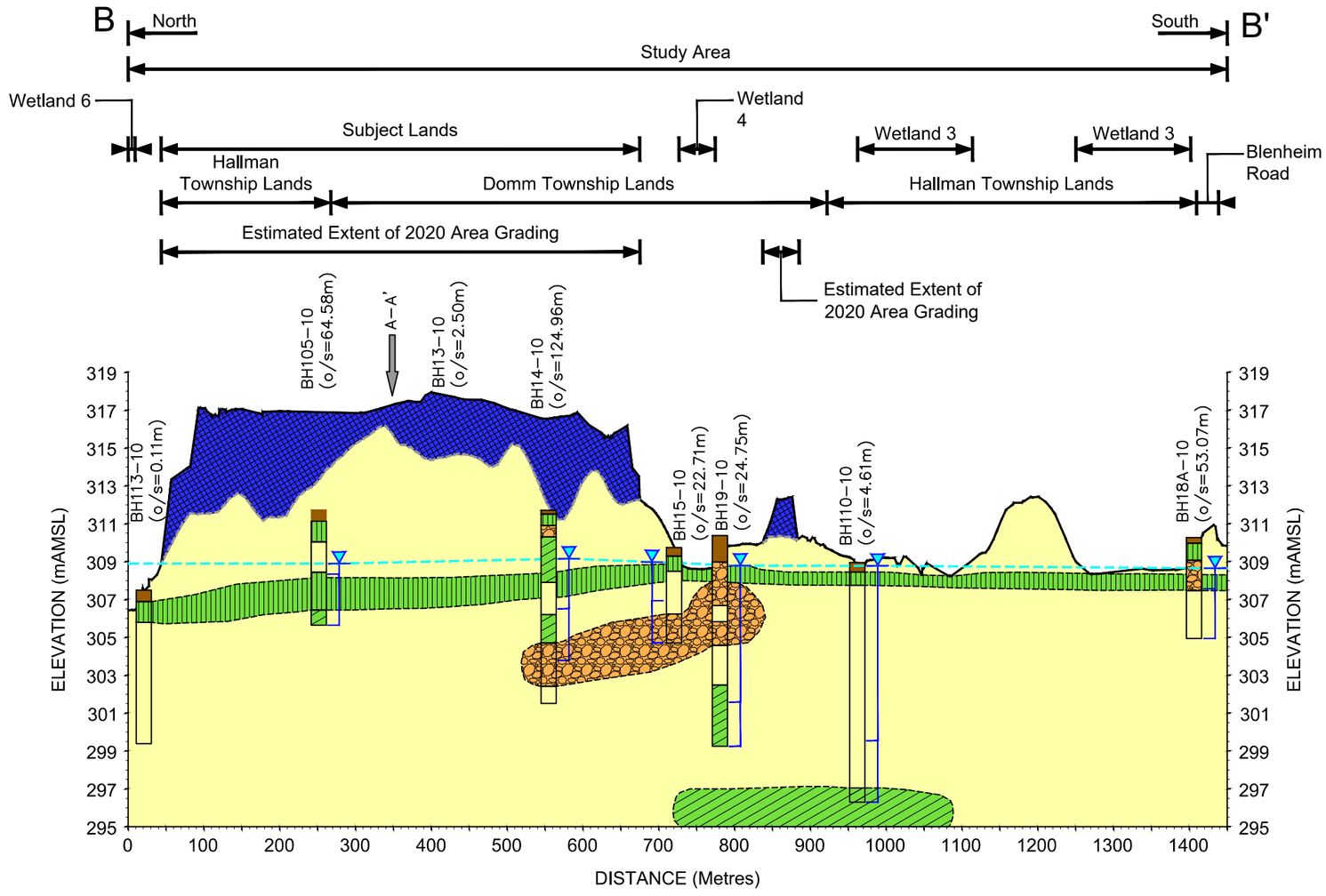
CLIENT
Hallman Construction Ltd. and Brian Domm

PROJECT
Westwood Village - Phase 2 Scoped Hydrogeological Assessment

SITE
North of Blenheim Road
West of Newman Drive
Township of North Dumfries

TITLE
CROSS-SECTION A-A'

Reviewed By	RBM		
Prepared By	EMB	Project No.	02534-800
Drawn By	AXH	Figure No.	5.0
Date	April 2021		



Legend

- Ground Surface (2015/2020)
- Pre-Development Ground Surface (SWOOP 2015)

Borehole Lithology

- Topsoil
- Fill
- Sand / Silty Sand
- Silt
- Sand & Gravel
- Silt Till
- Gravel

- Groundwater Elevation (mAMSL)
- Interpreted Water Table

Vertical Exaggeration 25x

Notes:

1. Geological sequence is based on professional interpretation from sediments encountered during drilling and borehole logs reviewed as part of other reports for this Scoped Hydrogeological Assessment. Actual geological conditions can vary between tested locations.
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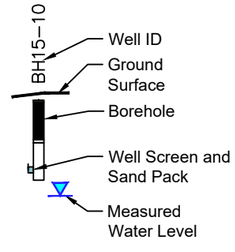
3. Pre-development ground surface based on 2015 SWOOP data.
4. Water levels for on-site monitoring wells were measured April 24, 2020.
5. Property boundaries, road locations and surface water features are approximate.
6. Wells further from the cross-section line may, in some places, be displayed as having the well top lying above or below the ground surface due to the differences in offsets. Similarly, static water levels at individual wells may be situated above or below interpreted water table / potentiometric surface due to this offset.
7. Offsets may show 0.00m, but the well may be above or below interpreted ground surface due to different sources of information and their accuracy (i.e. MTE survey vs. the SWOOP data vs. MECP interpreted ground surfaces).
8. Sediment descriptions obtained from borehole logs from LVM, 2010; LVM, 2014.
9. Location of BH13-10 shown along cross-section; however, GSE depicted on LVM borehole log was incorrect and therefore stratigraphy not depicted.



Well Detail

Scale(11x17): As Noted

MTE
Engineers, Scientists, Surveyors
Ph. (519) 743-6500 www.mte85.com

CLIENT: Hallman Construction Ltd. and Brian Domm

PROJECT: Westwood Village - Phase 2 Hydrogeological Assessment

SITE: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

TITLE: CROSS-SECTION B-B'

Reviewed By	RBM		
Prepared By	EMB	Project No.	02534-800
Drawn By	AXH	Figure No.	6.0
Date	April 2021		

P:\P\02534\800\02534-800-MS4 (B'B).DWG
April 8, 2021 - 10:51:44 AM - Plotted By: Scott Scheifele

Project No: 02534-800 P:\P02534\800\02534-800_gwr1.qgz

GWR1.7

April 08, 2021 - 23:32 - Plotted By: SRederer

Grand River
Cruickston Creek
Newman Creek
Newman Pond
GEORGE STREET NORTH
ESTHER AVENUE
NEWMAN DRIVE
HAWTHORNE ROAD
RONALD ROAD
SUNSET BOULEVARD
LINNDALE ROAD
LESLIE AVENUE
DIANNE AVENUE
G4A
G4
WESTCLIFF WAY
PRINCESS STREET
ROSSLINN ROAD
BISMARK DRIVE
BLAIR ROAD
DEVILS CREEK DRIVE
KENMORE AVENUE
Grandview Pond
Wetland 6
Wetland 1
Street A
Street B
Street C
Street D
Street E
Street F
Street G
Street A
Street A
①
②
③
④
⑤
⑥
Wetland 2
Wetland 5
Wetland 4
Wetland 3
Wetland 7
6500655
6507266
6507650
500m
City of Cambridge
Township of North Dumfries
WHISTLE BARE ROAD
ROSEVILLE ROAD
ORR'S LAKE ROAD
OAKWOOD DRIVE
BROWN AVENUE
Barrie's Lake
Orr's Lake
Devil's Creek
BLENHEIM ROAD
PARKWOOD DRIVE
HILLCREST DRIVE
SALISBURY AVENUE
HIGHLAND CRESCENT

N
NORTH

N
PROJECT NORTH

Legend

- Subject Lands
- 500m Study Area
- Municipal Boundary
- Proposed Roads (MHBC, Jan 20, 2021)
- Roads
- Railroad
- Provincially Significant Wetland
- Waterbody
- Water Courses
- Municipal Well (GRCA, 2020)

MOE Wells

- Domestic
- (1) Brian Domm Lands
- (2) Hallman Construction Lands
- (3) Newman Lands
- (4) Cachet Lands (30T-16103)
- (5) Hallman Construction Lands (30T-16104)
- (6) Freure Lands

Data Sources:

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Contains Information made available under Grand River Conservation Authority's Open Data Licence v2.0

0 80 160 240 320 400 m

Scale (11x17): 1:9000

Project CRS: NAD83 / UTM zone 17N

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

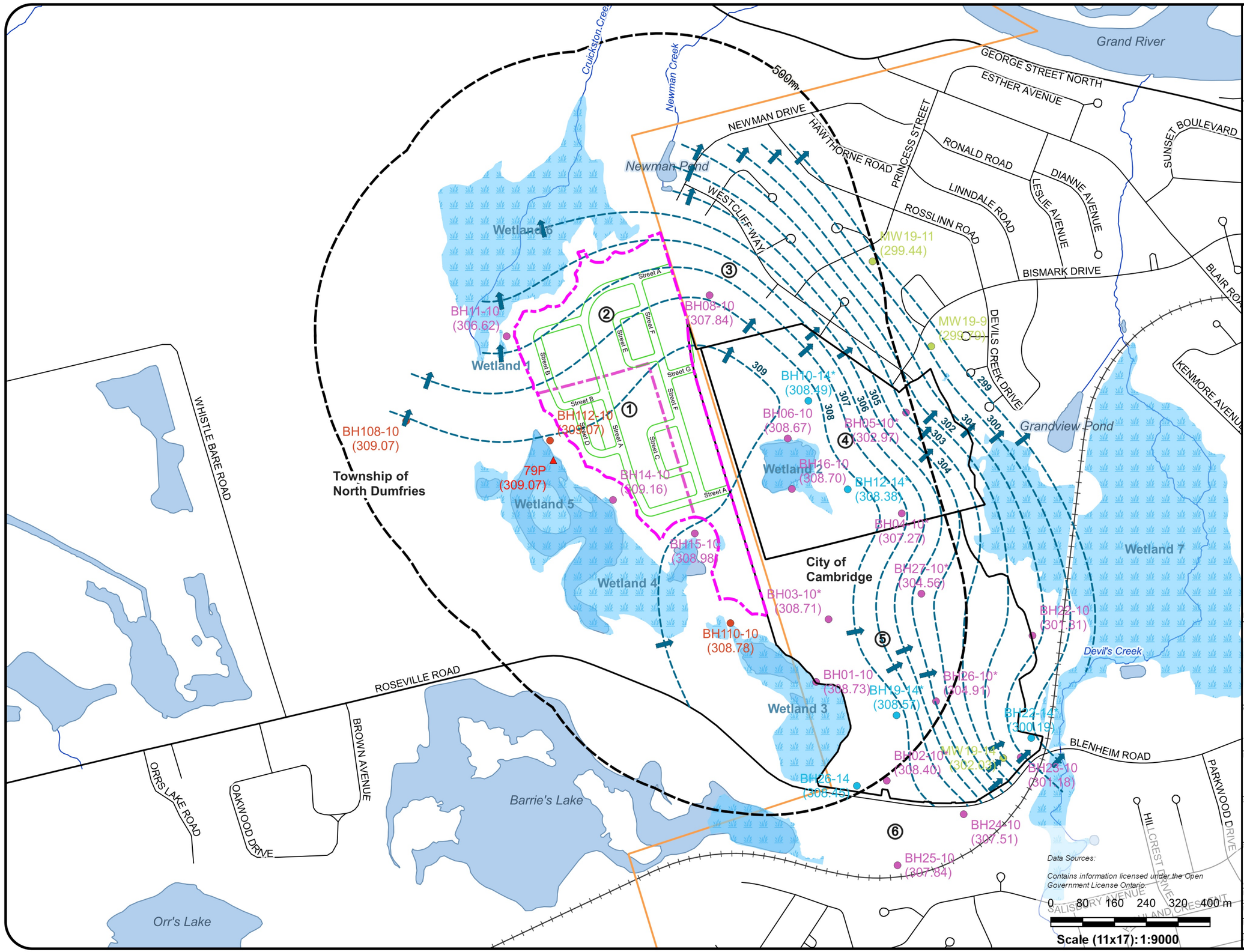
Client: Brian Domm + Hallman Construction Limited

Project: Westwood Village Phase 2 Scoped Hydrogeological Assessment

Site: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

Title: **Water Users**

Reviewed By	RBM		
Prepared By	EMB	Project No	02534-800
Drawn By	SAR	Figure No	7
Date	April 2021		



NORTH

PROJECT NORTH

Legend

- Subject Lands
- 500m Study Area
- Municipal Boundary
- Provincially Significant Wetland
- Proposed Roads (MHBC, Jan 20, 2021)
- Roads
- Railroad
- Waterbody
- Water Courses
- Groundwater Conours (1m Interval)
- Groundwater Flow Direction (Inferred)

Monitoring Locations

- 2019 Borehole Investigation Peto MacCallum, 2019 (Ref. 18KF062)
- 2014 Boreholes/Monitoring Wells LVM, 2014 (Ref. P-0003455-0-09-100-GE-R-0001-00)
- 2010-2 Series Boreholes LVM, 2010 (Ref. 160-P-036589-0300-HD-R-0001-00)
- 2010-1 Series Boreholes Citation LVM, 2010 (Ref. 160-P-031655-0300-HD-R-0001-00)
- Surface Water Monitoring Location
- (1) Brian Domm Lands
- (2) Hallman Construction Lands
- (3) Newman Lands
- (4) Cachet Lands (30T-16103)
- (5) Hallman Construction Lands (30T-16104)
- (6) Freure Lands

Project CRS: NAD83 / UTM zone 17N

Data Sources:

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

Client: Brian Domm + Hallman Construction Limited

Project: Westwood Village Phase 2 Scoped Hydrogeological Assessment

Site: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

Title: **Interpreted Groundwater Flow Map**

Reviewed By	RBM		
Prepared By	EMB	Project No	02534-800
Drawn By	SAR	Figure No	8
Date	April 2021		

Project No: 02534-800 P:\P02534800\02534-800_gwr1.qgz
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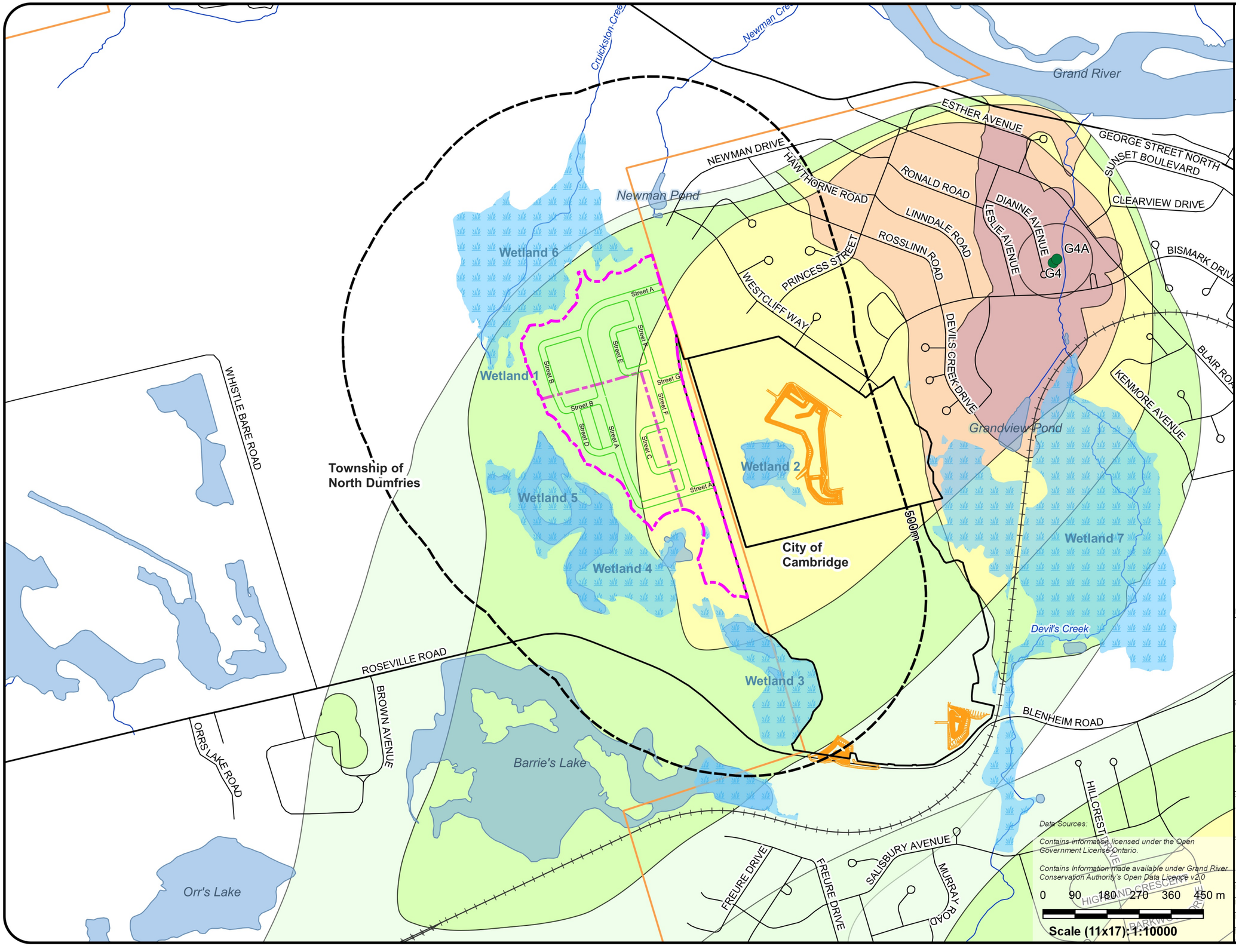
April 09, 2021 - 12:46 - Plotted By: SRederer

Project No: 02534-800 P:\P02534800\02534-800_gwr1.qgz

GWR1.9

April 08, 2021 - 23:34 - Plotted By: SRederer



N NORTH

N PROJECT NORTH

Legend

- Subject Lands
- 500m Study Area
- Municipal Boundary
- Provincially Significant Wetland
- Proposed Roads (MHBC, Jan 20, 2021)
- Roads
- Railroad
- Waterbody
- Water Courses
- SWM Pond
- Municipal Well (GRCA, 2020)

WHPA Vulnerability (GRCA)

- 2
- 4
- 6
- 8
- 10

1. Brian Domm Lands
2. Hallman Construction Lands
3. Newman Lands
4. Cachet Lands (30T-16103)
5. Hallman Construction Lands (30T-16104)
6. Freure Lands

Project CRS: NAD83 / UTM zone 17N

0 90 180 270 360 450 m

Scale (11x17): 1:10000

MTE

Engineers,Scientists, Surveyors

Ph. (519) 743-6500

Client: Brian Domm + Hallman Construction Limited

Project: Westwood Village Phase 2 Scoped Hydrogeological Assessment

Site: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

Title: **WHPA**

Reviewed By	RBM		
Prepared By	EMB	Project No	02534-800
Drawn By	SAR	Figure No	9
Date	April 2021		

Project No: 02534-800 P:\P\P02534\800\02534-800_gwr1.qgz

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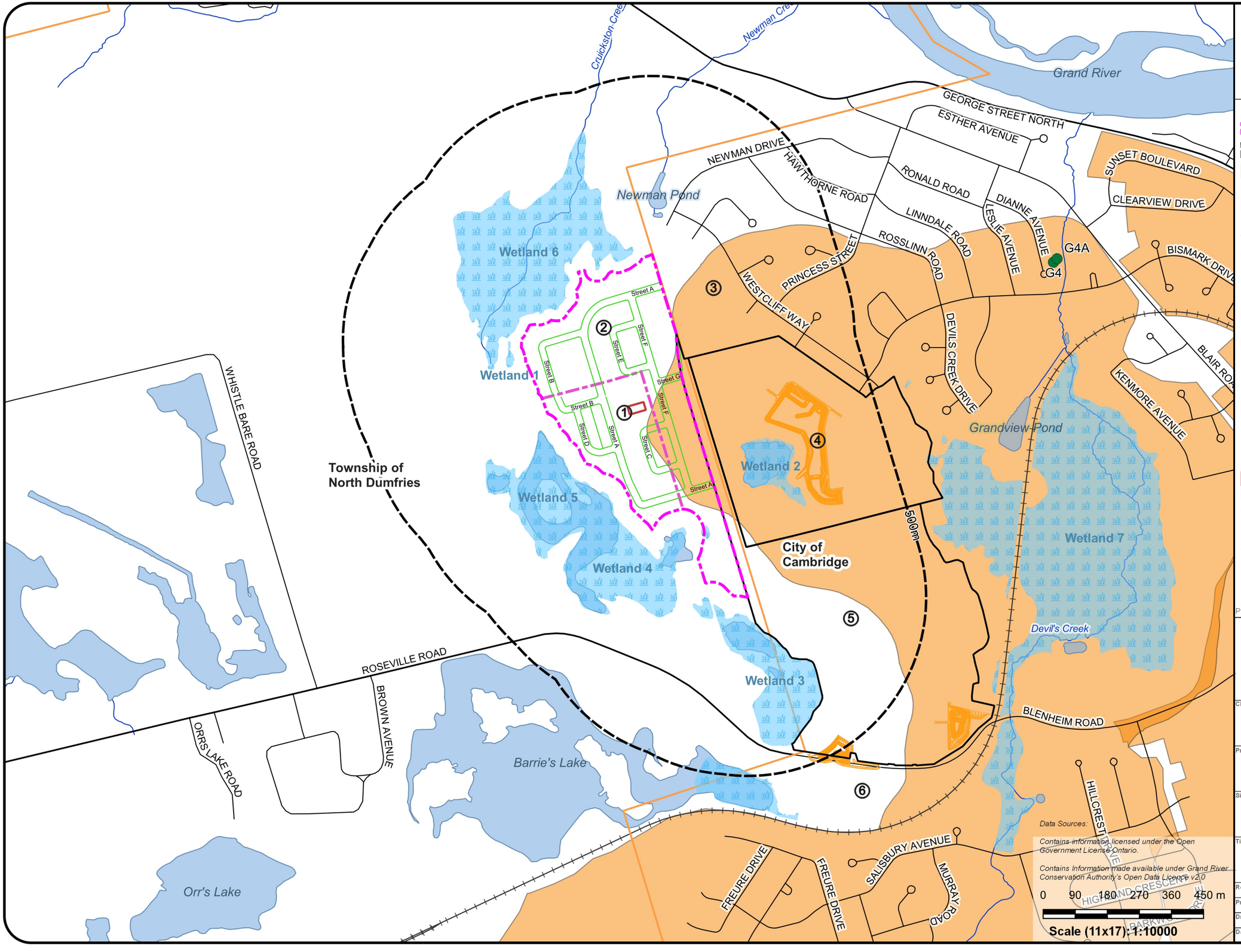
April 08, 2021 - 23:35 - Plotted By: SRederer



NORTH

PROJECT NORTH

Legend

- Subject Lands
- 500m Study Area
- Municipal Boundary
- Provincially Significant Wetland
- Proposed Roads (MHBC, Jan 20, 2021)
- Roads
- Railroad
- Waterbody
- Water Courses
- SWM Pond
- Municipal Well (GRCA, 2020)
- 1 Brian Domm Lands
- 2 Hallman Construction Lands
- 3 Newman Lands
- 4 Cachet Lands (30T-16103)
- 5 Hallman Construction Lands (30T-16104)
- 6 Freure Lands
- Conveyance Gallery

WHPA-GUDI Vulnerability (GRCA)

- 0 - 3.9
- 4 - 5.9
- 6 - 7.9
- 8 - 9.9
- 10

Project CRS: NAD83 / UTM zone 17N

Data Sources:

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Contains Information made available under Grand River Conservation Authority's Open Data Licence v2.0

0 90 180 270 360 450 m

Scale (11x17): 1:10000

MTE

Engineers,Scientists, Surveyors

Ph. (519) 743-6500

Client: Brian Domm + Hallman Construction Limited

Project: Westwood Village Phase 2 Scoped Hydrogeological Assessment

Site: North of Blenheim Road, West of Newman Drive, Township of North Dumfries

Title: **GUDI Vulnerability**

Reviewed By	RBM		
Prepared By	EMB	Project No	02534-800
Drawn By	SAR	Figure No	10
Date	April 2021		

Appendix B

Proposed Draft Plan of Subdivision

Notes

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. BOUNDARY INFORMATION FROM PLAN 58R-20976 PREPARED BY MTE ONTARIO LAND SURVEYORS LTD., NOVEMBER 6, 2020.
3. TOPOGRAPHICAL BASE INFORMATION PROVIDED BY MTE.
4. DRIPLINE AND WETLAND INFORMATION PROVIDED BY WSP.
5. ADJACENT PARCEL FABRIC IS APPROXIMATE.

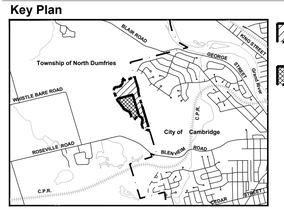
■■■■ DENOTES STAGE LIMITS

CONSOLIDATED DRAFT PLAN OF SUBDIVISION

Legal Description

PART OF LOTS 13 AND 14, CONCESSION 11
AND PART OF ROAD ALLOWANCE BETWEEN CONCESSIONS 11 & 12
TOWNSHIP OF NORTH DUMFRIES
REGIONAL MUNICIPALITY OF WATERLOO

Key Plan



Limits of Hallman Draft Plan

Limits of Domm Draft Plan

north

SCALE: NTS

Source: SLRN, Region of Waterloo

Additional Information Required Under Section 51(17) of the Planning Act R.S.O. 1990, c.P.13 as Amended

A. AS SHOWN	B. AS SHOWN	C. AS SHOWN
D. RESIDENTIAL, MULTIPLE RESIDENTIAL, PARK, WILDLIFE CORRIDOR		
E. AS SHOWN	F. AS SHOWN	G. AS SHOWN
H. MUNICIPAL WATER SUPPLY	I. LOAM	J. AS SHOWN
K. ALL SERVICES AS REQUIRED	L. AS SHOWN	

Area Schedule - Hallman Construction Limited **30T-_____**

	STAGE 1			STAGE 2		
Description	Lots/Blks	Units	Area (ha)	Lots/Blks	Units	Area (ha)
Residential/ Consolidation Block	1-13	83-115	2.809	1-9	82-98	3.745
Park	14		0.217			
Emergency Access	15	1-2	0.070	10	1	0.057
Wildlife Corridor	16		0.246			
0.3m Reserve	17-20		0.004	11,12		0.002
Roads			1.121			1.108
Total	**20**	**84-117**	**4.467**	**12**	**83-99**	**4.912**

	STAGE 3			STAGE 4		
Description	Lots/Blks	Units	Area (ha)	Lots/Blks	Units	Area (ha)
Residential/ Consolidation Block				1-5	37-44	2.024
Multiple Residential/ Consolidation Block	1	59-185	1.857			
Emergency Access				6	1	0.046
0.3m Reserve				7-9		0.005
Roads						0.676
Total	**1**	**59-185**	**1.857**	**9**	**38-45**	**2.751**

	STAGE 5			TOTAL		
Description	Lots/Blks	Units	Area (ha)	Lots/Blks	Units	Area (ha)
Residential/ Consolidation Block	1-4	47-58	2.542	30	249-315	11.120
Multiple Residential/ Consolidation Block				1	59-185	1.857
Park				1		0.217
Wildlife Corridor				1		0.246
Emergency Access				3	3-4	0.173
0.3m Reserve	5		0.001	10		0.012
Roads			0.417			3.322
Total	**5**	**47-58**	**2.960**	**46**	**311-504**	**16.947**

Area Schedule - Brian Domm **30T-_____**

	STAGE 1			STAGE 2		
Description	Lots/Blks	Units	Area (ha)	Lots/Blks	Units	Area (ha)
Residential/ Consolidation Block	1-14	88-104	3.669	1-7	26-30	1.469
Park	15,16		0.886	8		0.074
Emergency Access	17,18	5-6	0.302			
Walkway	19		0.018			
0.3m Reserve	20-22		0.003			
Roads			1.415			0.518
Total	**22**	**93-110**	**6.293**	**8**	**26-30**	**2.061**

	STAGE 3			TOTAL		
Description	Lots/Blks	Units	Area (ha)	Lots/Blks	Units	Area (ha)
Residential/ Consolidation Block				21	114-134	5.138
Multiple Residential/ Consolidation Block	1	0-12	0.126	1	0-12	0.126
Park				3		0.960
Emergency Access				2	5-6	0.302
Walkway				1		0.018
0.3m Reserve				3		0.003
Roads						1.933
Total	**1**	**0-12**	**0.126**	**31**	**119-152**	**8.480**

Total Number of Units Proposed for Entire Plan (Hallman/Domm):430-656

Unit Calculations:

Minimum Unit Yield: 13.716m (45 ft) lots backing onto Open Space
12.192m (40 ft) lots across from those lots backing onto Open Space
10.9728m (36 ft) lots for the remainder
5.5m (18 ft) units from used for street townhouse blocks
Concept Plan used for minimum number of units in multiple blocks

Maximum Unit Yield: 12.192m (40 ft) lots backing onto Open Space
10.9728m (36 ft) lots across from those lots backing onto Open Space
9.0m (30 ft) lots for the remainder
5.5m (18 ft) units from used for street townhouse blocks
100 units/ha used for maximum number of units in multiple blocks

Rev. No.	Date	Issued / Revision	By
1.	Feb.4, 2021	For Submission to Region of Waterloo;	DGS

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200-540 BINGEMANS CENTRE DR. KITCHENER, ON, N2B 3X9 | P: 519.576.3650 F: 519.576.0121 | WWW.MHBCPLAN.COM

Approval Stamp

Date	February 4, 2021
File No.	0800C
Plan Scale	1:1,250 (36x36)
Drawn By	D.G.S.
Checked By	P.B.

Project Westwood Phase 2

Applicant
Hallman Construction Limited/
Brian Domm

north

File Name DRAFT PLAN

Dwg No. 1 of 1

Scale Bar 0 5 10 25 50 100m

K:\0800C-Gatestone Developments-North Dumfries Lands\DP\Consolidated Draft Plan February4 2021.dwg

Township of
Woolwich

Township of
North Dumfries

County of
Wellington

LEGEND

Urban Area

- Built-Up Area*
- Urban Designated Greenfield Areas
- Prime Industrial/Strategic Reserve (Serviced)
- Urban Growth Centres
- Reurbanization Corridors **
- Major Transit Station Areas **
- Central Transit Corridor Environmental Assessment Study Area
- Planned Highway 7
- Region of Waterloo International Airport
- Urban Area Boundary

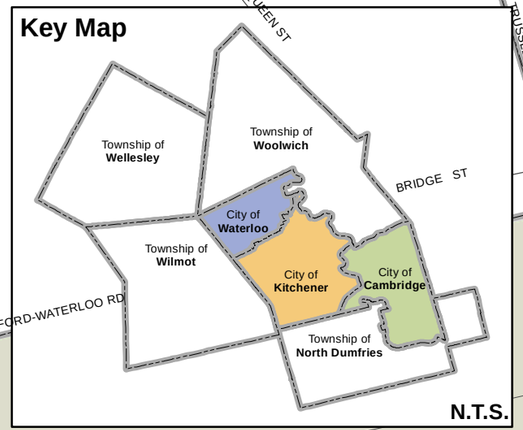
LEGEND

- Provincial Highway
- Regional Road
- River
- Region of Waterloo International Airport
- Municipal Boundary
- Railway

0 0.5 1 2 Km

Sources: Region of Waterloo, Ministry of Energy and Infrastructure

Key Map



N.T.S.

Region of Waterloo

Regional Official Plan
SHAPING OUR FUTURE

MAP 3a

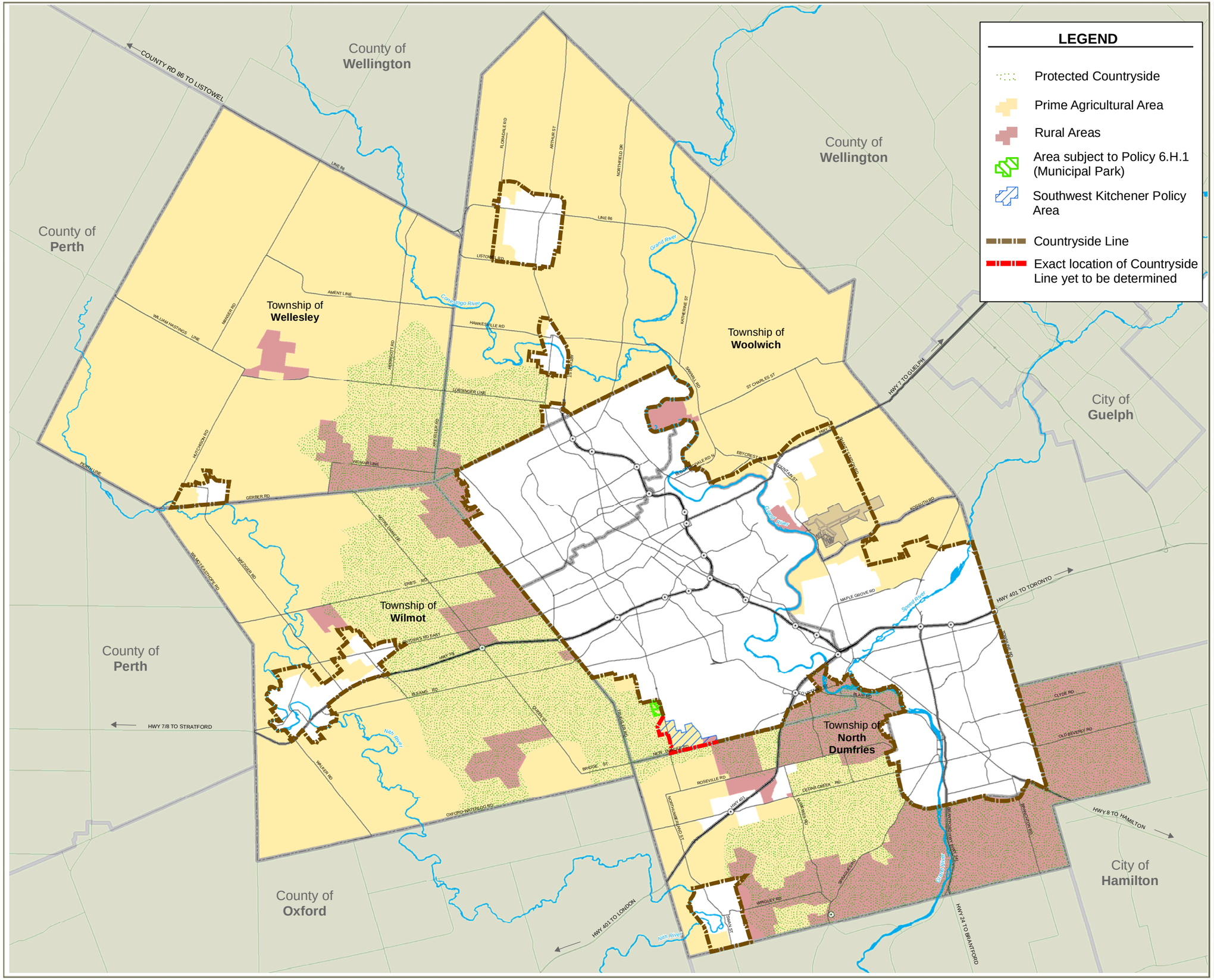
URBAN AREA

2015

* Built-Up Area includes all lands within the built boundary, as established by the Province.

** Map 3a will be amended to designate Reurbanization Corridors and Major Transit Station Areas following the completion of the Rapid Transit Environmental Assessment.

Note: This map forms part of the Official Plan of the Regional Municipality of Waterloo and must be read in conjunction with the policies of this Plan.



Region of Waterloo

Regional Official Plan
SHAPING OUR FUTURE

MAP 7

THE COUNTRYSIDE

LEGEND

- Provincial Highway
- Regional Road
- River
- Region of Waterloo International Airport
- Municipal Boundary
- Railway

0 1 2 4 Km

Sources: Region of Waterloo

2015

Note: This map forms part of the Official Plan of the Regional Municipality of Waterloo and must be read in conjunction with the policies of this Plan.

Appendix C

Borehole Logs

LVM

Borehole Number: 01-10

Ground Elevation: *309.13 mASL*

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Job No.: *P036589-300*

Drill Date: *February 11, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	309.13			
	TOPSOIL: dark brown silt, frozen				
1.00	***SILT:*** firm brown clayey silt, trace sand, APL	308.00	1	SS	8
	SAND: compact brown fine to coarse sand, some silt, trace fine gravel, saturated		2	SS	18
2.00		307.00			
			3	SS	22
3.00	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt, saturated	306.00	4	SS	29
4.00		305.00			
5.00		304.00	5	SS	23
6.00		303.00			
7.00		302.00			
	Borehole terminated at 7.62 m				
8.00		301.00			
9.00		300.00			
10.00		299.00			
11.00		298.00			

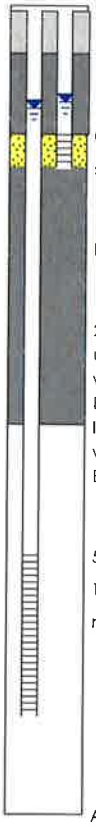
Dynamic Cone (X) 20 40 60 80

Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200

Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 02-10

Ground Elevation: *308.59 mASL*

Job No.: *P036589-300*

Drill Date: *February 11, 2010*

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation		308.59			
	TOPSOIL: black peaty topsoil, WTPL					
1.00	***SILT:*** very loose brown silt, some sand and organics		308.00	1	SS	2
	SAND AND GRAVEL: compact brown sand and gravel, some silt, saturated		307.00	2	SS	12
2.00	some cobbles					
3.00			306.00	3	SS	22
	frequent cobbles		305.00			
4.00			304.00			
5.00			303.00			
6.00	Borehole terminated at 6.10 m		302.00			
7.00			301.00			
8.00			300.00			
9.00			299.00			
10.00			298.00			
11.00			297.00			

Dynamic Cone (X) 20 40 60 80 — Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- 19 mm pipe
- 0.30 m slotted filter
- sand pack
- bentonite seal
- 2010-03-14 upper standpipe water level at 0.62 m Elev. 307.97 m lower standpipe water level at 0.62 m Elev. 307.97 m
- 50 mm pipe
- 1.52 m slotted screen
- native cave
- At drilling completion, water level at 0.61 m

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 03-10

Ground Elevation: *313.06 mASL*

Project: *Cambridge West*

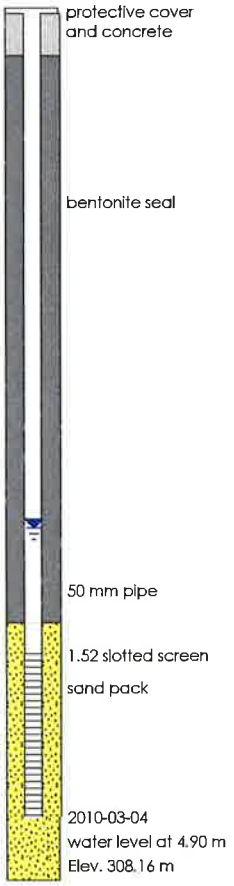
Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 11-12, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	313.06			
0.00	***TOPSOIL:*** dark brown silt, frozen				
1.00	***SAND:*** compact rusty brown fine to coarse sand, trace silt and fine gravel, damp	312.00	1	SS	13
	some gravel		2	SS	20
2.00		311.00			
3.00	***SAND AND GRAVEL:*** very dense brown sand and gravel	310.00	3	SS	27\150mm
4.00		309.00			
5.00	moist	308.00	4	SS	33
	saturated				
6.00	some silt	307.00	5	SS	27
7.00		306.00			
8.00	***SILT:*** compact grey silt, trace clay; some sand layers, saturated	305.00	6	SS	23
	Borehole terminated at 8.23 m				
9.00		304.00			
10.00		303.00			
11.00		302.00			

Dynamic Cone (X) 20 40 60 80
Standard Penetration (●) 20 40 60 80
Shear Strength (PP) kPa (▲) 50 100 150 200
Shear Strength (FV) kPa (■) 50 100 150 200
WP WL
Water Content (%) 10 20 30



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 04-10

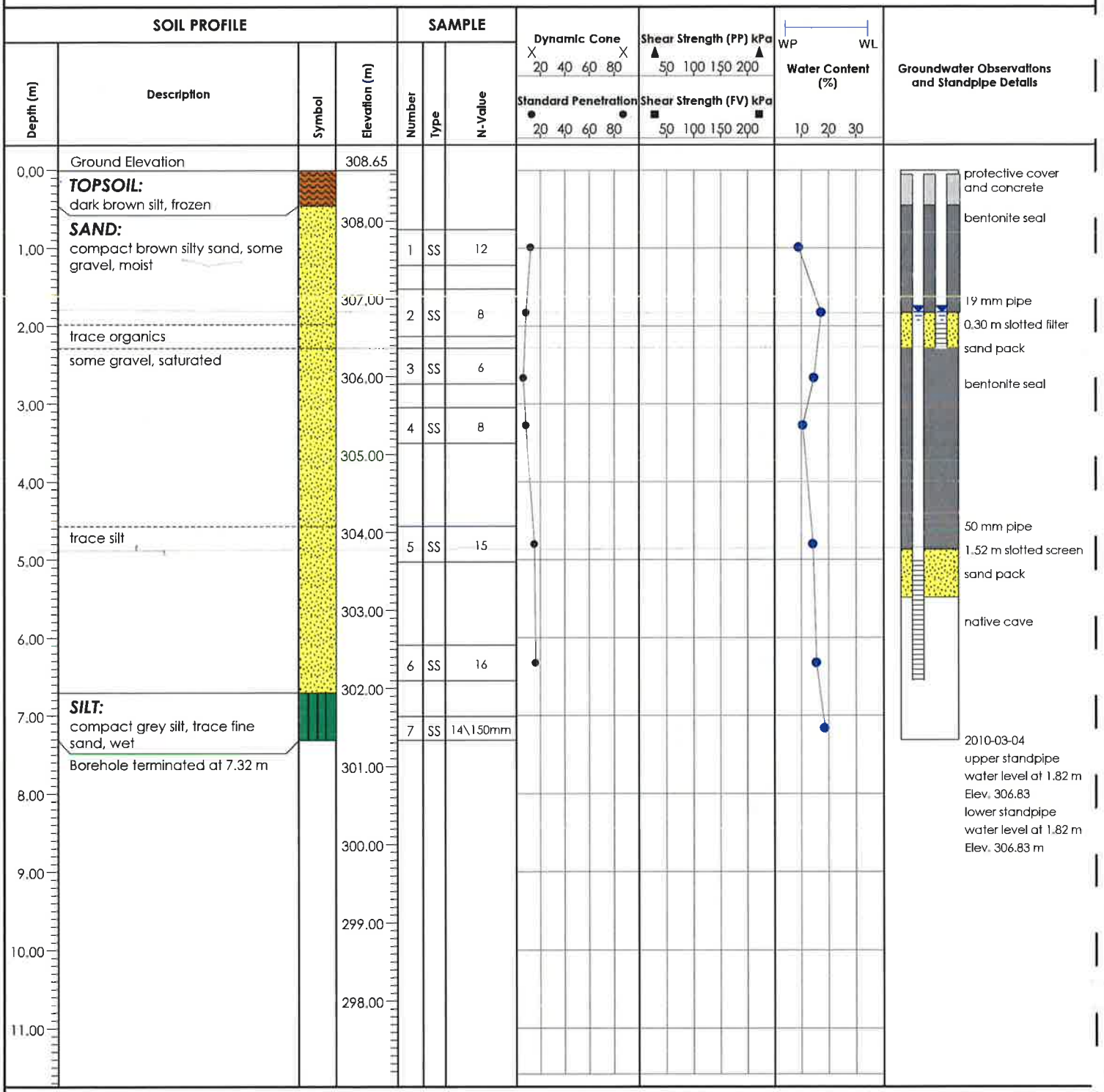
Ground Elevation: *308.65 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 12, 2010*



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 05-10

Ground Elevation: *308.57 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 12, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
	Ground Elevation		308.57			
0.00	***FILL:*** loose brown and rusty brown sand and silty sand, damp to moist					
1.00			308.00	1	SS	4
			307.00	2	SS	6
2.00	***SILT:*** compact grey silt, trace sand, saturated					
			306.00	3	SS	16
3.00	trace clay					
			305.00	4	SS	21
4.00						
5.00	***SAND:*** compact brown fine sand, trace silt, damp		304.00	5	SS	14
6.00	saturated		303.00			
			302.00	6	SS	16
7.00						
			301.00	7	SS	20
8.00	some gravel					
			300.00			
9.00						
			299.00	8	SS	22
	Borehole terminated at 9.60 m					
10.00			298.00			
11.00			297.00			

Dynamic Cone: X 20 40 60 80 X
Standard Penetration: ● 20 40 60 80 ●
Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲
Shear Strength (FV) kPa: ■ 50 100 150 200 ■
Water Content (%): WP WL; 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- 19 mm pipe
- 0.61 m slotted filter
- sand pack
- bentonite seal
- 2010-03-04
- upper standpipe water level at 2.11 m Elev. 306.46 m
- lower standpipe water level at 6.04 m Elev. 302.53 m
- 50 mm pipe
- 1.52 m slotted screen
- sand pack

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

Borehole Number: 06-10

Ground Elevation: *308.97 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 12, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
	Ground Elevation	308.97			
0.00	***TOPSOIL:*** dark brown silt, frozen				
1.00	***SILT:*** loose brown silt, some sand and clay, very moist to wet	308.00	1	SS	4
			2	SS	4
2.00	***SAND:*** loose grey fine to coarse sand, some silt and gravel, saturated	307.00			
			3	SS	16
3.00		306.00			
			4	SS	17
4.00		305.00			
			5	SS	36
5.00		304.00			
6.00	Borehole terminated at 6.10 m	303.00			
7.00		302.00			
8.00		301.00			
9.00		300.00			
10.00		299.00			
11.00		298.00			

Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP — WL; 10 20 30

Groundwater Observations and Standpipe Details

2010-03-04
upper standpipe water level at 0.91 m Elev. 308.06 m
lower standpipe water level at 0.92 Elev. 308.05 m

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 07-10

Ground Elevation: *310.74 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 16, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	310.74			
	TOPSOIL: dark brown silt, frozen				
	SAND: compact brown fine to coarse sand, some fine gravel, trace silt, damp	310.00	1	SS	15
1.00					
		309.00	2	SS	26
2.00			3	AS	
		308.00			
3.00	saturated		4	SS	21
4.00		307.00			
	SILT: compact brown silt, moist	306.00	5	SS	29
5.00	***SAND:*** dense brown silty fine sand, saturated		6	SS	44
		305.00			
6.00	***SILT TILL:*** dense to very dense brown sandy silt, some gravel, moist		7	SS	36
		304.00	8	SS	57
7.00	Borehole terminated at 7.01 m				
8.00		303.00			
9.00		302.00			
10.00		301.00			
11.00		300.00			

Dynamic Cone (X) 20 40 60 80 | Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 | Shear Strength (FV) kPa (■) 50 100 150 200

WP WL | Water Content (%) 10 20 30

Groundwater Observations and Standpipe Details

2010-03-04
upper standpipe
water level at 4.15 m
Elev. 13.62 m
lower standpipe
water level at 4.38 m
Elev. 14.37 m

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

Borehole Number: 08-10

Ground Elevation: *311.92 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 16, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		311.92			
	TOPSOIL: dark brown silt, frozen					
1.00	***SILT:*** loose brown silt, trace sand and clay, moist		311.00	1	SS	6
	SAND: compact brown fine to coarse sand, trace silt and fine gravel, damp			2	SS	13
2.00			310.00			
				3	SS	17
3.00			309.00			
				4	SS	15
4.00			308.00			
	saturated					
5.00			307.00	5	SS	10
	SILT TILL: compact brown sandy silt, some gravel, moist			6	SS	18
6.00			306.00	7	SS	27
	Borehole terminated at 6.40 m					
7.00			305.00			
8.00			304.00			
9.00			303.00			
10.00			302.00			
11.00			301.00			

Dynamic Cone (X) 20 40 60 80 X
Standard Penetration (●) 20 40 60 80
Shear Strength (PP) kPa (▲) 50 100 150 200
Shear Strength (FV) kPa (■) 50 100 150 200
WP WL
Water Content (%) 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- 50 mm pipe
- 0.76 slotted screen
- sand pack

2010-03-04
water level at 4.66 m
Elev. 307.26 m

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 09-10

Ground Elevation: *311.16 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 16, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	311.16			
0.00	***TOPSOIL:*** dark brown silt, frozen				
1.00	***SILT:*** brown sandy silt, moist	310.00	1	SS	28
	SAND AND GRAVEL: compact to dense brown sand and gravel, some cobbles, trace silt, damp		2	SS	41
2.00		309.00			
	SAND: compact brown fine to coarse sand, trace silt, damp		3	SS	20
3.00	***SILT:*** compact brown silt, moist	308.00	4	SS	24
	compact brown fine sandy silt, damp				
4.00		307.00			
	SAND: compact brown silty fine sand, moist		5	SS	33
5.00		306.00			
6.00	saturated	305.00	6	SS	28
7.00		304.00			
			7	SS	12\150mm
8.00	***SILT TILL:*** compact grey sandy silt, some gravel	303.00			
9.00		302.00	8	SS	20\75mm
10.00		301.00			
			9	SS	50\125mm
11.00	Borehole terminated at 10.95 m	300.00			

Dynamic Cone / Standard Penetration: 20 40 60 80

Shear Strength (PP) / (FV) kPa: 50 100 150 200

Water Content (%): WP WL; 10 20 30

Groundwater Observations and Standpipe Details:

- protective cover and concrete
- bentonite seal
- 2010-03-04
- upper standpipe water level at 5.62 m Elev. 305.54 m
- lower standpipe water level at 5.59 m Elev. 305.57 m
- 19 mm pipe
- 0.61 m slotted filter sand pack
- bentonite seal
- 50 mm pipe
- 0.76 m slotted screen
- sand pack

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 10-10

Ground Elevation: *310.22 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

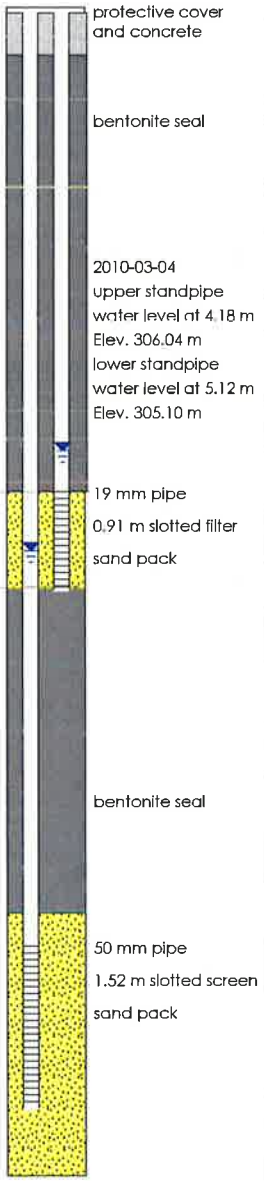
Drill Date: *February 16, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value
	Ground Elevation		310.22			
0.00	***SILT:*** brown silt, trace sand and clay, frozen					
1.00	***SAND:*** compact brown fine to medium sand, some silt, damp		309.00	1	SS	15
				2	SS	29
2.00	***SAND AND GRAVEL:*** dense brown sand and gravel, trace silt, damp		308.00	3	AS	
	SAND: loose brown fine to coarse sand, trace silt, damp					
3.00			307.00	4	SS	6
4.00			306.00			
	saturated			5	SS	28
5.00	***SILT:*** compact brown silt, moist		305.00			
6.00	grey, moist		304.00	6	SS	16
7.00			303.00			
8.00	***SAND:*** compact brown fine to medium sand, some silt, saturated; some silt layers, wet		302.00	7	SS	20
9.00	some gravel		301.00	8	SS	22
10.00			300.00			
	SILT TILL: very dense grey silt, some sand and gravel, moist			9	SS	15\25mm
11.00	Borehole terminated at 11.00 m		299.00			

Dynamic Cone (X) 20 40 60 80 / Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa 50 100 150 200 / Shear Strength (FV) kPa 50 100 150 200

Water Content (%) WP WL 10 20 30



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

Borehole Number: 11-10

Ground Elevation: *307.87 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 17, 2010*

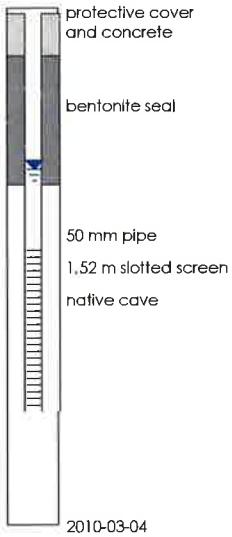
Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		307.87			
	TOPSOIL: dark brown silt, frozen					
1.00	***SILT:*** brown silt, some sand and clay, frozen		307.00	1	SS	15
	SAND: compact brown fine to coarse sand, some fine gravel, trace silt, damp					
2.00	loose, saturated		306.00	2	SS	6
				3	SS	8
3.00			305.00			
				4	SS	7
4.00	***SILT TILL:*** compact brown silt, trace sand, moist		304.00	5	SS	18
				6	SS	28
5.00	Borehole terminated at 4.88 m		303.00			
6.00			302.00			
7.00			301.00			
8.00			300.00			
9.00			299.00			
10.00			298.00			
11.00			297.00			

SOIL PROFILE | **SAMPLE**

Dynamic Cone (X) 20 40 60 80 | Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 | Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30



Groundwater Observations and Standpipe Details

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 12-10

Ground Elevation: *313.67 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 17, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	313.67			
	TOPSOIL: dark brown silt, frozen				
	SILT: firm rusty brown silt, some clay, APL	313.00	1		
1.00			2	SS	6
	SAND: compact brown fine to coarse sand, trace silt and fine gravel, damp	312.00	3	SS	11
2.00	loose brown fine to medium sand, trace silt, damp		4	SS	7
3.00	trace fine gravel	311.00	5	SS	6
4.00	some gravel	310.00			
	SILT TILL: compact brown silt, trace sand and fine gravel, moist	309.00	6	SS	22
5.00		308.00			
6.00	grey, moist		7	SS	27
	SILT: compact brown fine sandy silt, saturated	307.00			
7.00		306.00	8	SS	19
8.00					
9.00		305.00	9	SS	25
	SAND: loose to compact grey silty fine sand, saturated	304.00			
10.00		303.00	10	SS	6
11.00	Borehole terminated at 11.28 m				

Dynamic Cone (X) 20 40 60 80 X
Standard Penetration (●) 20 40 60 80 ●
Shear Strength (PP) kPa ▲ 50 100 150 200 ▲
Shear Strength (FV) kPa ■ 50 100 150 200 ■
WP WL
Water Content (%) 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- 19 mm pipe
- 0.91 m slotted filter
- sand pack
- 2010-03-04 upper standpipe dry lower standpipe water level at 6.26 m Elev. 307.41 m
- bentonite seal
- 50 mm pipe
- 1.52 m slotted screen
- sand pack

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

Borehole Number: 13-10

Ground Elevation: *316.61 mASL*

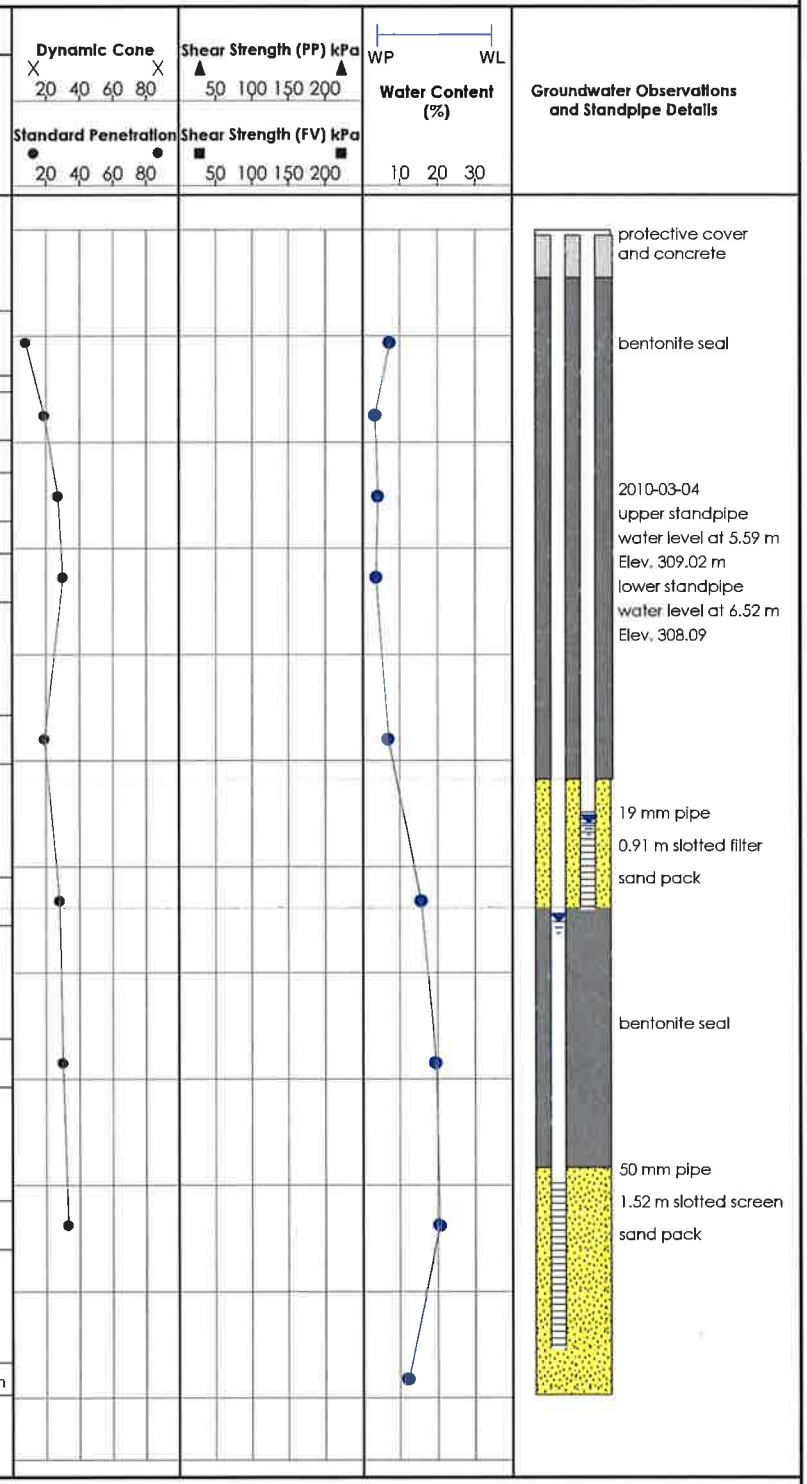
Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 17, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	316.61			
	TOPSOIL: dark brown silt, frozen				
1.00	***SILT:*** brown silt, some sand and clay, frozen	316.00	1	SS	8
	SAND: loose brown fine to coarse sand, trace gravel and silt, damp	315.00	2	SS	19
2.00	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, damp				
		314.00	3	SS	27
3.00			4	SS	30
4.00	***SAND:*** compact brown fine to coarse sand, trace silt, damp	313.00			
		312.00	5	SS	19
5.00					
6.00	***SILT TILL:*** compact brown silt, trace sand and fine gravel, moist	311.00	6	SS	28
7.00	***SILT:*** compact grey silt, some fine sand, wet	310.00			
		309.00	7	SS	30
8.00		308.00			
9.00			8	SS	33
	SAND AND GRAVEL: dense brown sand and gravel, some silt, saturated	307.00			
10.00	***SILT TILL:*** very dense grey silt, some sand and gravel, moist	306.00	9	SS	46\150mm
11.00	Borehole terminated at 11.28 m	305.00			



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 14-10

Ground Elevation: *311.71 mASL*

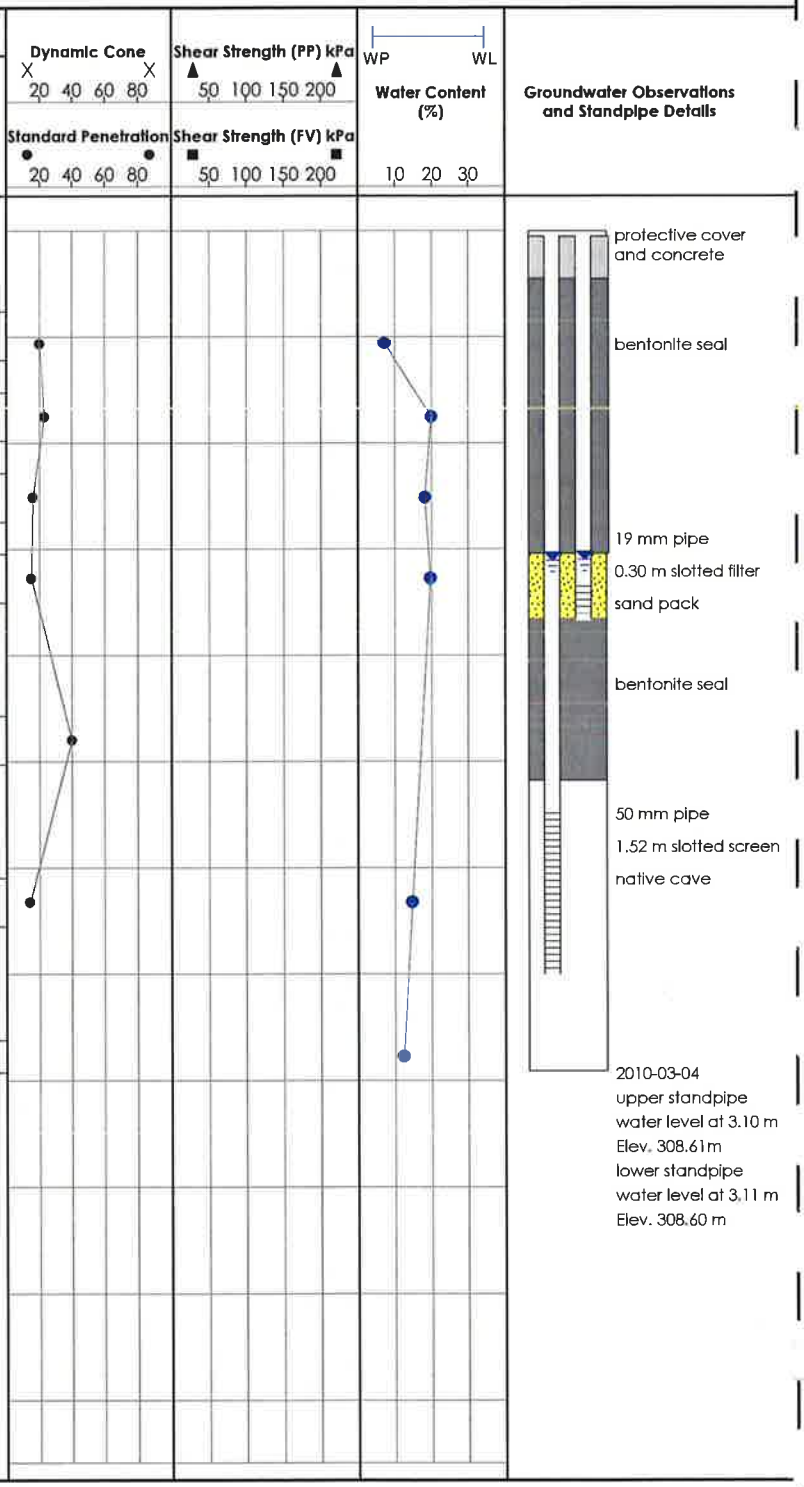
Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 17-18, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value
	Ground Elevation		311.71			
0.00	***TOPSOIL:*** dark brown silt, frozen					
	SILT: brown silt, some sand and gravel, frozen		311.00	1	SS	20
1.00						
	SAND AND GRAVEL: compact brown sand and gravel, damp		310.00	2	SS	23
2.00						
	SILT AND SAND: compact brown layered silt and sand, moist / damp		309.00	3	SS	16
3.00	***SAND:*** compact brown fine to medium sand, trace silt, moist			4	SS	15
	fine to coarse sand, saturated		308.00			
4.00						
	SAND AND GRAVEL: dense brown sand and gravel, some silt, saturated		307.00	5	SS	40
5.00						
	SAND: compact grey fine to coarse sand, trace silt and fine gravel, saturated		306.00	6	SS	14
6.00						
7.00			305.00			
			304.00	7	SS	13\150mm
8.00	Borehole terminated at 7.92 m					
9.00			303.00			
			302.00			
10.00						
			301.00			
11.00						



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

Borehole Number: 15-10

Ground Elevation: *309.74 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

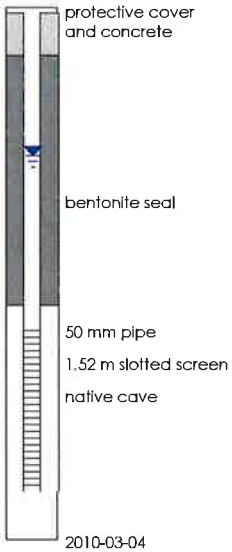
Drill Date: *February 18, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	309.74			
0.00	***TOPSOIL:*** dark brown silt, frozen				
0.80	***SILT:*** firm brown silt, some clay, trace sand and gravel, APL	309.00	1	SS	7
1.00	***SAND:*** loose brown fine to coarse sand, trace silt, moist				
1.70	saturated	308.00	2	SS	8
2.00	compact				
2.50		307.00	3	SS	11
3.00					
3.50			4	SS	16
3.50	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, saturated	306.00			
4.00					
4.70		305.00	5	SS	26
5.00	Borehole terminated at 5.03 m				
6.00		304.00			
7.00		303.00			
8.00		302.00			
9.00		301.00			
10.00		300.00			
11.00		299.00			

Dynamic Cone (X) 20 40 60 80 — Standard Penetration (●) 20 40 60 80

Shear Strength (PP) (▲) kPa 50 100 150 200 — Shear Strength (FV) (■) kPa 50 100 150 200

Water Content (%) WP WL 10 20 30



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

Borehole Number: 16-10

Ground Elevation: *309.08 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 18, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value
	Ground Elevation		309.08			
0.00	***PEAT:*** firm black amorphous peat, WTPL					
1.00			308.00	1	SS	6
2.00	***SAND:*** very loose brown silty sand, saturated		307.00	2	SS	WH
	trace gravel			3	SS	3
3.00			306.00	4	SS	8
4.00	***SAND AND GRAVEL:*** compact brown sand and gravel, some cobbles and silt, saturated		305.00			
5.00			304.00	5	SS	28
6.00	***SAND:*** brown sand, trace silt and fine gravel, saturated		303.00			
	Borehole terminated at 6.10 m					
7.00			302.00			
8.00			301.00			
9.00			300.00			
10.00			299.00			
11.00			298.00			

SOIL PROFILE | **SAMPLE**

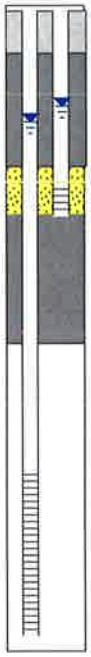
Dynamic Cone (X) 20 40 60 80

Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200

Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30



Groundwater Observations and Standpipe Details

2010-03-04
upper standpipe
water level at 0.95 m
Elev. 308.13 m
lower standpipe
water level at 1.10 m
Elev. 307.98 m

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 17-10

Ground Elevation: *310.52 mASL*

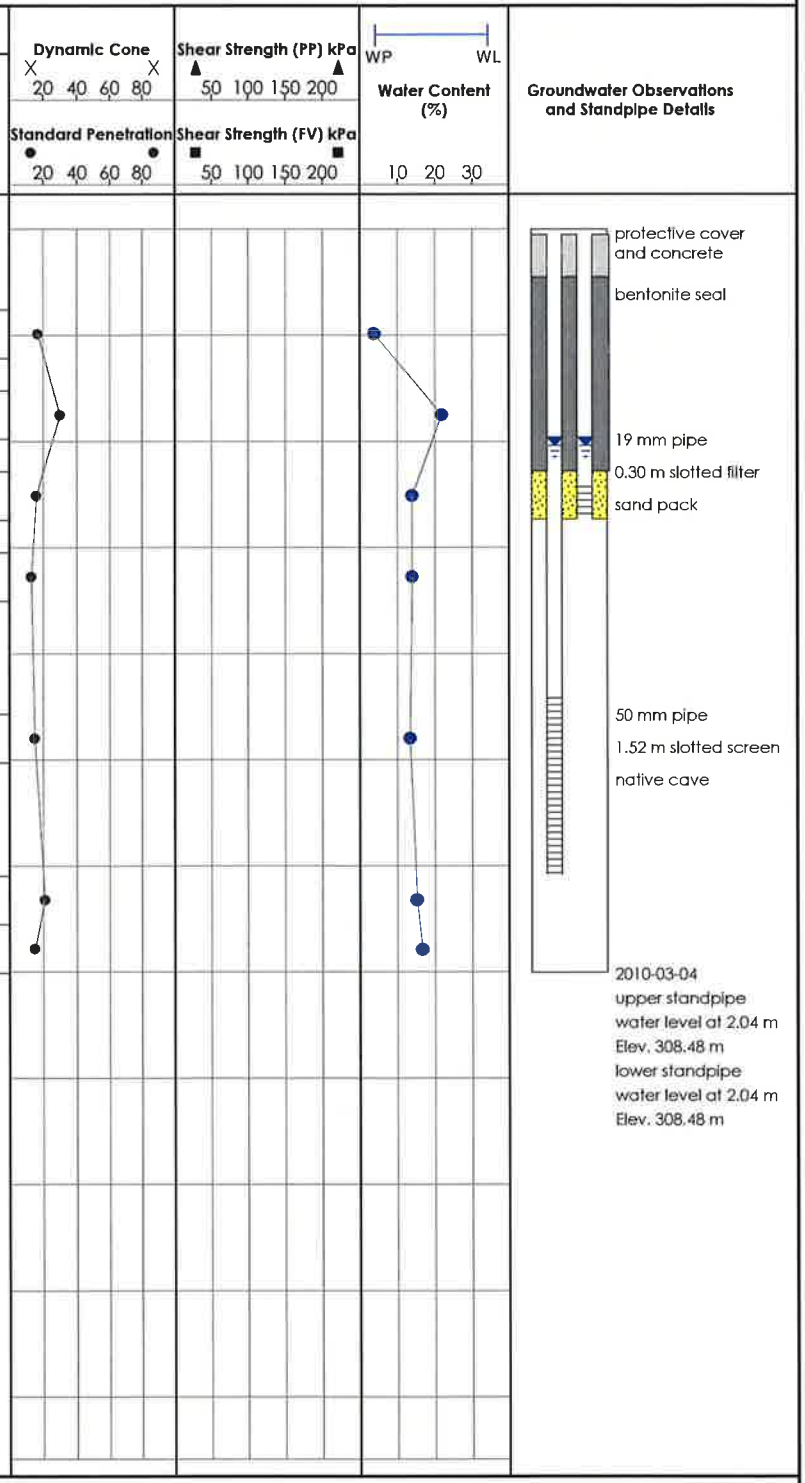
Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 18, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	310.52			
	TOPSOIL: dark brown silt, frozen	310.00			
1.00	***SILT:*** brown silt, some sand, clay and gravel, frozen		1	SS	17
		309.00			
2.00	***SAND:*** compact brown fine to medium sand, trace silt and gravel, damp		2	SS	30
		308.00			
3.00	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, damp		3	SS	16
	SAND: compact brown fine to coarse sand, some gravel, trace silt, saturated	307.00	4	SS	13
4.00	trace gravel				
		306.00	5	SS	15
5.00					
		305.00			
6.00	***SILT TILL:*** compact brown silt, some sand, trace fine gravel, wet		6	SS	21
		304.00	7	SS	15
7.00	grey				
	Borehole terminated at 7.01 m	303.00			
8.00		302.00			
9.00		301.00			
10.00		300.00			
11.00		299.00			



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 18-10

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *310.17 mASL*

Job No.: *P036589-300*

Drill Date: *February 24, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
	Ground Elevation	310.17			
0.00	***TOPSOIL:*** dark brown silt, frozen				
1.00	***SILT:*** brown silt, some sand and gravel, moist	309.00	1	SS	47
2.00		308.00	2	SS	32\150mm
			3	AS	
3.00	***SAND AND GRAVEL:*** dense to very dense brown sand and gravel, some cobbles, trace silt, damp	307.00	4	SS	23
4.00	saturated	306.00			
5.00	***SAND:*** compact brown fine to coarse sand, some gravel, trace silt, saturated	305.00	5	SS	27
6.00	trace fine gravel	304.00	6	SS	38
7.00		303.00			
8.00	***SAND AND GRAVEL:*** dense brown sand and gravel, trace silt, saturated	302.00	7	SS	40
9.00	***SAND:*** compact brown fine to coarse sand, trace silt, saturated	301.00	8	SS	22
10.00	***SILT:*** dense brown fine sandy silt, saturated	300.00			
11.00		299.00	9	SS	33
12.00	grey, saturated	298.00	10	SS	20
13.00		297.00			
14.00		296.00	11	SS	7
15.00		295.00			
16.00		294.00			
17.00		293.00			
18.00	***SILT TILL:*** very dense grey silt, some sand and gravel, moist	292.00	12	SS	10\25mm
19.00		291.00			
20.00	Borehole terminated at 19.51 m upon auger refusal on bedrock or boulder	290.00			

Dynamic Cone (X) 20 40 60 80 — Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30

Groundwater Observations and Standpipe Details:
- protective cover and concrete
- bentonite seal
- 2010-03-04 water level at 2.08 m Elev. 307.98 m
- bentonite grout
- 50 mm pipe
- 1.52 slotted screen
- sand pack

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 18A-10

Ground Elevation: *310.27 mASL*

Project: *Cambridge West*

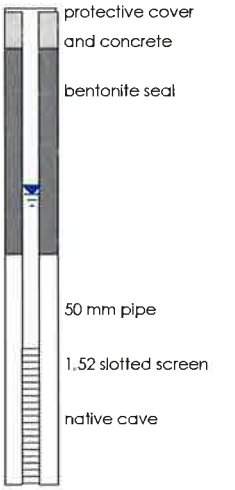
Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *March 2, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		310.27			
	TOPSOIL: dark brown silt, frozen					
1.00	***SILT:*** brown silt, some sand and gravel, moist		309.00	1	SS	47
				2	SS	32\150mm
2.00	***SAND AND GRAVEL:*** dense to very dense brown sand and gravel, some cobbles, trace silt, damp		308.00	3	AS	
3.00	saturated					
	SAND: compact brown fine to coarse sand, some gravel, trace silt,		307.00	4	SS	23
4.00	saturated		306.00			
	trace fine gravel			5	SS	27
5.00			305.00			
	Borehole terminated at 5.33 m					
6.00			304.00			
7.00			303.00			
8.00			302.00			
9.00			301.00			
10.00			300.00			
11.00			299.00			
12.00			298.00			
13.00			297.00			

Dynamic Cone (X) 20 40 60 80 X
Standard Penetration (●) 20 40 60 80 ●
Shear Strength (PP) kPa ▲ 50 100 150 200 ▲
Shear Strength (FV) kPa ■ 50 100 150 200 ■
WP WL
Water Content (%) 10 20 30



2010-03-04
water level at 2.08 m
Elev. 308.19 m

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM/KT*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 19-10

Ground Elevation: *310.38 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 25, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	310.38			
	FILL: brown sandy silt, trace gravel and topsoil, frozen				
1.00	***TOPSOIL:*** dark brown silt, moist	309.00	1	SS	6
	SAND AND GRAVEL: compact brown silty sand and gravel, damp		2	SS	11
2.00	***SAND:*** loose to compact brown fine to coarse sand, some silt, trace fine gravel, saturated	308.00	3	SS	14
3.00		307.00	4	SS	8
4.00		306.00			
5.00	***SAND AND GRAVEL:*** compact grey fine to coarse sand and gravel, trace silt, saturated	305.00	5	SS	24
6.00	***SAND:*** compact grey fine to coarse sand, trace silt and fine gravel, saturated	304.00	6	SS	16
7.00		303.00	7	SS	28
8.00	***SILT TILL:*** compact grey silt, some sand, clay and gravel, moist	302.00			
9.00		301.00	8	SS	26
10.00	very dense	300.00			
11.00			9	SS	52
	Borehole terminated at 11.13 m	299.00			

Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP — WL; 10 20 30

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 20-10

Ground Elevation: *314.78 mASL*

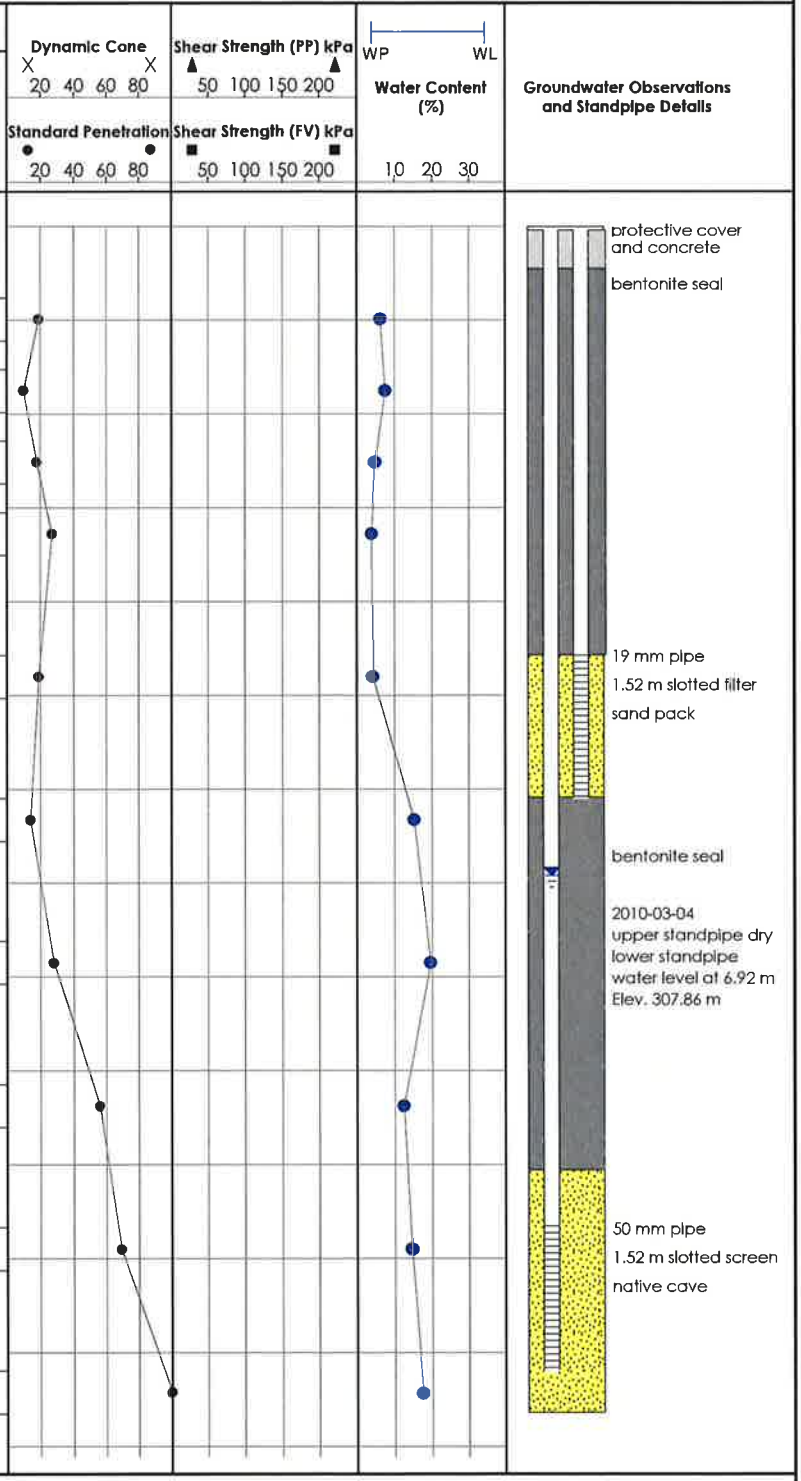
Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 25, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		314.78			
0.00	***TOPSOIL:*** dark brown silt, frozen					
1.00	***SILT:*** brown silt, some sand and gravel, frozen		314.00	1	SS	19
2.00	***SAND AND GRAVEL:*** compact brown silty sand and gravel, damp		313.00	2	SS	10
3.00	***SAND:*** compact brown fine to coarse sand, trace silt and gravel, damp		312.00	3	SS	18
4.00	compact brown fine to coarse sand, trace silt, damp		311.00	4	SS	27
5.00	some gravel; occasional brown silt layers, moist		310.00	5	SS	19
6.00	***SILT:*** compact brown silt, trace fine sand, moist		309.00	6	SS	14
7.00	brown fine sandy silt, saturated		308.00			
8.00	brown sand and gravel layers, saturated		307.00	7	SS	28
9.00	***SILT TILL:*** very dense grey silt, some sand, clay and gravel, moist		306.00	8	SS	56
10.00			305.00			
11.00			304.00	9	SS	69
12.00	***SILT:*** very dense grey silt, some fine sand, saturated		303.00	10	SS	114
13.00	Borehole terminated at 12.65 m		302.00			



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 21-10

Ground Elevation: *308.32 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 26, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
	Ground Elevation	308.32			
0.00	***TOPSOIL:*** dark brown silt, frozen				
1.00	***SILT:*** brown silt, trace sand and gravel, frozen	307.00	1	SS	9
	SAND AND GRAVEL: compact brown sand and gravel, trace silt, damp		2	SS	12
2.00		306.00	3	SS	27
3.00	saturated	305.00	4	SS	26
4.00		304.00			
5.00	***SAND:*** compact brown fine to coarse sand, trace silt and fine gravel, saturated	303.00	5	SS	33
6.00		302.00	6	SS	24
7.00		301.00			
	Borehole terminated at 7.62 m				
8.00		300.00			
9.00		299.00			
10.00		298.00			
11.00		297.00			

Dynamic Cone (X) 20 40 60 80
Standard Penetration (●) 20 40 60 80
Shear Strength (PP) kPa (▲) 50 100 150 200
Shear Strength (FV) kPa (■) 50 100 150 200
WP WL
Water Content (%) 10 20 30

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 22-10

Ground Elevation: *313.80 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *Feb 26 and Mar 1, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	313.80			
0.00	***TOPSOIL:*** dark brown silt, frozen				
1.00			1	SS	6
1.00	***SILT:*** loose reddish brown silt, some sand, moist	312.00	2	SS	21
2.00			3	AS	27
2.00	***SAND:*** compact brown fine to coarse sand, trace silt, damp	311.00	4	SS	*
3.00					
4.00	***SAND AND GRAVEL:*** compact to dense brown fine to coarse sand and gravel, some cobbles, trace silt, damp	310.00			
4.00					
5.00		309.00	5	SS	31
5.00	***SAND:*** compact brown fine to coarse sand, trace silt and fine gravel, damp				
6.00		308.00	6	SS	22
6.00					
7.00	some gravel, damp	307.00			
7.00					
8.00	very dense brown fine to coarse sand, some gravel, trace silt, damp	306.00	7	SS	71
8.00					
9.00		305.00			
9.00	compact brown fine to coarse sand, trace gravel and silt, damp		8	SS	27
10.00		304.00			
10.00					
11.00	***SAND AND SILT:*** dense to very dense light brown fine sand and silt, moist	303.00	9	SS	50
11.00					
12.00		302.00			
12.00	dense, brown, moist		10	SS	45
13.00		301.00			
13.00					
14.00	***SAND:*** compact brown to reddish brown silty fine sand, saturated	300.00	11	SS	21
14.00					
15.00		299.00			
15.00					
16.00	***SILT:*** dense brown silt, trace fine sand, saturated, dilatant	298.00	12	SS	31
16.00					
17.00		297.00			
17.00	dense to very dense grey and brown silt, saturated		13	SS	50
18.00	***SAND:*** dense brown fine sand, some silt, saturated	296.00			
18.00					
19.00		295.00			
19.00	Borehole terminated at 17.22 m				
20.00		294.00			
		293.00			

Dynamic Cone / Standard Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200

Water Content (%): WP WL; 10 20 30

Groundwater Observations and Standpipe Details:
- protective cover and concrete
- bentonite seal
- 2010-03-04 water level at 13.29 m Elev. 300.51 m
- 50 mm pipe
- 1.52 slotted screen
- sand pack

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes: **Sampler bouncing on cobble*

Field Tech.: *RM/KT*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 23-10

Ground Elevation: *310.46 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *March 1, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	310.46			
0.00	***TOPSOIL:*** dark brown silt, frozen				
1.00	***SILT:*** brown silt, trace sand and gravel, moist		1	SS	21
		309.00	2	SS	18
2.00	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, damp				
	some cobbles	308.00	3	SS	30
3.00					
		307.00	4	SS	24
4.00					
		306.00	5	SS	50\150mm*
5.00	boulders				
		305.00			
6.00	***SILT:*** compact brown silt, trace fine sand, moist		6	SS	26
		304.00			
7.00	some gravel				
	some fine sand layers, saturated	303.00	7	SS	25
8.00					
		302.00			
9.00	***SAND:*** dense brown silty fine sand, saturated		8	SS	35
		301.00			
10.00	compact				
		300.00	9	SS	19
11.00					
		299.00			
12.00					
		298.00	10	SS	21
13.00	Borehole terminated at 12.65 m				
		297.00			

Dynamic Cone (X) 20 40 60 80 X X

Standard Penetration (●) 20 40 60 80 ● ●

Shear Strength (PP) kPa ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa ■ 50 100 150 200 ■

WP WL

Water Content (%) 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- 2010-03-04 water level at 9.73 m Elev. 300.73 m
- 50 mm pipe
- 1.52 slotted screen
- sand pack

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes: **Sampler bouncing on gravel*

Field Tech.: *RM/KT*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 24-10

Ground Elevation: *314.32 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

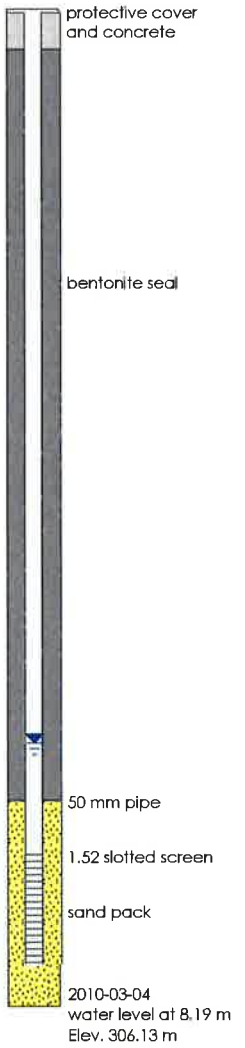
Drill Date: *March 1, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value
	Ground Elevation		314.32			
0.00	***TOPSOIL:*** dark brown silt, frozen					
1.00	***SILT:*** loose brown sandy silt, damp		313.00	1	SS	5
				2	SS	17
2.00	***SAND:*** compact brown fine to medium sand, trace fine gravel and silt, damp		312.00	3	SS	31
3.00	***SAND TILL:*** compact to dense brown silty fine sand, trace fine gravel, moist		311.00	4	SS	25
4.00	***SILT:*** compact brown fine sandy silt, trace gravel, damp		310.00			
5.00	dense, damp to moist		309.00	5	SS	32
6.00	compact brown silt, trace fine sand, very moist		308.00	6	SS	16
7.00			307.00			
	saturated, dilatant			7	SS	20
8.00			306.00			
9.00			305.00	8	SS	21
10.00			304.00			
11.00	Borehole terminated at 11.13 m		303.00	9	SS	26
12.00			302.00			
13.00			301.00			

Dynamic Cone (X) 20 40 60 80 | Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 | Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM/KT*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 25-10

Ground Elevation: *311.27 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *March 2, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation		311.27			
	TOPSOIL: dark brown silt, frozen					
1.00	***SILT:*** loose brown to dark brown silt, some clay, trace sand, moist		310.00	1	SS	4
				2	SS	29
2.00	***SAND AND GRAVEL:*** compact brown fine to coarse sand and gravel, trace silt, some cobbles, damp		309.00	3	SS	61
3.00	very dense		308.00	4	SS	33
	dense					
4.00	saturated		307.00			
5.00			306.00	5	SS	46
6.00			305.00	6	SS	27
7.00			304.00			
	Borehole terminated at 7.62 m					
8.00			303.00			
9.00			302.00			
10.00			301.00			
11.00			300.00			
12.00			299.00			
13.00			298.00			

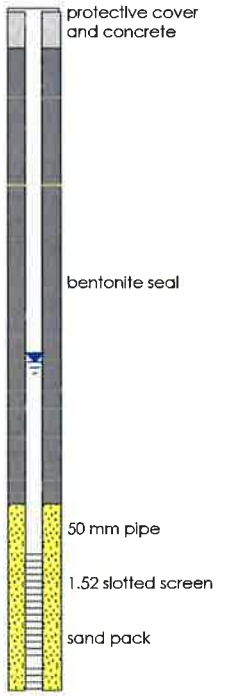
Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP WL; 10 20 30



Groundwater Observations and Standpipe Details

2010-03-04
water level at 3.95 m
Elev. 307.32 m

Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM/KT*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 26-10

Ground Elevation: *319.35 mASL*

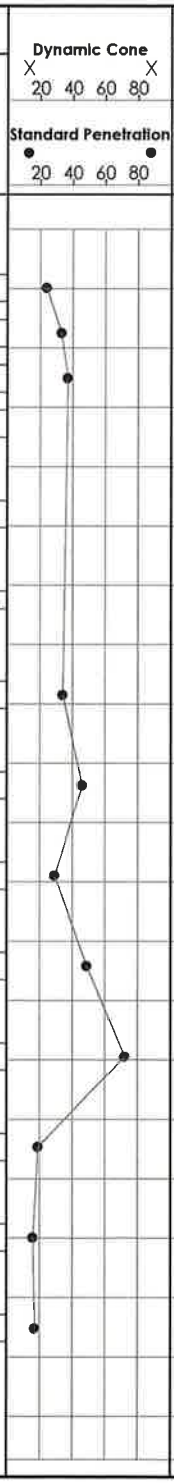
Project: *Cambridge West*

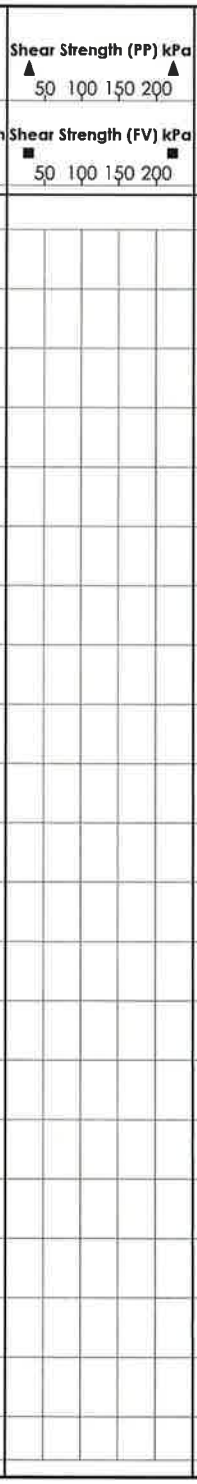
Job No.: *P036589-300*

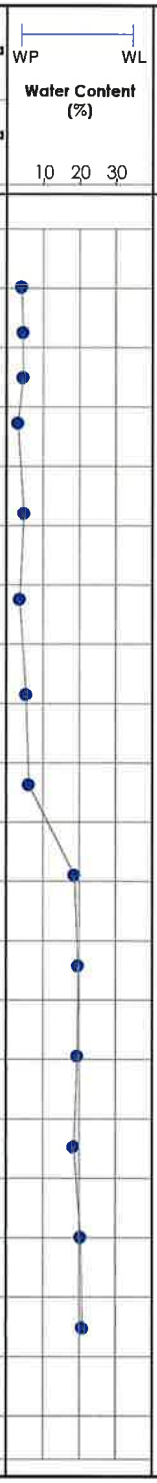
Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *March 2, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation		319.35			
0.00	***TOPSOIL:*** dark brown silt, frozen					
1.00	***SILT:*** brown sandy silt, moist		318.00	1	SS	24
2.00				2	SS	3
2.00	***SAND AND GRAVEL:*** dense brown fine to coarse sand and gravel, trace silt, damp		317.00	3	AS	37
3.00			316.00	4	SS	15\75mm*
3.00	some sand layers, damp					
4.00	some cobbles		315.00	5	SS	35\75mm
4.00	very dense					
5.00			314.00			
6.00			313.00	6	SS	38\150mm
7.00	***SILT:*** dense brown silt, some fine sand, damp to moist		312.00			
7.00				7	SS	34
8.00			311.00			
9.00			310.00	8	SS	46
10.00						
10.00			309.00			
11.00	compact, moist			9	SS	29
11.00			308.00			
12.00						
12.00			307.00	10	SS	49
13.00	dense brown fine sandy silt, wet, dilatant					
13.00			306.00			
14.00	very dense silt, trace to some fine sand, wet, dilatant			11	SS	72
14.00			305.00			
15.00						
15.00	compact, trace fine sand, saturated		304.00	12	SS	19
16.00						
16.00			303.00			
17.00	***SILT AND SAND:*** compact brown silt and fine sand, saturated			13	SS	16
17.00			302.00			
18.00						
18.00			301.00	14	SS	17
19.00	Borehole terminated at 18.75 m					
19.00			300.00			
20.00						
			299.00			







Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes: **Sampler bouncing on gravel*

Field Tech.: *RM/KT*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 27-10

Ground Elevation: *318.13 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *March 10, 2010*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	318.13			
	TOPSOIL: dark brown silt, frozen				
1.00	***SILT:*** brown silt, trace sand and clay, frozen	317.00	1	SS	36
2.00		316.00	2	SS	45
	SAND AND GRAVEL: dense brown sand and gravel, some cobbles, trace silt, damp				
3.00		315.00	3	SS	33
4.00	***SAND:*** dense brown fine to coarse sand, some fine gravel, trace silt, damp	314.00			
			4	SS	37
5.00		313.00			
6.00		312.00	5	SS	46
7.00		311.00			
8.00	very dense	310.00	6	SS	53
9.00	very dense brown fine to medium sand, trace silt, damp; some brown silt layers, moist	309.00	7	SS	56
10.00		308.00			
11.00	dense brown silty fine to medium sand, moist; some sand layers, damp	307.00	8	SS	49
12.00		306.00	9	SS	23
	compact brown silty fine sand, saturated				
13.00		305.00			
14.00	some silt layers	304.00	10	SS	30
15.00		303.00	11	SS	63
	dense to very dense, saturated				
16.00		302.00			
17.00		301.00	12	SS	36
18.00		300.00			
	grey		13	SS	22
19.00	Borehole terminated at 18.75 m	299.00			

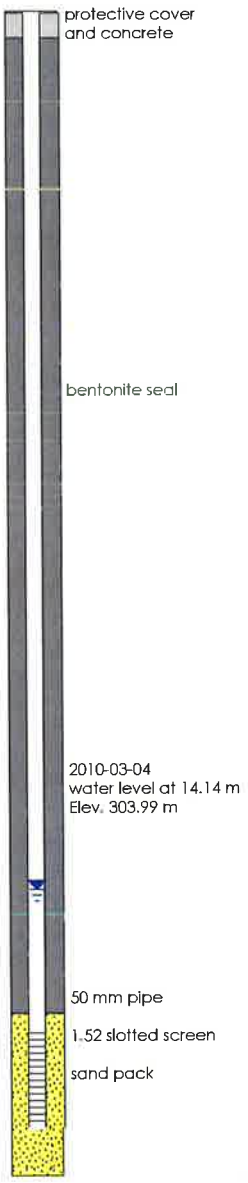
Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP WL; 10 20 30



Reviewed by: *CH*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RM*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Borehole Number: 101-10

Ground Elevation: *310.13 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

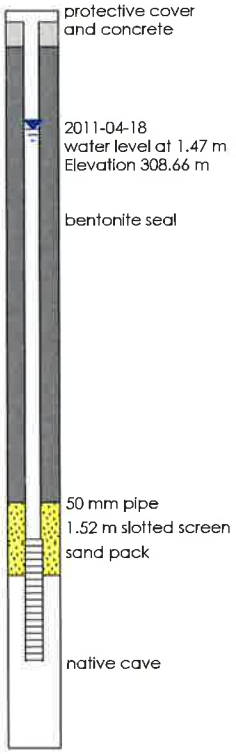
Drill Date: *2010-10-08*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		310.13			
	TOPSOIL: dark brown silt, moist					
1.00	***SILT:*** compact brown silt, some sand and gravel, moist		309.00	1	SS	13
2.00	***SAND:*** loose to compact brown fine to coarse sand, trace silt and gravel, damp		308.00	2	SS	6
				3	SS	6
3.00	saturated		307.00	4	SS	8
	loose brown silty sand, some gravel, saturated					
4.00	trace silt and gravel		306.00			
5.00			305.00	5	SS	22
6.00	grey fine to coarse sand, saturated		304.00			
7.00			303.00			
8.00			302.00			
9.00			301.00	6	AS	
	Borehole terminated at 9.14 m					
10.00			300.00			
11.00			299.00			
12.00			298.00			
13.00			297.00			
14.00			296.00			
15.00			295.00			

Dynamic Cone (X) 20 40 60 80 — Standard Penetration (●) 20 40 60 80

Shear Strength (PP) (▲) kPa 50 100 150 200 — Shear Strength (FV) (■) kPa 50 100 150 200

Water Content (%) WP WL 10 20 30



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 102-10

Ground Elevation: *318.07 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-08*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		318.07			
0.00	***TOPSOIL:*** dark brown silt, moist					
1.00	***SILT:*** brown silt, some sand, moist		317.00	1	SS	13
				2	SS	16
2.00	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt, damp		316.00	3	SS	20
3.00	some cobbles		315.00	4	SS	34
	dense, damp					
4.00			314.00			
5.00			313.00	5	SS	40
6.00			312.00	6	SS	48
7.00	less gravel		311.00			
8.00	***SILT:*** compact brown silt, trace fine sand, saturated, dilatant		310.00	7	SS	41
9.00			309.00	8	SS	22
10.00			308.00			
11.00			307.00	9	SS	23
12.00			306.00			
	brown clayey silt layers, APL			10	SS	15
13.00			305.00	11	SS	34
	Borehole terminated at 13.11 m					
14.00			304.00			
15.00			303.00			

Dynamic Cone / Standard Penetration: X 20 40 60 80 X; ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲; Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP WL; 10 20 30

Groundwater Observations and Standpipe Details:

- protective cover and concrete
- bentonite seal
- 2011-04-18 water level at 9.47 m Elevation 308.60 m
- 50 mm pipe
- 1.52 m slotted screen
- sand pack
- native cave

Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 103-10

Ground Elevation: *312.78 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Job No.: *P036589-300*

Drill Date: *2010-10-08*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	312.78			
0.00	***TOPSOIL:*** dark brown silt, moist				
1.00	***SILT:*** loose brown silt, some sand and clay, very moist	312.00	1	SS	4
2.00	***SAND:*** loose to compact brown fine to coarse sand, trace silt, damp	311.00	2	SS	8
3.00		310.00	3	SS	15
3.00			4	SS	25
4.00	***SAND AND GRAVEL:*** compact brown sand and gravel, occasional cobbles, damp	309.00			
5.00	***SAND:*** compact brown fine to coarse sand, some fine gravel, saturated	308.00	5	SS	16
6.00		307.00			
			6	SS	8
7.00	***SILT TILL:*** compact to dense brown silt, trace sand and fine gravel, moist	306.00	7	SS	43
			8	SS	22
8.00	Borehole terminated at 7.77 m	305.00			
9.00		304.00			
10.00		303.00			
11.00		302.00			
12.00		301.00			
13.00		300.00			
14.00		299.00			
15.00		298.00			

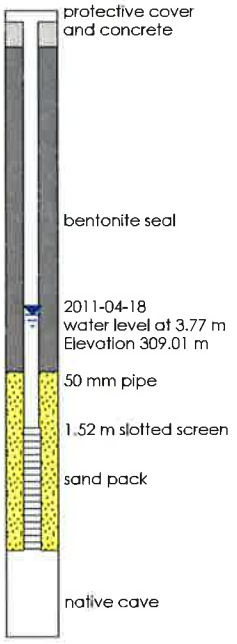
Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP WL; 10 20 30



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 104-10

Ground Elevation: *314.27 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

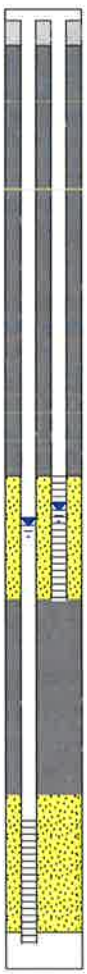
Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-12*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		314.27			
	TOPSOIL: dark brown silt, moist					
1.00	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt and cobbles, damp		313.00	1	SS	19
2.00			312.00	2	SS	38
3.00			311.00	3	SS	33
	SAND: compact brown fine to medium sand, some silt, damp					
4.00			310.00	4	SS	19
5.00	***SILT:*** compact brown silt, trace fine sand, moist; silt, some clay layers, moist		309.00			
6.00			308.00	5	SS	18
	occasional fine sandy silt, wet					
7.00	***SILT TILL:*** dense brown silt, some sand and gravel, moist		307.00			
8.00			306.00	6	SS	36
	occasional cobbles					
9.00	very dense brown sandy silt, some gravel, moist		305.00	7	SS	69
10.00			304.00			
11.00	***SAND AND GRAVEL:*** brown sand and gravel		303.00	8	SS	63
	SILT TILL: very dense grey sandy silt, some gravel, moist			9	SS	50\150mm
12.00	Borehole terminated at 11.89 m		302.00			
13.00			301.00			
14.00			300.00			
15.00			299.00			

Dynamic Cone (X) 20 40 60 80 X
Standard Penetration (●) 20 40 60 80
Shear Strength (PP) kPa (▲) 50 100 150 200
Shear Strength (FV) kPa (■) 50 100 150 200
WP WL
Water Content (%) 10 20 30



2011-04-18
upper standpipe
water level at 6.21 m
Elevation 308.06 m
lower standpipe
water level at 6.40 m
Elevation 307.87 m

Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 105-10

Ground Elevation: *311.74 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

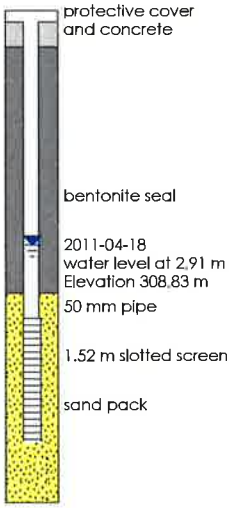
Drill Date: *2010-10-12*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	311.74			
0.00	***TOPSOIL:*** dark brown silt, moist				
1.00	***SILT:*** compact brown sandy silt, moist	311.00	1	SS	12
2.00	***SAND:*** compact brown fine to coarse sand, some gravel, damp	310.00	2	SS	11
	loose, trace fine gravel, damp		3	SS	9
3.00	saturated	309.00	4	SS	10
4.00	***SILT:*** compact brown silt, some fine sand, saturated	308.00	5	SS	16
5.00		307.00	6	SS	16
6.00	***SILT TILL:*** dense grey silt, trace sand and fine gravel, moist	306.00	7	SS	30
			8	SS	25\150mm
	Borehole terminated at 6.10 m				
7.00		305.00			
8.00		304.00			
9.00		303.00			
10.00		302.00			
11.00		301.00			
12.00		300.00			
13.00		299.00			
14.00		298.00			
15.00		297.00			

Dynamic Cone (X) 20 40 60 80 — Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 106-10

Ground Elevation: *311.59 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

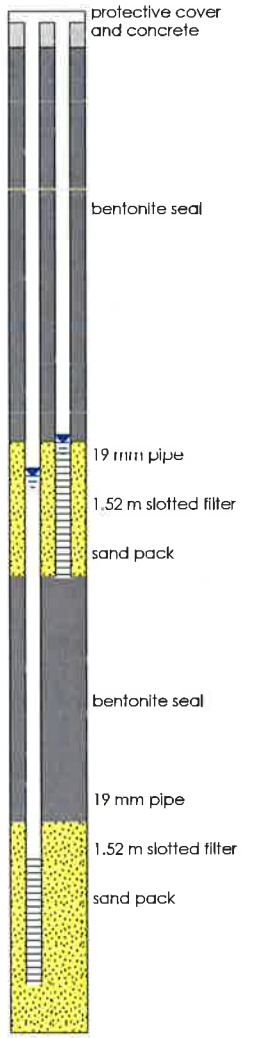
Drill Date: *2010-10-14*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		311.59			
0.00	***TOPSOIL:*** dark brown silt, moist					
1.00	***SAND:*** compact rusty brown fine to coarse sand, some silt and gravel, damp			1	SS	10
2.00	trace silt, damp		310.00	2	SS	15
			309.00	3	SS	12
3.00	***SILT:*** compact brown sandy silt, moist			4	SS	20
4.00	compact brown silt, trace sand, moist		308.00	5	SS	30
	SAND: compact brown fine to medium sand, some silt, damp		307.00	6	SS	12
5.00			306.00			
6.00	saturated			7	SS	18
7.00	***SILT:*** compact brown silt, trace fine sand, wet		305.00			
	compact grey silt, saturated; some grey clayey silt layers, APL		304.00	8	SS	16
8.00			303.00			
9.00				9	SS	20
10.00	some brown fine to medium sand layers, saturated		302.00			
			301.00	10	SS	13
11.00	***SAND:*** loose brown fine to medium sand, saturated		300.00			
12.00			299.00	11	SS	7
13.00	Borehole terminated at 12.65 m		298.00			
14.00			297.00			
15.00						

Dynamic Cone (X) 20 40 60 80 — Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30



Groundwater Observations and Standpipe Details

2011-04-18
upper standpipe
water level at 5.35 m
Elevation 306.24 m
lower standpipe
water level at 5.77 m
Elevation 5.77 m

Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 107-10

Ground Elevation: *314.44 m*

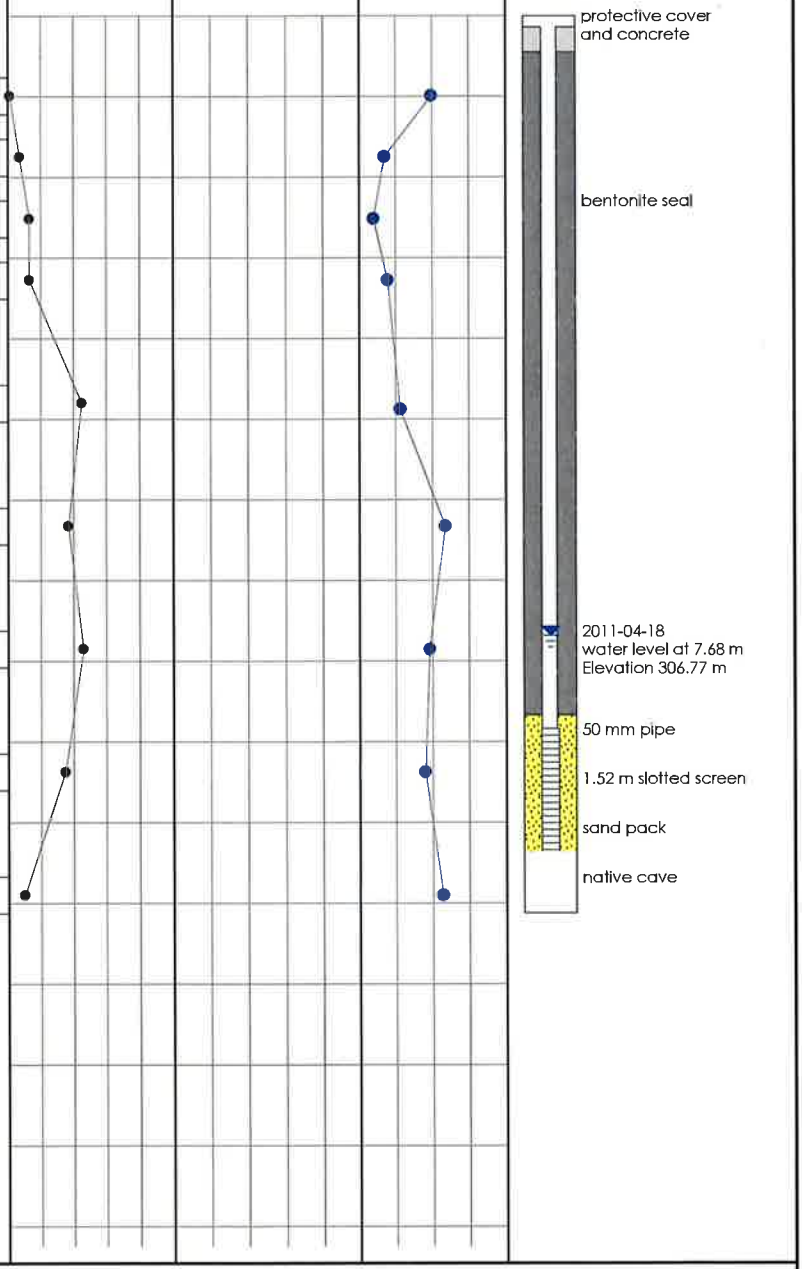
Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-14*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
	Ground Elevation	314.44			
0.00	***TOPSOIL:*** dark brown silt, moist				
1.00	***SILT:*** very loose rusty brown silt, some sand, trace gravel, very moist	313.00	1	SS	1
2.00			2	SS	7
	SAND: loose to compact brown fine to coarse sand, trace silt and fine gravel, damp	312.00	3	SS	13
3.00			4	SS	13
4.00		311.00			
		310.00			
	some gravel		5	SS	45
5.00	***SILT:*** dense brown silt, trace fine sand, moist	309.00			
6.00	saturated, dilatant		6	SS	37
7.00		308.00			
		307.00			
8.00			7	SS	46
9.00		306.00			
	SAND: dense brown fine to medium sand, trace silt, saturated	305.00	8	SS	35
10.00		304.00			
11.00			9	SS	10
	Borehole terminated at 11.13 m	303.00			
12.00		302.00			
13.00		301.00			
14.00		300.00			
15.00					



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 108-10

Ground Elevation: *314.33 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

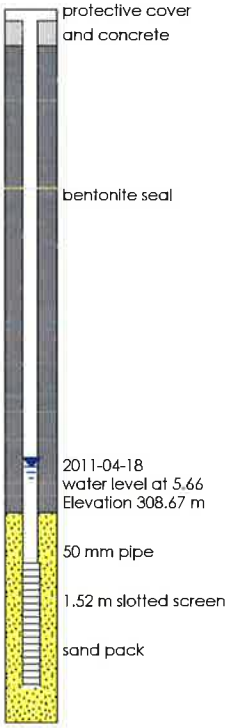
Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-14*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		314.33			
0.00	***TOPSOIL:*** dark brown silt, moist					
1.00	***SAND AND GRAVEL:*** compact to dense brown sand and gravel, some silt, damp			1	SS	28
			313.00	2	SS	34
2.00	trace silt					
			312.00			
3.00				3	SS	26
			311.00			
4.00	***SAND:*** compact brown fine ot medium sand, trace silt, damp					
			310.00	4	SS	20
5.00						
			309.00			
6.00	brown silt, some clay layer, APL					
			308.00	5	SS	20
7.00	saturated					
			307.00			
8.00				6	SS	16
			306.00			
	SILT: dense brown silt, trace fine sand, wet			7	SS	43
9.00						
			305.00			
	Borehole terminated at 8.84 m					
10.00						
			304.00			
11.00						
			303.00			
12.00						
			302.00			
13.00						
			301.00			
14.00						
			300.00			
15.00						

Dynamic Cone (X) 20 40 60 80 X
Standard Penetration (●) 20 40 60 80 ●
Shear Strength (PP) kPa ▲ 50 100 150 200 ▲
Shear Strength (FV) kPa ■ 50 100 150 200 ■
WP WL
Water Content (%) 10 20 30

Groundwater Observations and Standpipe Details



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 109-10

Ground Elevation: *312.52 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

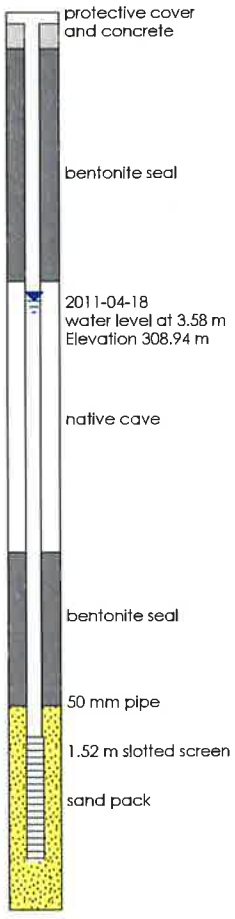
Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-15*

Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation		312.52			
	TOPSOIL: dark brown silt, moist					
1.00	***SILT:*** brown silt, trace sand and clay, moist		311.00	1	SS	10
2.00	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, damp		310.00	2	SS	21
3.00	***SAND:*** dense brown fine to coarse sand, some gravel, damp		309.00	3	SS	39
4.00	occasional cobbles, saturated		308.00	4	SS	24
5.00	***SILT:*** compact brown silt, wet		307.00			
6.00			306.00	5	SS	41
7.00	some fine sand layers, saturated		305.00	6	SS	27
8.00			304.00	7	SS	27
9.00	***SAND:*** compact brown silty fine sand, saturated, dilatant		303.00	8	SS	28
10.00			302.00	9	SS	19
11.00	Borehole terminated at 11.13 m		301.00			
12.00			300.00			
13.00			299.00			
14.00			298.00			
15.00						

Dynamic Cone X X 20 40 60 80
Standard Penetration ● ● 20 40 60 80
Shear Strength (PP) kPa ▲ ▲ 50 100 150 200
Shear Strength (FV) kPa ■ ■ 50 100 150 200
WP WL
Water Content (%) 10 20 30



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 110-10

Ground Elevation: *308.95 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-18*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	308.95			
0.00	***TOPSOIL:*** dark brown silt, moist				
1.00	***SILT:*** grey silt, trace sand adn clay, very moist	308.00	1	SS	2
			2	SS	12
2.00	***SAND:*** very loose to compact brown fine to coarse sand, some silt, saturated	307.00	3	SS	11
3.00	grey, saturated	306.00	4	SS	8
4.00		305.00			
5.00		304.00	5	SS	10
6.00		303.00	6	SS	12
7.00		302.00			
8.00		301.00	7	SS	12
9.00		300.00			
10.00		299.00	8	SS	21
11.00		298.00	9	SS	12
12.00	***SILT TILL:*** compact grey silt, trace sand and fine gravel, moist	297.00			
			10	SS	13
13.00	Borehole terminated at 12.65 m	296.00			
14.00		295.00			
15.00		294.00			

Dynamic Cone / Standard Penetration: X / ● — 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: ▲ / ■ — 50 100 150 200

Water Content (%): WP — WL; 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite grout seal
- 2011-04-18 water level at 3.73 m Elevation 308.79 m
- 50 mm pipe
- 1.52 m slotted screen
- native cave

Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 111-10

Ground Elevation: *313.89 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

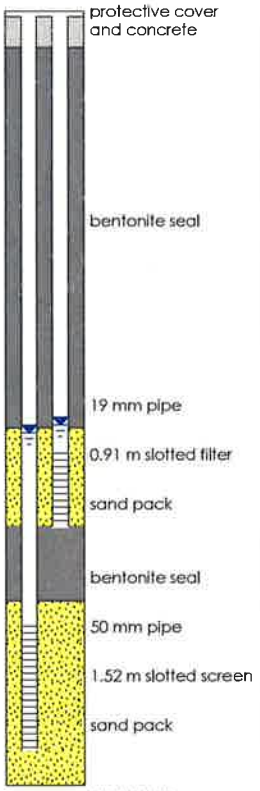
Drill Date: *2010-10-18*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		313.89			
0.00	***TOPSOIL:*** dark brown silt, moist					
1.00	***SILT:*** rusty brown silt, moist		313.00	1	SS	26
2.00	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, damp		312.00	2	SS	20
				3	SS	20
3.00	***SAND:*** compact fine to coarse sand, trace silt and gravel, damp		311.00	4	SS	17
4.00			310.00			
	some gravelly layers, damp					
5.00			309.00	5	SS	32
6.00			308.00			
	SILT: loose brown silt, wet; some sand layers, saturated			6	SS	8
7.00	compact to dense grey silt, wet		307.00			
8.00			306.00	7	SS	31
9.00			305.00			
				8	SS	39
10.00	Borehole terminated at 9.60 m		304.00			
11.00			303.00			
12.00			302.00			
13.00			301.00			
14.00			300.00			
15.00			299.00			

Dynamic Cone / Standard Penetration: X / ● at 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: ▲ / ■ at 50 100 150 200

Water Content (%): WP – WL at 10 20 30



Groundwater Observations and Standpipe Details

2011-04-18
upper standpipe
water level at 5.13 m
Elevation 308.76 m
lower standpipe
water level at 5.23 m
Elevation 308.66 m

Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

Borehole Number: 112-10

Ground Elevation: *311.59 m*

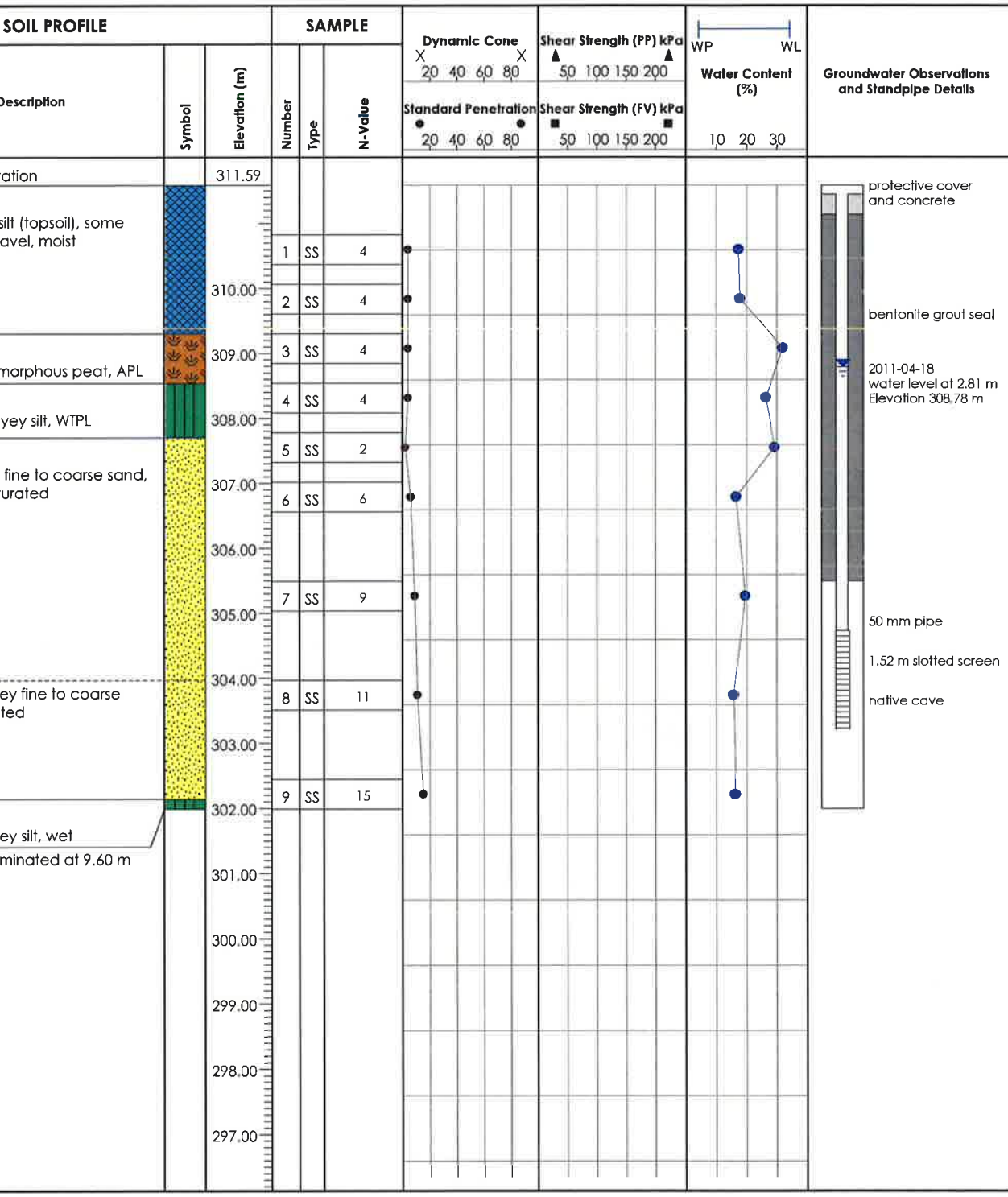
Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-18*

Depth (m)	Description	Elevation (m)	Number	Type	N-Value
0.00	Ground Elevation	311.59			
0.00	***FILL:*** dark brown silt (topsoil), some sand and gravel, moist		1	SS	4
1.00		310.00	2	SS	4
2.00	***PEAT:*** soft black amorphous peat, APL	309.00	3	SS	4
3.00	***SILT:*** soft grey clayey silt, WTPL	308.00	4	SS	4
4.00	***SAND:*** loose brown fine to coarse sand, trace silt, saturated	307.00	5	SS	2
5.00		306.00	6	SS	6
6.00		305.00	7	SS	9
7.00	compact grey fine to coarse sand, saturated	304.00	8	SS	11
8.00		303.00			
9.00		302.00	9	SS	15
10.00	***SILT:*** compact grey silt, wet	301.00			
	Borehole terminated at 9.60 m				
11.00		300.00			
12.00		299.00			
13.00		298.00			
14.00		297.00			
15.00					



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 113-10

Ground Elevation: *307.49 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

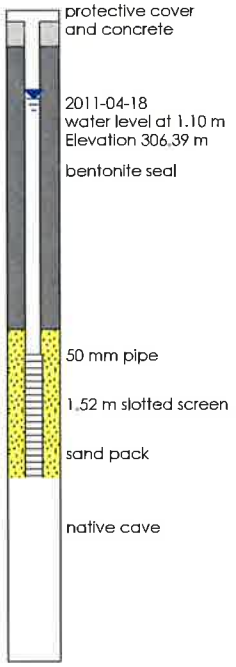
Drill Date: *2010-10-19*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		307.49			
	TOPSOIL: dark brown silt, moist					
1.00	***SILT:*** soft mottled brown silt, some clay, trace sand, WTPL		306.00	1	SS	3
2.00	***SAND:*** loose brown fine to coarse sand, some silt, saturated			2	SS	6
	compact, trace silt, some gravel and gravelly layers		305.00	3	SS	12
3.00				4	SS	12
4.00			304.00			
	loose		303.00	5	SS	8
5.00			302.00			
6.00	trace fine gravel, saturated		301.00	6	SS	7
7.00			300.00			
	compact			7	SS	11
8.00	Borehole terminated at 8.08 m		299.00			
9.00			298.00			
10.00			297.00			
11.00			296.00			
12.00			295.00			
13.00			294.00			
14.00			293.00			
15.00						

Dynamic Cone (X) / Standard Penetration (●): 20 40 60 80

Shear Strength (PP) kPa (▲) / Shear Strength (FV) kPa (■): 50 100 150 200

Water Content (%): WP – WL; 10 20 30



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 114-10

Ground Elevation: *309.74 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

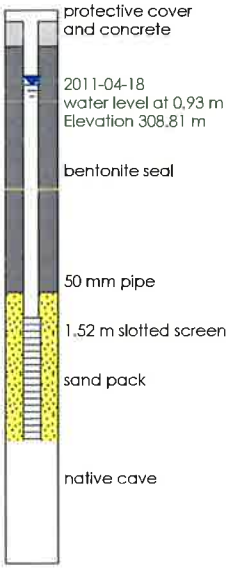
Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-19*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		309.74			
0.00	***TOPSOIL:*** dark brown silt, moist		309.00			
1.00	***SILT:*** soft mottled brown silt, some clay, WTPL			1	SS	3
2.00	***SAND:*** very loose to loose brown fine to coarse sand, trace fien gravel, saturated		308.00	2	SS	2
3.00	compact		307.00	3	SS	9
4.00			306.00	4	SS	25
5.00	gravelly layer		305.00	5	SS	9
6.00	***SILT TILL:*** compact brown silt, some sand, trace clay and fine gravel, moist		304.00	6	SS	25
7.00	Borehole terminated at 6.86 m		303.00	7	SS	13\150mm
8.00			302.00			
9.00			301.00			
10.00			300.00			
11.00			299.00			
12.00			298.00			
13.00			297.00			
14.00			296.00			
15.00			295.00			

Dynamic Cone (X) 20 40 60 80 X
Standard Penetration (●) 20 40 60 80
Shear Strength (PP) kPa ▲ 50 100 150 200 ▲
Shear Strength (FV) kPa ■ 50 100 150 200 ■
WP WL
Water Content (%) 10 20 30



Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Borehole Number: 115-10

Ground Elevation: *310.82 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-19*

Depth (m)	Description	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation	310.82			
0.00	***TOPSOIL:*** dark brown silt, moist				
1.00	***SILT:*** loose brown silt, trace sand and clay, moist	310.00	1	SS	13
2.00	***SAND:*** compact brown fine to coarse sand, trace silt, damp	309.00	2	SS	14
3.00	saturated	308.00	3	SS	13
3.00	dense		4	SS	33
4.00		307.00			
5.00	compact brown silty fine sand, saturated	306.00	5	SS	12
6.00	some silt layers	305.00	6	SS	13
7.00	dense	304.00	7	SS	32
8.00		303.00	8	SS	13
9.00		302.00	9	SS	8
10.00		301.00			
11.00	***SILT:*** dense brown silt, trace clay, moist	300.00	10	SS	43
11.00	grey				
12.00	Borehole terminated at 11.13 m	299.00			
13.00		298.00			
14.00		297.00			
15.00		296.00			

Dynamic Cone (X) 20 40 60 80 — Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite grout seal
- 2011-04-18 water level at 2.40 m Elevation 308.42
- 50 mm pipe
- 1.52 m slotted screen
- sand pack
- native cave

Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

Borehole Number: 115A-10

Ground Elevation: *310.87 m*

Project: *Supplementary Borehole Drilling - Cambridge West*

Job No.: *P036589-300*

Location: *Roseville Road / Blenheim Road, Cambridge, Ontario*

Drill Date: *2010-10-19*

SOIL PROFILE				SAMPLE			Dynamic Cone / Standard Penetration	Shear Strength (PP) / (FV) kPa	Water Content (%)	Groundwater Observations and Standpipe Details
Depth (m)	Description	Symbol	Elevation (m)	Number	Type	N-Value	20 40 60 80	50 100 150 200	WP WL; 10 20 30	
0.00	Ground Elevation		310.87							
	TOPSOIL: dark brown silt, moist									protective cover and concrete
1.00	***SILT:*** loose brown silt, trace sand and clay, moist		310.00	1	SS	13				bentonite seal
2.00	***SAND:*** compact brown fine to coarse sand, trace silt, damp		309.00	2	SS	14				
3.00	saturated		308.00	3	SS	13				2011-04-18 water level at 2.47 m Elevation 308.40 m
	dense			4	SS	33				50 mm pipe
4.00			307.00							1.52 m slotted screen
										sand pack
5.00	Borehole terminated at 4.57 m		306.00							
6.00			305.00							
7.00			304.00							
8.00			303.00							
9.00			302.00							
10.00			301.00							
11.00			300.00							
12.00			299.00							
13.00			298.00							
14.00			297.00							
15.00			296.00							

Reviewed by: *CHelmer*

Drill Method: *Hollow Stem Auger*

Notes:

Field Tech.: *RMcMillan*

Sheet: *1 of 1*

Drafted by: *SMeteer*

LVM

Mini-Piezometer Number: 1

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.42 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.42
	TOPSOIL: dark brown silt, trace sand and organics, frozen		
	SILT: mottled grey and brown clayey silt, very moist		308.00
1.00	***SAND:*** grey brown silty sand, some gravel, saturated		
	Terminated at 1.22 m		307.00
2.00			306.00
3.00			

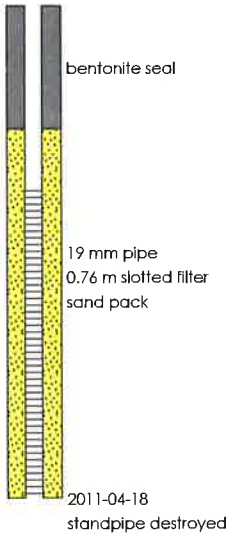
SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 2

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.52 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		308.52
0.00	***TOPSOIL:*** dark brown silt, some rootlets, trace sand, frozen		
	SILT: brown silt, some clay, trace sand and gravel, very moist		308.00
1.00	***SAND:*** brown silty sand, some gravel, saturated		
	Terminated at 1.22 m		307.00
2.00			306.00
3.00			

SAMPLE

Number	Type	N-Value

Dynamic Cone (X) 20 40 60 80

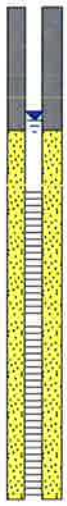
Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200

Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30

Groundwater Observations and Standpipe Details



2011-04-18
water level at 0.28 m
Elevation 308.24 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 3

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.39 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		308.39
0.00	***TOPSOIL:*** dark brown and black organic silt, trace sand and roots, frozen		
	SILT: grey brown silt, some clay and rootlets, trace sand and gravel, very moist		308.00
1.00			
	SAND: grey brown silty sand, some gravel, wet		307.00
	Terminated at 1.52 m		
2.00			
			306.00
3.00			

SAMPLE

Number	Type	N-Value

Dynamic Cone (X) 20 40 60 80

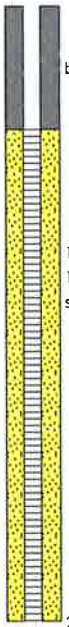
Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200

Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
1.22 m slotted filter
sand pack

2011-04-18
standpipe destroyed

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 4

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.43 mASL*

Job No.: *P036589-300*

Drill Date: *February 12, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		308.43
0.00	***TOPSOIL:*** dark brown silt, some roots, trace sand, frozen		
	saturated		
			308.00
	PEAT: brown fibrous peat, very moist		
1.00			
			307.00
	SILT: greenish grey silt, some sand and clay, trace gravel, wet		
	Terminated at 1.83 m		
2.00			
			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X): 20 40 60 80

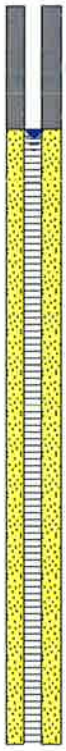
Standard Penetration (●): 20 40 60 80

Shear Strength (PP) kPa (▲): 50 100 150 200

Shear Strength (FV) kPa (■): 50 100 150 200

Water Content (%): WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
1.52 m slotted filter
sand pack

2011-04-18
water level at 0.33 m
Elevation 308.10 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 5

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.40 mASL*

Job No.: *P036589-300*

Drill Date: *February 12, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.40
	ICE: 150 mm ice		
	TOPSOIL: brown silt, trace sand and rootlets, very moist		
	dark brown, some organics		308.00
	SILT: brown and grey silt, some clay and topsoil, trace sand and roots, wet		
1.00	greenish grey sandy silt, some organics, saturated		
	some gravel		307.00
	Terminated at 1.52 m		
2.00			306.00
3.00			

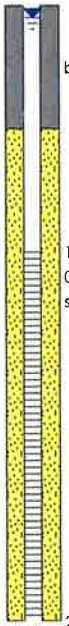
SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP WL — 10 20 30

Groundwater Observations and Standpipe Details



2011-04-18
water level at -0.02 m
Elevation 308.45 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 6

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.42 mASL*

Job No.: *P036589-300*

Drill Date: *February 12, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		308.42
0.00	***ICE:*** 75 mm ice		
	TOPSOIL: dark brown organic silt, trace sand, frozen wet		308.00
1.00	***SILT:*** grey silt, some sand, trace gravel, wet		
	Terminated at 1.22 m		307.00
2.00			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 (X)

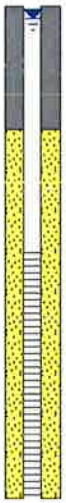
Standard Penetration (●) 20 40 60 80 (●)

Shear Strength (PP) kPa (▲) 50 100 150 200 (▲)

Shear Strength (FV) kPa (■) 50 100 150 200 (■)

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



2011-04-18
water level at -0.17 m
Elevation 308.59 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 7

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *306.77 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Elevation (m)
0.00	Ground Elevation	306.77
	TOPSOIL: brown and dark brown organic silt, trace sand, wet	
	SILT: grey brown sandy silt, trace gravel and rootsl, saturated	306.00
1.00	***SAND:*** grey brown silty sand, some gravel, saturated	
	Terminated at 0.91 m	305.00
2.00		304.00
3.00		

SAMPLE: Number, Type, N-Value

Dynamic Cone (X): 20 40 60 80

Standard Penetration (●): 20 40 60 80

Shear Strength (PP) kPa (▲): 50 100 150 200

Shear Strength (FV) kPa (■): 50 100 150 200

Water Content (%): WP — WL; 10 20 30

Groundwater Observations and Standpipe Details

- bentonite seal
- 19 mm pipe
- 0.61 m slotted filter sand pack

2011-04-18
water level at 0.24 m
Elevation 306.53 m

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 8

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *306.83 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Elevation (m)
	Ground Elevation	306.83
0.00	***TOPSOIL:*** dark brown organic silt, trace sand and roots, frozen to wet	
	SILT: grey brown silt, some clay, trace sand and gravel, wet	306.00
1.00	***SAND:*** grey silty sand, some gravel, saturated	
	Terminated at 0.91 m	305.00
2.00		304.00
3.00		

SAMPLE: Number, Type, N-Value

Dynamic Cone: X 20 40 60 80 X

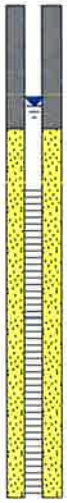
Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP WL; 10 20 30

Groundwater Observations and Standpipe Details



Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 9

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *306.53 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Elevation (m)
	Ground Elevation	306.53
0.00	***TOPSOIL:*** dark brown organic silt, trace sand and roots, frozen to wet	
	SILT: grey brown silt, some clay, trace sand and gravel, wet	306.00
1.00	***SAND:*** grey silty sand, some gravel, saturated	
	Terminated at 0.91 m	305.00
2.00		304.00
3.00		

SAMPLE: Number, Type, N-Value

Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP WL; 10 20 30

Groundwater Observations and Standpipe Details:

- bentonite seal
- 19 mm pipe
- 0.76 m slotted filter sand pack
- 2011-04-18 water level at 0.11 m Elevation 306.42 m

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 10

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.95 mASL*

Job No.: *P036589-300*

Drill Date: *February 11, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		308.95
0.00	***TOPSOIL:*** dark brown organic silt, trace sand, frozen wet		
	SILT: grey brown clayey silt, trace sand and roots, WTPL		308.00
1.00			
	grey silt, some sand, trace gravel, wet		
	Terminated at 1.68 m		307.00
2.00			
			306.00
3.00			

SAMPLE

Number	Type	N-Value

Dynamic Cone
X 20 40 60 80 X

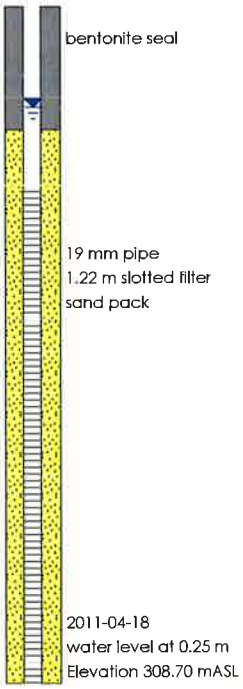
Standard Penetration
● 20 40 60 80 ●

Shear Strength (PP) kPa
▲ 50 100 150 200 ▲

Shear Strength (FV) kPa
■ 50 100 150 200 ■

Water Content (%)
WP WL
10 20 30

Groundwater Observations and Standpipe Details



Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 11

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.70 mASL*

Job No.: *P036589-300*

Drill Date: *February 11, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.70
	ICE: 125 mm ice		
	PEAT: dark brown fibrous peat, wet to saturated		
	SILT: dark brown and grey silt, some peat and sand, saturated		308.00
1.00	grey clayey silt, some sand, WTPL		
	sandy silt, some gravel, saturated		307.00
	Terminated at 1.68 m		
2.00			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details

2011-04-18
water level at -0.09 m
Elevation 308.79 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 12

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.72 mASL*

Job No.: *P036589-300*

Drill Date: *February 11, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.72
	ICE: 150 mm ice		
	TOPSOIL: dark brown organic silt, trace sand and peat, wet to saturated		
	PEAT: black fibrous peat, fine wood fragments, wet		308.00
1.00	***SILT:*** brown silt, trace sand, moist		
	Terminated at 1.07 m		
			307.00
2.00			
			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X): 20 40 60 80

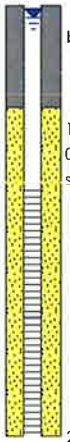
Standard Penetration (●): 20 40 60 80

Shear Strength (PP) kPa (▲): 50 100 150 200

Shear Strength (FV) kPa (■): 50 100 150 200

Water Content (%): WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
0.61 m slotted filter
sand pack

2011-04-18
water level at -0.03 m
Elevation 308.75 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 13

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.80 mASL*

Job No.: *P036589-300*

Drill Date: *February 12, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.80
	ICE: 125 mm ice		
	FILL: brown sand and silt, some topsoil, gravel and wood, wet		
	PEAT: dark brown fibrous peat, wet		308.00
1.00			
	SILT: grey silt, some clay and sand, saturated		307.00
	Terminated at 1.68 m		
2.00			
			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- bentonite seal
- 19 mm pipe
- 1.52 m slotted filter sand pack

2011-04-18
water level at -0.02 m
Elevation 308.82 m

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 14

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.66 mASL*

Job No.: *P036589-300*

Drill Date: *February 12, 2010*

Depth (m)	Description	Elevation (m)
0.00	Ground Elevation	308.66
	ICE: 100 mm ice	
	WATER: 150 mm water	
	FILL: grey silt, some sand, topsoil and wood, saturated	
	PEAT: dark brown fibrous peat, wet	308.00
1.00		
	SAND AND GRAVEL: grey silty sand and gravel, saturated	307.00
2.00		
	Terminated at 2.44 m	306.00
3.00		

SAMPLE: Number, Type, N-Value

Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

Water Content (%): WP — WL; 10 20 30

Groundwater Observations and Standpipe Details:

- bentonite seal
- 19 mm pipe
- 1.83 m slotted filter sand pack
- 2011-04-18 water level at -0.07 m Elevation 308.73 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 15

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.71 mASL*

Job No.: *P036589-300*

Drill Date: *February 12, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		308.71
0.00	***ICE:*** 100 mm ice		
	FILL: dark brown and brown silt, some topsoil, organics and sand, trace cobbles and boulders, frozen to very moist		
	PEAT: red brown fibrous peat, wet		308.00
1.00			
	SILT: grey silt, trace sand and clay, moist		307.00
	Terminated at 1.83 m		
2.00			
			306.00
3.00			

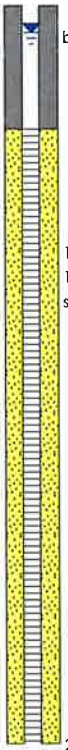
SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



2011-04-18
water level at 0.07 m
Elevation 308.64 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 16

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *306.41 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		306.41
	TOPSOIL: dark brown silt, trace sand and roots, very moist		
	SILT: brown silt, trace sand, very moist		306.00
1.00	***SAND:*** brown sand, some silt and gravel, moist		
	Terminated at 1.07 m		305.00
2.00			304.00
3.00			

SAMPLE

Number	Type	N-Value

Dynamic Cone (X) 20 40 60 80

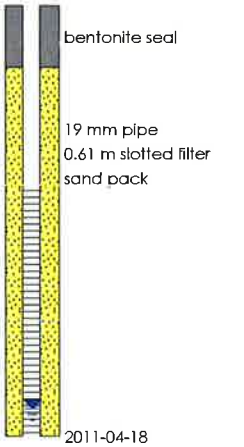
Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200

Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL; 10 20 30

Groundwater Observations and Standpipe Details



Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 17

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *305.48 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		305.48
0.00	***TOPSOIL:*** dark brown silt, trace sand and roots, very moist		
			305.00
	SILT: brown silt, some sand, moist		
1.00	grey brown silt, some clay and sand, trace gravel, saturated		
	Terminated at 1.22 m		
			304.00
2.00			
			303.00
3.00			

SAMPLE

Number	Type	N-Value

Dynamic Cone (X) 20 40 60 80

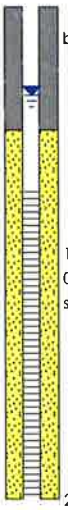
Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200

Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP WL 10 20 30

Groundwater Observations and Standpipe Details



2011-04-18
water level at 0.22 m
Elevation 305.26 m

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 18

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *305.31 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		305.31
	PEAT: dark brown fibrous peat, wet		
			305.00
1.00			
			304.00
2.00			
			303.00
	Terminated at 2.90 m		
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details

- bentonite seal
- sand pack
- 19 mm pipe
- 1.83 m slotted filter
- native cave
- 2011-04-18
- water level at -0.14 m
- Elevation 305.45 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 19

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *305.24 mASL*

Job No.: *P036589-300*

Drill Date: *February 11, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		305.24
0.00	***PEAT:*** dark brown fibrous peat, wet		
			305.00
1.00	***SILT:*** brown silt, trace clay and sand, very moist		304.00
	Terminated at 1.52 m		
2.00			303.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 (X)

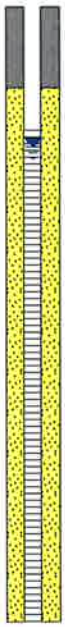
Standard Penetration (●) 20 40 60 80 (●)

Shear Strength (PP) kPa (▲) 50 100 150 200 (▲)

Shear Strength (FV) kPa (■) 50 100 150 200 (■)

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
1.22 m slotted filter
sand pack

2011-04-18
water level at 0.35 m
Elevation 304.89 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 20

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *306.64 mASL*

Job No.: *P036589-300*

Drill Date: *February 11, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		306.64
0.00	***TOPSOIL:*** dark brown and black silt, some peat, trace sand, saturated		
			306.00
1.00			
			305.00
2.00			
			304.00
	Terminated at 2.74 m		
3.00			

SAMPLE

Number	Type	N-Value

Dynamic Cone
X 20 40 60 80 X

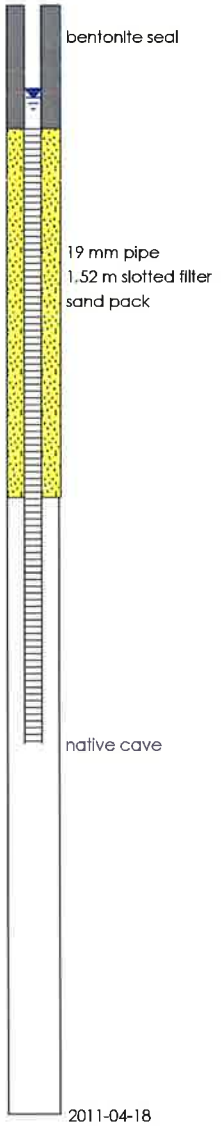
Standard Penetration
● 20 40 60 80 ●

Shear Strength (PP) kPa
▲ 50 100 150 200 ▲

Shear Strength (FV) kPa
■ 50 100 150 200 ■

Water Content (%)
WP 10 20 30 WL

Groundwater Observations and Standpipe Details



Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 21

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *305.67 mASL*

Job No.: *P036589-300*

Drill Date: *February 11, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		305.67
0.00	***TOPSOIL:*** dark brown and black silt, some peat, trace sand, saturated		
			305.00
1.00			
			304.00
2.00			
			303.00
	Terminated at 2.74 m		
3.00			

SAMPLE

Number	Type	N-Value

Dynamic Cone
X 20 40 60 80 X

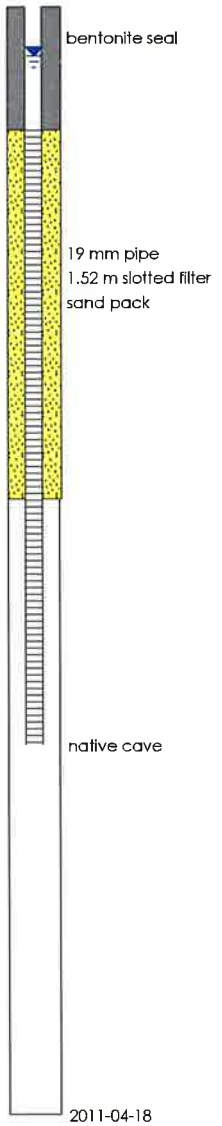
Standard Penetration
● 20 40 60 80 ●

Shear Strength (PP) kPa
▲ 50 100 150 200 ▲

Shear Strength (FV) kPa
■ 50 100 150 200 ■

Water Content (%)
WP WL
10 20 30

Groundwater Observations and Standpipe Details



2011-04-18
water level at 0.12 m
Elevation 305.55 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 22

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.03 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.03
	ICE: 100 mm ice		
	TOPSOIL: dark brown and grey silt, trace sand and clay, frozen		
	very moist		
	SILT: grey brown silt, some sand and gravel, wet		
1.00			307.00
	Terminated at 1.07 m		
2.00			306.00
3.00			305.00

SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details

- bentonite seal
- 19 mm pipe
- 0.46 m slotted filter sand pack
- 2011-04-18 standpipe destroyed

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 23

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.01 mASL*

Job No.: *P036589-300*

Drill Date: *February 10, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.01
	ICE: 50 mm ice		
	TOPSOIL: dark brown silt, trace sand, frozen to very moist		
	SILT: grey brown and dark brown silt, some topsoil and clay, trace sand, very moist		
1.00			307.00
	grey brown silt, some sand and gravel, wet		
	Terminated at 1.22 m		
2.00			306.00
3.00			305.00

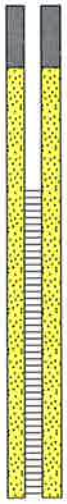
SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP WL 10 20 30

Groundwater Observations and Standpipe Details



Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 24

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *305.33 mASL*

Job No.: *P036589-300*

Drill Date: *February 16, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		305.33			
	TOPSOIL: dark brown silt, some sand and roots, frozen to saturated					
	SAND: brown silty sand, some gravel, saturated		305.00			
	Terminated at 0.76 m upon auger refusal					
1.00			304.00			
2.00			303.00			
3.00						

Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

WP WL

Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

bentonite seal

19 mm pipe
0.61 m slotted filter
sand pack

2011-04-18
standpipe destroyed

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 25

Ground Elevation: *304.69 mASL*

Project: *Cambridge West*

Job No.: *P036589-300*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Date: *February 16, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value	Dynamic Cone / Standard Penetration	Shear Strength (PP) kPa / Shear Strength (FV) kPa	Water Content (%)	Groundwater Observations and Standpipe Details
0.00	Ground Elevation		304.69							
	TOPSOIL: dark brown silt, some roots and sand, frozen to saturated									
	SAND: brown silty sand, trace gravel, saturated		304.00							
1.00	Terminated at 1.07 m upon auger refusal		303.00							
2.00			302.00							
3.00										

Dynamic Cone: X 20 40 60 80 X
Standard Penetration: ● 20 40 60 80 ●
Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲
Shear Strength (FV) kPa: ■ 50 100 150 200 ■
Water Content (%): WP — WL; 10 20 30

bentonite seal
19 mm pipe
0.91 m slotted filter sand pack
2011-04-18 standpipe destroyed

Reviewed by: *CH*

Field Tech.: *DS*

Drill Method: *Hand Auger*

Sheet: *1 of 1*

Notes:

Drafted by: *SM*

LVM

Mini-Piezometer Number: 26

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *304.57 mASL*

Job No.: *P036589-300*

Drill Date: *February 16, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		304.57
	PEAT: dark brown fibrous peat and roots, saturated		
	SILT: brown fine sandy silt, wet		
			304.00
1.00	***SAND:*** brown silty sand, saturated		
	Terminated at 1.07 m		
			303.00
2.00			
			302.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X): 20 40 60 80

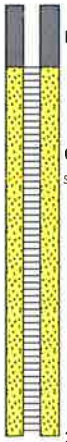
Standard Penetration (●): 20 40 60 80

Shear Strength (PP) kPa (▲): 50 100 150 200

Shear Strength (FV) kPa (■): 50 100 150 200

Water Content (%): WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
0.91 m slotted filter
sand pack

2011-04-18
standpipe destroyed

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 27

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.44 mASL*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.44
	ICE: 50 mm ice		
	TOPSOIL: black and dark brown silt, some roots and peat, wet		
			308.00
	SILT: grey brown silt, some fine sand, wet		
	some clay, trace sand and gravel, saturated		
1.00	Terminated at 1.07 m		
			307.00
2.00			
			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone X 20 40 60 80 X

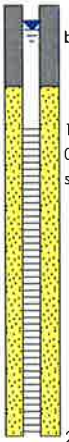
Standard Penetration ● 20 40 60 80 ●

Shear Strength (PP) kPa ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa ■ 50 100 150 200 ■

Water Content (%) WP WL 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
0.76 m slotted filter sand pack

2011-04-18
water leve at 0.06 m
Elevation 308.38 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 28

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.37 mASL*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.37
	ICE: 50 mm ice		
	TOPSOIL: black and dark brown silt, some roots and peat, wet		308.00
	SILT: greenish grey silt, some clay and sand, wet		
1.00	***SAND:*** brown silty fine sand, some gravel, very moist		
	Terminated at 1.07 m		307.00
2.00			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone X 20 40 60 80 X — **Standard Penetration** ● 20 40 60 80 ●

Shear Strength (PP) kPa ▲ 50 100 150 200 ▲ — **Shear Strength (FV) kPa** ■ 50 100 150 200 ■

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details

bentonite seal

19 mm pipe
0.61 m slotted filter
sand pack

2012-04-18
water level at 0.05 m
Elevation 308.32 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 29

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.35 mASL*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.35
	ICE: 150 mm ice		
	WATER: 100 mm water		
	TOPSOIL: dark brown silt, some roots and peat, trace sand, saturated		308.00
	SILT: brown silt, some sand, trace gravel and clay, very moist		
1.00	grey clayey silt, trace sand,. WTPL		
	Terminated at 1.07 m		307.00
2.00			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 (X)

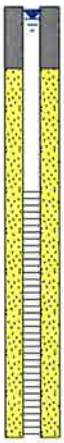
Standard Penetration (●) 20 40 60 80 (●)

Shear Strength (PP) kPa (▲) 50 100 150 200 (▲)

Shear Strength (FV) kPa (■) 50 100 150 200 (■)

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
0.61 m slotted filter sand pack

2011-04-18
water level at 0.00
Elevation 308.35 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 30

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.42 mASL*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Elevation (m)
0.00	Ground Elevation	308.42
	ICE: 150 mm ice	
	TOPSOIL: dark brown silt, some roots, trace sand, saturated	
	SILT: brown silt, some sand, trace clay, wet	308.00
	grey brown silt, some clay, trace gravel	
1.00	**SAND:** brown sand, some silt and gravel, wet	
	Terminated at 1.37 m	307.00
2.00		306.00
3.00		

SOIL PROFILE | SAMPLE (Number, Type, N-Value) | Dynamic Cone / Standard Penetration (20 40 60 80) | Shear Strength (PP) kPa / Shear Strength (FV) kPa (50 100 150 200) | Water Content (%) WP WL (10 20 30) | Groundwater Observations and Standpipe Details

Groundwater Observations and Standpipe Details:
- bentonite seal
- 19 mm pipe
- 1.22 m slotted filter
- sand pack
- 2011-04-18 water level at 0.24 m Elevation 308.18 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 31

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.38 mASL*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.38
	ICE: 150 mm ice		
	PEAT: brown fibrous peat, wet		308.00
	SILT: grey silt, some sand and rootlets, trace gravel and clay, wet		
1.00	***SAND:*** brown silty sand, some gravel, saturated		
	Terminated at 1.22 m		307.00
2.00			306.00
3.00			

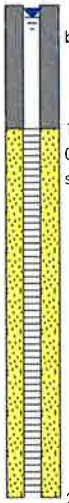
SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80 — **Standard Penetration** (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200 — **Shear Strength (FV) kPa** (■) 50 100 150 200

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
0.91 m slotted filter
sand pack

2011-04-18
water level at -0.02 m
Elevation 308.40 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 32

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *N/A*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Symbol	Elevation (m)	Sample Number	Sample Type	N-Value
0.00	Ground Elevation		0.00			
	ICE: 50 mm ice					
	TOPSOIL: dark brown silt, some roots, trace sand, frozen					
	SILT: brown and grey silt, some clay and sand, wet					
1.00			-1.00			
	SAND: brown sand, some silt, trace gravel, saturated					
	Terminated at 1.52 m					
2.00			-2.00			
3.00			-3.00			

Dynamic Cone (X): 20 40 60 80

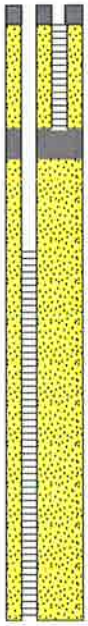
Standard Penetration (●): 20 40 60 80

Shear Strength (PP) kPa (▲): 50 100 150 200

Shear Strength (FV) kPa (■): 50 100 150 200

Water Content (%): WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



- bentonite seal
- 19 mm pipe
- 0.25 m slotted filter sand pack
- bentonite seal
- 19 mm pipe
- 0.91 m slotted filter sand pack
- 2011-04-18 water level above ground surface in both pipes

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 33

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.62 mASL*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Elevation (m)
0.00	Ground Elevation	308.62
	ICE: 50 mm ice	
	FILL: brown silt and sand, trace gravel and wood, wet	
	TOPSOIL: black silt, some organics, trace sand, wet	
		308.00
	SILT: grey brown silt, some sand, clay and gravel, trace roots, wet	
1.00	saturated	
		307.00
	Terminated at 1.83 m	
2.00		
		306.00
3.00		

SAMPLE: Number, Type, N-Value

Dynamic Cone: X 20 40 60 80 X

Standard Penetration: ● 20 40 60 80 ●

Shear Strength (PP) kPa: ▲ 50 100 150 200 ▲

Shear Strength (FV) kPa: ■ 50 100 150 200 ■

WP WL

Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

bentonite seal

19 mm pipe
1.22 m slotted filter
sand pack

2011-04-18
water level at 0.23 m
Elevation 308.39 mASL

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

LVM

Mini-Piezometer Number: 34

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.53 mASL*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Symbol	Elevation (m)
	Ground Elevation		308.53
0.00	***ICE:*** 150 mm ice		
	WATER: 100 mm water		
	TOPSOIL: black organic silt, trace sand, saturated		
			308.00
1.00			
	SILT: brown and grey silt, some sand adn gravel, very moist		
	Terminated at 1.52 m		307.00
2.00			
			306.00
3.00			

SAMPLE: Number | Type | N-Value

Dynamic Cone (X) 20 40 60 80

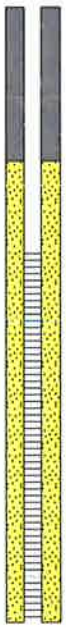
Standard Penetration (●) 20 40 60 80

Shear Strength (PP) kPa (▲) 50 100 150 200

Shear Strength (FV) kPa (■) 50 100 150 200

Water Content (%) WP — WL; 10 20 30

Groundwater Observations and Standpipe Details



bentonite seal

19 mm pipe
0.91 m slotted filter
sand pack

2011-04-18
standpipe destroyed

Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Mini-Piezometer Number: 35

Project: *Cambridge West*

Location: *Blenheim Road, Cambridge, Ontario*

Ground Elevation: *308.61 mASL*

Job No.: *P036589-300*

Drill Date: *February 17, 2010*

Depth (m)	Description	Symbol	Elevation (m)
0.00	Ground Elevation		308.61
	ICE: 125 mm ice		
	WATER: 175 mm water		
	PEAT: dark brown fibrous peat, wet		
			308.00
1.00			
	SILT: grey silt, some sand, very moist		307.00
	Terminated at 1.83 m		
2.00			
			306.00
3.00			

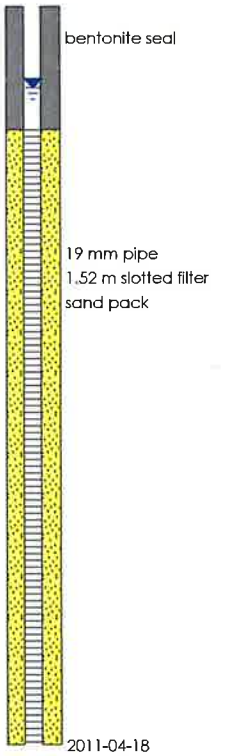
SAMPLE: Number | Type | N-Value

Dynamic Cone / Standard Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200

Water Content (%): WP – WL; 10 20 30

Groundwater Observations and Standpipe Details



Reviewed by: *CH*

Drill Method: *Hand Auger*

Notes:

Field Tech.: *DS*

Sheet: *1 of 1*

Drafted by: *SM*

Ground Elevation: *315.46 m*

Borehole Number: **BH-01-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-23*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

SOIL PROFILE			SAMPLE								
Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value	Dynamic Cone / Std Penetration (20 40 60 80)	Shear Strength (PP) kPa / Shear Strength (FV) kPa (50 100 150 200)	Water Content (%) (10 20 30)	Groundwater Observations and Standpipe Details
	Ground Elevation		315.46							
	TOPSOIL: dark brown silt, trace sand gravel and corn roots, moist		0.00 / 315.13						WP WL	
			0.33							
1	***SAND:*** compact brown sand, some gravel, trace silt, moist			SS-1	5-8 9	17				native backfill
			313.94							
	trace silt and gravel, very moist		1.52	SS-2	4-5 8	13				
2			313.17							
	SAND AND GRAVEL: dense brown sand and gravel, some silt and occasional cobbles, moist		2.29	SS-3	23-20 15	35				
3			312.41							
	SAND: compact brown fine to coarse sand, some gravel, trace silt, moist		3.05	SS-4	5-6 7	13				native cave
			311.95							
	Borehole terminated at 3.50 m		3.50							
4										
5										
6										
7										
8										
9										
10										
11										
12										

Shear Strength (PP) kPa: ■ Initial, □ Remold

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *316.82 m*

Borehole Number: **BH-02-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-20*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		316.82			
	TOPSOIL: dark brown silt, some sand, trace gravel and corn roots, moist		0.00 / 316.41			
			0.41			
1	***SAND AND GRAVEL:*** dense brown sand and gravel, some silt, moist			SS-1	10-22 16	38
2				SS-2	12-15 23	38
3				SS-3	14-18 18	36
				SS-4	12-20 24	44
4			312.25			
	very dense		4.57	SS-5	40-42 42	84
5						
6			310.72			
	SAND: compact brown fine sand, some silt, moist		6.10	SS-6	11-12 12	24
7						
				SS-7	10-22 15	37
8			308.74			
	very moist		8.08			
9			307.68			
	saturated		9.14	SS-8	8-11 12	23
			307.07			
10	Borehole terminated at 9.75 m		9.75			
11						
12						

Dynamic Cone: 20 40 60 80
Std Penetration: 20 40 60 80
Shear Strength (PP) kPa: 50 100 150 200
Initial
Remold
Shear Strength (FV) kPa: 50 100 150 200
WP WL
Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 5.79 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes: *Bulk sample AS-4A taken from 3.05 to 4.57 m.*

Ground Elevation: *314.01 m*

Borehole Number: **BH-03-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-20*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		314.01			
	TOPSOIL: dark brown silt, some sand, trace gravel and corn roots, moist		0.00 / 313.76 / 0.25			
1	***SAND:*** compact brown sand, some gravel and silt, moist		312.49	SS-1	10-11 12	23
	SAND AND GRAVEL: compact brown sand and gravel, some silt, moist		1.52	SS-2	9-11 12	23
2			311.72			
	SAND: compact grey and brown coarse sand, some gravel, trace silt, moist		2.29	SS-3	9-10 10	20
3	dense, gravel and coarse sand		310.96 / 3.05	SS-4	8-11 21	32
4						
	compact, trace gravel and silt		309.44 / 4.57	SS-5	8-8 10	18
5						
6			307.91			
	fine sand, some silt, saturated; some grey sandy silt layers, wet		6.10	SS-6	7-9 10	19
	Borehole terminated at 6.55 m		307.46 / 6.55			
7						
8						
9						
10						
11						
12						

Dynamic Cone — Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- native backfill
- bentonite seal
- native cave
- At drilling completion, dry cave at 3.35 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

LVM

Ground Elevation: *313.34 m*

Borehole Number: **BH-04-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-21*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		313.34			
	FILL: dark brown silt (topsoil), some sand and gravel, moist		0.00 / 313.11 / 0.23			
1	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt, moist			SS-1	7-8 9	17
			311.82 / 1.52			
2	***SAND:*** compact brown medium sand, some silt, trace gravel, moist			SS-2	5-7 7	14
	trace silt and gravel, very moist		311.05 / 2.29	SS-3	4-5 6	11
3	medium to coarse sand		310.29 / 3.05	SS-4	5-5 6	11
4						
	fine sand, trace silt		308.77 / 4.57	SS-5	6-7 10	17
5						
6	gravelly coarse sand, some silt, saturated		307.24 / 6.10	SS-6	6-9 12	21
7						
	silty fine sand, some dark grey stains		305.72 / 7.62	SS-7	3-4 6	10
8						
9	brown, wet to saturated		304.20 / 9.14	SS-8	6-10 12	22
	saturated		303.43 / 9.91	SS-9	3-6 8	14
10	Borehole terminated at 10.36 m		302.98 / 10.36			
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, wet cave at 5.49 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser* **Drafted by:** *E.Ciochon* **Sheet:** *1 of 1*

Notes: *Bulk sample AS-4A taken from 3.05 to 4.57 m.*

Ground Elevation: *312.87 m*

Borehole Number: **BH-05-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-21*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		312.87			
	TOPSOIL: dark brown silt, some sand and gravel, moist		0.00 / 312.67 / 0.20			
1	***SAND:*** compact brown gravelly sand, some silt, moist			SS-1	5-7 10	17
				SS-2	6-8 8	16
2			310.58			
	SAND AND GRAVEL: compact brown sand and gravel, some silt, moist		2.29	SS-3	6-10 16	26
3	very dense		309.82 / 3.05	SS-4	25-50 /150 mm	
4			308.30			
	saturated		4.57	SS-5	10-14 21	35
5						
6			306.77			
	SAND: dense brown coarse sand, some silt and gravel, saturated		6.10 / 306.32	SS-6	11-15 16	31
	Borehole terminated at 6.55 m		6.55			
7						
8						
9						
10						
11						
12						

Dynamic Cone: 20 40 60 80
Std Penetration: 20 40 60 80
Shear Strength (PP) kPa: 50 100 150 200
Initial
Remold
Shear Strength (FV) kPa: 50 100 150 200
WP WL
Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details:
- native backfill
- bentonite seal
- native cave
- At drilling completion, dry cave at 2.13 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes: *Bulk sample AS-3A taken from 2.29 to 3.05 m.*

Ground Elevation: *313.07 m*

Borehole Number: **BH-06-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-22*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		313.07			
	TOPSOIL: dark brown silt, some sand and gravel, trace corn roots, moist		312.79 / 0.28			
1	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt, occasional cobbles, moist			SS-1	9-12 13	25
				SS-2	7-9 10	19
2	dense		310.78 / 2.29	SS-3	8-10 25	35
3				SS-4	12-15 16	31
4	compact, very moist		308.50 / 4.57	SS-5	8-10 18	28
5	wet to saturated		308.19 / 4.88			
6	saturated		306.97 / 6.10	SS-6	9-11 10	21
	Borehole terminated at 6.55 m		306.52 / 6.55			
7						
8						
9						
10						
11						
12						

Dynamic Cone: 20 40 60 80

Std Penetration: 20 40 60 80

Shear Strength (PP) kPa: 50 100 150 200

Initial

Remold

Shear Strength (FV) kPa: 50 100 150 200

WP WL

Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

protective cover and concrete

bentonite seal

el. 308.05 m 2014-06-15

50 mm pipe

sand pack

1.52 m slotted screen

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *312.12 m*

Borehole Number: **BH-07-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-21*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		312.12			
	TOPSOIL: dark brown silt, some sand, gravel and corn roots, moist		0.00 / 311.97			
			0.15 / 311.66			
	SILT: brown silt, some sand, trace gravel and topsoil, moist		0.46			
1				SS-1	8-10 16	26
	SAND AND GRAVEL: compact brown sand and gravel, trace silt and cobbles, moist					
				SS-2	9-12 14	26
2			309.83			
	dense		2.29	SS-3	15-18 26	44
3			308.77	SS-4	32-21 13	34
	SAND: compact brown coarse sand, some silt, trace gravel, moist		3.35			
4			307.85			
	dark brown silty sand, some gravel, saturated		4.27			
			307.24	SS-5	8-12 15	27
5	brown, trace cobbles		4.88			
	Borehole terminated at 5.03 m		307.09 / 5.03			
6						
7						
8						
9						
10						
11						
12						

Dynamic Cone — Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 2.29 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *311.70 m*

Borehole Number: **BH-08-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-22*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		311.70			
	TOPSOIL: dark brown silt, trace sand, gravel and corn roots, moist		0.00 311.29 0.41			
1	***SILT:*** dark brown silt, some topsoil and sand, very moist to wet			SS-1	2-1 2	3
	loose brown sandy silt, wet		310.18 1.52	SS-2	2-3 3	6
2	very moist		309.41 2.29	SS-3	3-2 2	4
3	mottled grey and brown, wet		308.65 3.05	SS-4	2-3 3	6
4						
	some saturated gravel and silty sand in spoon		307.13 4.57 306.82	SS-5	4-5 5	10
5	***SAND:*** compact brown gravelly sand, some silt, saturated		4.88			
6				SS-6	5-8 10	18
7						
8				SS-7	4-6 9	15
	Borehole terminated at 8.08 m		303.62 8.08			
9						
10						
11						
12						

Dynamic Cone: 20 40 60 80 — Std Penetration: 20 40 60 80

Shear Strength (PP) kPa: 50 100 150 200 — Initial / Remold — Shear Strength (FV) kPa: 50 100 150 200

WP WL — Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- el. 308.89 m 2014-06-15
- el. 308.68 m 2014-06-15
- sand pack, 19 mm pipe, 1.52 m slotted screen
- bentonite seal
- sand pack, 50 mm pipe, 1.52 m slotted screen
- native cave

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser* **Drafted by:** *E.Ciochon* **Sheet:** *1 of 1*

Notes: *Bulk sample AS-3A taken from 2.29 to 3.05 m.*

Ground Elevation: *309.76 m*

Borehole Number: **BH-09-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-21*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		309.76			
	TOPSOIL: dark brown silt, some sand and gravel, moist		0.00 / 309.40			
			0.36			
1	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt, trace topsoil, moist			SS-1	6-10 11	21
			308.24			
	silty sand and gravel, wet		1.52	SS-2	6-5 6	11
2			307.47			
	SAND: loose grey and brown coarse sand, some gravel, trace silt		2.29	SS-3	2-4 5	9
			306.71			
3	***SAND AND GRAVEL:*** compact grey and brown sand and gravel, some silt, saturated		3.05	SS-4	3-5 6	11
4			305.19			
	SAND: compact brown silty sand, some gravel, saturated		4.57	SS-5	5-10 10	20
5						
6			303.66			
	greenish brown coarse sand, some silt and gravel		6.10	SS-6	6-9 11	20
			303.21			
	Borehole terminated at 6.55 m		6.55			
7						
8						
9						
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 (Initial / Remold)

Water Content (%): WP WL; 10 20 30

Groundwater Observations and Standpipe Details:
- native backfill
- bentonite seal
- native cave
- At drilling completion, wet cave at 1.83 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *311.95 m*

Borehole Number: **BH-10-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-22*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		311.95			
	TOPSOIL: dark brown silt, some sand and gravel, trace corn roots, moist		0.00 / 310.88	SS-1	2-2 2	4
	SAND: loose brown and dark brown silty sand, some gravel, trace topsoil, very moist		1.07 / 310.43	SS-2	1-2 4	6
	brown silty fine sand, trace clay and gravel, very moist to wet		1.52 / 309.66	SS-3	3-4 4	8
	coarse sand, trace silt and gravel, moist		2.29 / 308.90	SS-4	3-5 5	10
	compact, some gravel		3.05 / 308.60			
	wet		3.35 / 307.38	SS-5	2-2 2	4
	SAND AND GRAVEL: loose grey/brown coarse sand and fine gravel, trace silt, saturated		4.57 / 305.85	SS-6	3-5 6	11
	SAND: compact grey/brown medium sand, trace silt and gravel, saturated		6.10 / 302.81	SS-7	6-4 6	10
	Borehole terminated at 9.14 m		9.14			

Dynamic Cone: 20 40 60 80
Std Penetration: 20 40 60 80
Shear Strength (PP) kPa: 50 100 150 200
Initial
Remold
Shear Strength (FV) kPa: 50 100 150 200
WP WL
Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

el. 308.46 m 2014-06-15

protective cover and concrete

bentonite seal

native cave (sand pack)
50 mm pipe
1.52 m slotted screen.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes: *Bulk sample AS-8 taken at 9.14 m (moisture content=14.2%).*

LVM

Ground Elevation: *312.53 m*

Borehole Number: **BH-11-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-21*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		312.53			
	TOPSOIL: dark brown silt, some sand, trace gravel and corn roots, moist		0.00 / 312.33			
			0.20 / 312.12			
	some gravel		0.41			
1	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt, moist to very moist			SS-1	5-7 17	24
				SS-2	7-9 18	27
2			310.24			
	SAND: compact brown coarse sand, trace silt and gravel, very moist		2.29	SS-3	6-7 8	15
			309.48			
3	some gravel		3.05	SS-4	6-7 8	15
4			307.96			
	SAND AND GRAVEL: compact brown sand and gravel, some silt, saturated		4.57	SS-5	9-11 12	23
5						
6			306.43			
	SAND: compact brown silty fine sand, saturated		6.10	SS-6	8-9 11	20
7						
				SS-7	6-7 8	15
8			304.45			
	Borehole terminated at 8.08 m		8.08			
9						
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- native backfill
- bentonite seal
- native cave
- At drilling completion, dry cave at 2.59 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

LVM

Ground Elevation: *311.61 m*

Borehole Number: **BH-12-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-22*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		311.61			
	TOPSOIL: dark brown silt, some sand and gravel, trace corn roots, moist		0.00 / 311.23			
	SAND AND GRAVEL: compact brown sand and gravel, some silt, moist to very moist		0.38	SS-1	6-10 13	23
	dense, trace silt, numerous cobbles, moist		310.09 / 1.52	SS-2	12-20 22	42
	compact, grey and brown		309.32 / 2.29	SS-3	8-12 14	26
	saturated		308.56 / 3.05	SS-4	8-8 8	16
	SAND: compact brown coarse sand, some gravel, trace silt, saturated		308.26 / 3.35			
	SAND AND GRAVEL: dense brown and grey coarse sand and fine gravel, trace silt, saturated		307.04 / 4.57	SS-5	8-12 19	31
	yellowish brown sand and coarse gravel, some silt		306.73 / 4.88			
	compact greyish brown sand and gravel, some silt		305.51 / 6.10	SS-6	8-10 10	20
	Borehole terminated at 6.55 m		305.06 / 6.55			

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- el. 308.38 m 2014-06-15
- bentonite seal
- sand pack
- 50 mm pipe
- 1.52 m slotted screen
- native cave

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *313.09 m*

Borehole Number: **BH-13-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-21*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		313.09			
	TOPSOIL: dark brown silt, some sand and gravel, trace corn roots, moist		0.00 / 312.63			
			0.46			
1	***SAND:*** compact grey and brown coarse sand, some gravel, trace silt, moist			SS-1	6-9 10	19
2				SS-2	7-9 9	18
3				SS-3	7-8 9	17
			310.04			
	fine sand, some silt		3.05 / 309.89	SS-4	8-11 11	22
	SILT: compact brown fine sandy silt, moist		3.20 / 309.66			
4	wet		3.43			
			308.52			
5	***SAND:*** compact brown fine sand, trace silt, moist		4.57	SS-5	10-12 15	27
			306.99			
6	layers of grey/brown silt, some sand, clay and gravel, moist		6.10	SS-6	11-12 16	28
	silty fine sand, wet		306.54 / 6.55			
7						
			305.47			
8	dense brown, saturated		7.62	SS-7	13-18 22	40
9						
			303.95			
	wet		9.14	SS-8	11-13 16	29
			303.49			
10	Borehole terminated at 9.60 m		9.60			
11						
12						

Dynamic Cone: 20 40 60 80
Std Penetration: 20 40 60 80
Shear Strength (PP) kPa: 50 100 150 200
Initial
Remold
Shear Strength (FV) kPa: 50 100 150 200
WP WL
Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 6.40 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *308.83 m*

Borehole Number: **BH-14-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-22*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		308.83			
	TOPSOIL: dark brown silt, trace sand, moist		0.00 / 308.52 / 0.30			
1	***SAND:*** loose brown coarse sand, some gravel, trace silt, moist			SS-1	4-4 4	8
	medium sand, trace silt and gravel		307.31 / 1.52	SS-2	2-3 3	6
2	fine sand, some silt		306.54 / 2.29	SS-3	3-3 5	8
	silty fine sand, very moist		306.24 / 2.59			
3	compact fine sand, some silt, moist		305.63 / 3.20	SS-4	3-5 5	10
4						
	silty fine sand, trace gravel, very moist to wet		303.90 / 4.93	SS-5	5-6 7	13
5	loose to compact, wet		303.50 / 5.33	SS-6	4-6 4	10
6	some silt, trace sand and clay layers, very moist to wet		302.73 / 6.10	SS-7	5-6 6	12
	fine sand, trace silt, moist		302.43 / 6.40			
7	Borehole terminated at 6.55 m		302.28 / 6.55			
8						
9						
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- sand pack
- 50 mm pipe
- 1.52 m slotted screen
- native cave

June 15, 2014
Monitoring well dry.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

LVM

Ground Elevation: *312.08 m*

Borehole Number: **BH-15-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-21*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		312.08			
	TOPSOIL: dark brown silt, some gravel, trace sand, very moist		0.00 / 311.57			
	SAND AND GRAVEL: compact brown sand and garvel, some silt, moist		0.51 / 310.56	SS-1	7-8 9	17
	SAND: compact brown sand, some silt, trace gravel, moist to very moist		1.52 / 309.79	SS-2	5-6 8	14
	some gravel, trace silt, moist		2.29 / 309.03	SS-3	7-11 12	23
	very dense coarse sand, very moist		3.05 / 308.27	SS-4	16-22 32	54
	saturated		3.81 / 307.96	SS-5	12-10 8	18
	compact brown and dark brown sand, some silt, trace gravel, saturated		4.12 / 307.81			
	Borehole terminated at 4.27 m		4.27			

Dynamic Cone — Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 2.44 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *317.23 m*

Borehole Number: **BH-16-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-23*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		317.23			
	TOPSOIL: dark brown silt, trace sand, gravel and corn roots, moist		316.90 / 0.33			
1	***SAND AND GRAVEL:*** dense brown sand and gravel, some silt, occasional cobbles, moist			SS-1	5-11 20	31
2				SS-2	16-16 16	32
3				SS-3	5-16 20	36
	compact		314.18 / 3.05	SS-4	16-12 11	23
4						
	dense, coarse sand and gravel, trace silt		312.66 / 4.57	SS-5	20-26 16	42
5						
6				SS-6	9-15 19	34
7			309.61			
	SAND: dense brown sand, some silt, moist		7.62	SS-7	8-17 28	45
8						
9			308.09			
	dense light brown fine sand, trace silt, moist		9.14	SS-8		
	Borehole terminated at 9.60 m		307.63 / 9.60			
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- native backfill
- bentonite seal
- native cave

At drilling completion, dry cave at 2.29 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *316.38 m*

Borehole Number: **BH-17-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-23*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation	316.38			
	TOPSOIL: dark brown silt, trace sand, gravel and roots, moist	316.07 / 0.30			
1	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, occasional cobbles, moist		SS-1	3-6 12	18
	dense	314.86 / 1.52	SS-2	7-15 17	32
2			SS-3	13-17 23	40
3	***SAND:*** compact brown coarse sand, some gravel, trace silt, moist	313.33 / 3.05	SS-4	8-8 10	18
4					
	dense medium sand, trace silt and gravel	311.81 / 4.57	SS-5	9-12 18	30
5					
6	compact, some gravel	310.28 / 6.10	SS-6	8-11 13	24
7					
	coarse sand	308.76 / 7.62	SS-7	12-10 12	22
8	Borehole terminated at 8.08 m	308.30 / 8.08			
9					
10					
11					
12					

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

WP WL — Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 4.57 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

LVM

Ground Elevation: *317.76 m*

Borehole Number: **BH-18-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-23*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		317.76			
	TOPSOIL: dark brown silt, trace sand, gravel and roots, moist		317.40 / 0.00			
			0.36			
1	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, moist			SS-1	13-14 12	26
	occasional cobbles		316.54 / 1.22			
	dense		316.24 / 1.52	SS-2	11-16 18	34
2						
	compact sand, some silt, wet		315.47 / 2.29	SS-3	7-11 13	24
	some gravel, trace silt, moist		315.17 / 2.59			
3			314.71			
	SAND: compact brown coarse sand, some gravel, trace silt, moist		3.05	SS-4	10-11 16	27
4						
				SS-5	10-12 12	24
5						
			311.66 / 6.10			
6	grey/brown			SS-6	11-12 12	24
7						
			310.14 / 7.62			
	brown fine sand, some silt, very moist			SS-7	9-12 14	26
8			309.68			
	Borehole terminated at 8.08 m		8.08			
9						
10						
11						
12						

Dynamic Cone: 20 40 60 80

Std Penetration: 20 40 60 80

Shear Strength (PP) kPa: 50 100 150 200

Initial

Remold

Shear Strength (FV) kPa: 50 100 150 200

WP WL

Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 5.49 m.

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *312.99 m*

Borehole Number: **BH-19-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-27*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		312.99			
	TOPSOIL: dark brown silt, some sand, trace gravel and corn roots, moist		0.00 312.63 0.36			
1	***SAND:*** loose brown medium sand, some silt, trace gravel, moist			SS-1	4-4 4	8
				SS-2	4-4 5	9
2			310.70			
	SAND AND GRAVEL: very dense brown sand and gravel, some silt, occasional cobbles, moist		2.29	SS-3	21-30 33	63
3	dense		309.94 3.05	SS-4	22-14 20	34
4			308.42			
	compact, saturated		4.57	SS-5	12-12 14	26
5						
6			306.89			
	SAND: compact brown silty fine sand, saturated		6.10 306.44	SS-6	9-10 12	22
	Borehole terminated at 6.55 m		6.55			
7						
8						
9						
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- el. 308.46 m 2014-06-15
- sand pack
- 50 mm pipe
- 1.52 m slotted screen
- native cave

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *316.51 m*

Borehole Number: **BH-20-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-26*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		316.51			
	TOPSOIL: dark brown silt, some sand, trace gravel and corn roots, moist		0.00 / 316.15			
			0.36			
1	***SAND:*** compact brown sand, some silt, trace gravel, pieces of black coal,moist			SS-1	5-8 8	16
2				SS-2	4-5 6	11
			314.22			
	SAND AND GRAVEL: dense brown sand and gravel, trace silt and cobbles, moist		2.29	SS-3	16-24 18	42
3			313.46			
	compact to dense		3.05	SS-4	11-14 14	28
4						
5				SS-5	11-13 15	28
6			310.41			
	SAND: compact brown coarse sand, some gravel, trace silt, moist		6.10	SS-6	6-9 9	18
7						
			308.89			
	gravelly sand, saturated		7.62	SS-7	5-6 10	16
8						
9			307.37			
	silty fine sand		9.14	SS-8	7-6 7	13
10						
			305.84			
	fine sand, some silt, moist to very moist		10.67	SS-9	7-10 12	22
11			305.38			
	Borehole terminated at 11.13 m		11.13			
12						

Dynamic Cone — Std Penetration: 20 40 60 80

Shear Strength (PP) kPa — Initial / Remold — Shear Strength (FV) kPa: 50 100 150 200

WP WL — Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 6.71 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

LVM

Ground Elevation: *298.00 m*

Borehole Number: **BH-21A-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-06-04*

Project: *Cambridge West Development*

Field Tech: *D.Gonser*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hand Sampled Borehole*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		298.00			
	FILL: dark brown organic silt (topsoil), moist		0.00 / 297.39			
	light brown silty fine sand to silty clay		0.61 / 297.24	SS-1	3-3 4-3	7
	some layered organics and roots		0.76 / 296.93	SS-2	6-21 22-50	43
	SAND: brown silty fine sand, trace clay and gravel, very moist		1.07 / 296.78	SS-3	50 /125 mm	
	SAND AND GRAVEL: brown to grey sand and gravel, trace silt, saturated		1.22 / 296.35			
	Borehole terminated at 1.65 m		1.65			

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

native backfill

At drilling completion, wet cave at 1.07 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

LVM

Ground Elevation: *298.20 m*

Borehole Number: **BH-21B-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-06-04*

Project: *Cambridge West Development*

Field Tech: *D.Gonser*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hand Sampled Borehole*

SOIL PROFILE		SAMPLE								
Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value	Dynamic Cone / Std Penetration	Shear Strength (PP) kPa / Shear Strength (FV) kPa	Water Content (%)	Groundwater Observations and Standpipe Details
	Ground Elevation		298.20							
0	***FILL:*** dark brown organics (topsoil), very moist		0.00 / 298.05							native backfill
			0.15 / 297.59	SS-1	1-2 / 1-3	3				
	light brown silty fine sand, very moist		0.61							
1	saturated		296.98	SS-2	16-12 / 20-35	32				
	SAND AND GRAVEL: dense brown sand and gravel, some silt, saturated		1.22 / 296.68	SS-3	31-50 /75 mm					At drilling completion, water level at 0.71 m.
2	Borehole terminated at 1.52 m		1.52							
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Reviewed by: *D.Gonser* **Drafted by:** *E.Ciochon* **Sheet:** *1 of 1*

Notes:

Ground Elevation: *305.52 m*

Borehole Number: **BH-22-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-27*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		305.52			
	TOPSOIL: dark brown silt, some sand, gravel and cobbles, moist		0.00 / 305.11 / 0.41			
1	***SAND:*** compact brown medium sand, trace silt and gravel, moist			SS-1	3-6 8	14
				SS-2	9-10 11	21
2				SS-3	6-8 9	17
3	some gravel and silt, wet		302.47 / 3.05	SS-4	12-12 13	25
	fine sand, some silt		302.01 / 3.50			
4						
	SILT: compact brown silt, fine sand, clay and gravel, very moist		300.80 / 4.72 / 300.49 / 5.03	SS-5	15-17 10	27
5	***SAND:*** compact brown fine sand, some silt, wet					
6	saturated		299.42 / 6.10	SS-6	6-6 7	13
				SS-7	4-5 7	12
7	Borehole terminated 7.32 m		298.20 / 7.32			
8						
9						
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial — Remold

WP WL — Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- el. 300.09 m 2014-06-15
- sand pack
- 50 mm pipe
- 1.52 m slotted screen
- native cave

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *314.76 m*

Borehole Number: **BH-23-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-26*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation	314.76			
	TOPSOIL: dark brown silt, trace sand and gravel, moist	0.00 / 314.45 / 0.30			
1	***SAND:*** loose brown sand, some silt, trace gravel, very moist		SS-1	2-2 2	4
	compact, very moist to wet	313.24 / 1.52	SS-2	2-5 6	11
2		312.47			
	SAND AND GRAVEL: compact brown sand and gravel, trace silt and cobbles, moist	2.29	SS-3	13-10 11	21
3	very dense, numerous cobbles	311.71 / 3.05	SS-4	30-37 30	67
4		310.49			
	SAND: dense brown coarse sand, some gravel, trace silt, moist	4.27	SS-5	19-20 22	42
5					
6		308.66			
	medium sand	6.10	SS-6	13-16 17	33
7		307.14			
	compact fine sand, some silt, wet	7.62	SS-7	12-13 15	28
8					
9		305.62			
	dense, saturated	9.14	SS-8	10-16 17	33
10		304.40	SS-9	9-13 21	34
	Borehole terminated at 10.40 m	10.36			
11					
12					

Dynamic Cone: 20 40 60 80 — Std Penetration: 20 40 60 80

Shear Strength (PP) kPa: 50 100 150 200 — Initial / Remold — Shear Strength (FV) kPa: 50 100 150 200

WP WL — Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 4.57 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser* **Drafted by:** *E.Ciochon* **Sheet:** *1 of 1*

Notes: *Bulk sample AS-2A taken from 1.52 to 2.29 m.*

LVM

Ground Elevation: *310.03 m*

Borehole Number: **BH-24-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-26*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		310.03			
	TOPSOIL: dark brown silt, trace silt and gravel, moist		0.00 / 309.80			
			0.23			
1	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt and cobbles, moist			SS-1	6-10 15	25
			308.51 / 1.52			
2	***SAND:*** compact brown fine to coarse sand, some silt, saturated			SS-2	5-6 10	16
			307.74			
	coarse sand, trace gravel and silt		2.29	SS-3	5-7 12	19
			307.29			
3	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt, occasional cobbles, saturated		2.74	SS-4	6-9 10	19
4				SS-5	10-12 14	26
			305.76			
	Borehole terminated at 4.27 m		4.27			

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

WP WL — Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

native backfill

native cave

At drilling completion, wet cave at 1.98 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser* **Drafted by:** *E.Ciochon* **Sheet:** *1 of 1*

Notes:

LVM

Ground Elevation: *309.53 m*

Borehole Number: **BH-25-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-26*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		309.53			
	TOPSOIL: dark brown silt, trace sand, gravel, corn roots and cobbles, moist		0.00 / 309.17			
			0.36 / 308.77			
1	brown silty sand, some gravel, moist		0.76	SS-1	5-6 7	13
	SAND AND GRAVEL: compact brown sand and gravel, some silt, saturated		308.01			
2	occasional cobbles		1.52 / 307.24	SS-2	8-10 12	22
	SAND: compact grey and brown coarse sand, some gravel, trace silt, saturated		2.29	SS-3	6-8 9	17
3				SS-4	5-6 6	12
4			304.96			
	dense		4.57 / 304.50	SS-5	8-12 25	37
5	Borehole terminated at 5.03 m		5.03			

Dynamic Cone: 20 40 60 80
Std Penetration: 20 40 60 80
Shear Strength (PP) kPa: 50 100 150 200
Initial / Remold
Shear Strength (FV) kPa: 50 100 150 200
WP WL
Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

native backfill

native cave

At drilling completion, wet cave at 1.00 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

LVM

Ground Elevation: *309.42 m*

Borehole Number: **BH-26-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-27*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		309.42			
	TOPSOIL: dark brown silt, trace sand, gravel and corn roots, moist		0.00 / 309.19			
			0.23 / 308.81			
	SAND: brown silty sand, moist		0.61	SS-1	11-12 14	26
1	***SAND AND GRAVEL:*** compact grey and brown sand and gravel, some silt, wet to saturated			SS-2	8-11 11	22
2			307.13			
	SAND: compact brown fine to coarse sand, some silt and gravel, saturated		2.29	SS-3	6-6 9	15
3			306.37			
	SAND AND GRAVEL: compact grey/brown sand and gravel, some silt and occasional cobbles, saturated		3.05	SS-4	5-6 12	18
4			304.85			
	dense		4.57	SS-5	10-11 24	35
5			304.39			
	Borehole terminated at 5.03 m		5.03			
6						
7						
8						
9						
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Initial / Remold / Shear Strength (FV) kPa: 50 100 150 200

WP WL / Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

- protective cover and concrete
- bentonite seal
- el. 308.29 m 2014-06-15
- sand pack
- 50 mm pipe
- 0.61 m slotted screen
- native cave

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *308.99 m*

Borehole Number: **BH-27-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-27*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Elevation (m)	Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation	308.99				
	TOPSOIL: dark brown silt, trace sand, gravel and corn roots, moist	308.81	0.00			
		308.58	0.18			
	SAND: grey/brown silty sand, trace roots, moist		0.41	SS-1	4-5 5	10
	compact brown coarse sand, some gravel and silt, saturated	307.47	1.52	SS-2	3-4 5	9
	loose to compact, trace silt	306.70	2.29	SS-3	11-7 10	17
	compact	305.94	3.05	SS-4	8-7 8	15
	SAND AND GRAVEL: compact brown sand and gravel, some silt, saturated	304.42	4.57	SS-5	4-6 8	14
	grey	302.89	6.10	SS-6	9-21 20	41
	dense, trace silt	301.67	7.32	SS-7	7-16 24	40
	Borehole terminated at 7.32 m					

Dynamic Cone: 20 40 60 80

Std Penetration: 20 40 60 80

Shear Strength (PP) kPa: 50 100 150 200

Initial

Remold

Shear Strength (FV) kPa: 50 100 150 200

WP WL

Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details

bentonite seal

native cave

At drilling completion, wet cave at 0.76 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

Ground Elevation: *318.95 m*

Borehole Number: **BH-28-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-23*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		318.95			
	TOPSOIL: dark brown silt, trace sand, gravel and corn roots, moist		0.00 / 318.67 / 0.28			
1	***SAND AND GRAVEL:*** compact brown sand and gravel, some silt, moist			SS-1	5-6 6	12
	trace silt		317.43 / 1.52	SS-2	6-8 9	17
2	dense, coarse sand and gravel		316.66 / 2.29	SS-3	9-17 13	30
3	compact		315.90 / 3.05	SS-4	7-10 14	24
4						
	very dense, occasional cobbles		314.38 / 4.57	SS-5	36-25 31	56
5						
6	dense		312.85 / 6.10	SS-6	11-21 20	41
7						
	very dense		311.33 / 7.62	SS-7	43-36 31	67
8						
9	***SAND:*** compact brown fine sand, some silt, trace gravel, wet		309.81 / 9.14	SS-8	10-13 15	28
10						
	silty fine sand, saturated		308.28 / 10.67	SS-9	12-13 15	28
11	Borehole terminated at 11.13 m		307.82 / 11.13			
12						

Dynamic Cone: 20 40 60 80
Std Penetration: 20 40 60 80
Shear Strength (PP) kPa: 50 100 150 200
Initial
Remold
Shear Strength (FV) kPa: 50 100 150 200
WP WL
Water Content (%): 10 20 30

Groundwater Observations and Standpipe Details:
- native backfill
- bentonite seal
- native cave
- At drilling completion, dry cave at 3.35 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes: *Bulk sample AS-4A taken from 3.05 to 4.57 m.*

Ground Elevation: *314.06 m*

Borehole Number: **BH-29-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-26*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		314.06			
	TOPSOIL: dark brown silt, some sand, trace gravel and corn roots, moist		0.00 313.81 0.25			
1	***SAND:*** compact brown sand, some gravel and silt, moist to very moist		312.84 1.22	SS-1	6-7 7	14
2	***SAND AND GRAVEL:*** dense brown sand and gravel, trace silt and cobbles, moist			SS-2 SS-3	8-21 22 16-18 23	43 41
3	***SAND:*** very dense brown coarse sand, some gravel, trace silt and cobbles, moist		311.01 3.05	SS-4	13-21 40	61
4						
	dense		309.49 4.57	SS-5	16-15 15	30
5						
6	compact fine sand, trace silt, moist		307.96 6.10	SS-6	9-9 15	24
	wet		307.51 6.55			
7						
	dense silty fine sand, saturated		306.44 7.62	SS-7	10-14 17	31
8	fine sand, some silt, wet		306.13 7.92			
9						
	saturated		304.92 9.14	SS-8	8-14 22	36
	Borehole terminated at 9.60 m		304.46 9.60			
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

native backfill

bentonite seal

native cave

At drilling completion, dry cave at 3.96 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

LVM

Ground Elevation: *313.73 m*

Borehole Number: **BH-30-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-26*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Symbol	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation		313.73			
	TOPSOIL: dark brown silt, some sand and gravel, moist		0.00 / 313.48 / 0.25			
1	***SAND:*** compact brown sand, some gravel, trace silt, moist		312.21	SS-1	5-5 10	15
2	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt and cobbles, moist		1.52	SS-2	6-9 10	19
	dense, numerous cobbles		311.44 / 2.29	SS-3	9-15 15	30
3	very dense		310.68 / 3.05	SS-4	50 /125 mm	
4			309.16			
5	***SAND:*** dense brown coarse sand, some gravel, trace silt, moist		4.57	SS-5	9-18 15	33
6	silty fine sand, very moist to wet		307.63 / 6.10	SS-6	6-10 23	33
7			306.11			
	moist to very moist		7.62 / 305.81	SS-7	12-20 21	41
8	moist		7.92			
9			304.59			
	silty fine sand		9.14	SS-8	7-15 16	31
	Borehole terminated at 9.60 m		304.13 / 9.60			
10						
11						
12						

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- native backfill
- bentonite seal
- native cave
- At drilling completion, dry cave at 3.05 m.

Reviewed by: *D.Gonser* **Drafted by:** *E.Ciochon* **Sheet:** *1 of 1*

Notes: *Bulk sample AS-4A taken from 3.05 to 4.57 m, moisture content = 6.4%.*

Ground Elevation: *311.80 m*

Borehole Number: **BH-31-14**

Job N°: *P-0003455-0-09-100*

Drill Date: *2014-05-20*

Project: *Cambridge West Development*

Field Tech: *D.Souter*

Location: *Blenheim Road, Cambridge, Ontario*

Drill Method: *Hollow Stem Auger*

Depth (m)	Description	Elevation (m) / Depth (m)	Type and Number	"Blows" /150 mm	SPT 'N' Value
	Ground Elevation	311.80			
	TOPSOIL: dark brown and black silt, some sand, trace gravel and corn roots, moist	311.44 / 0.36			
1	***SAND:*** very loose brown silty fine to coarse sand, trace gravel, very moist	310.58 / 1.22	SS-1	1-2 1	3
	some silt, moist	309.97	SS-2	1-6 9	15
2	***SAND AND GRAVEL:*** compact brown sand and gravel, trace silt, moist	1.83	SS-3	20-12 12	24
3	***SAND:*** loose grey and brown sand, some silt and gravel, saturated	308.75 / 3.05	SS-4	4-4 4	8
4					
	compact, brown, trace silt and gravel	307.23 / 4.57	SS-5	6-8 8-8	16
5					
6	gravelly coarse sand, some silt	305.70 / 6.10	SS-6	6-8 9	17
7			SS-7	7-8 10	18
	Borehole terminated at 7.32 m	304.48 / 7.32			
8					
9					
10					
11					
12					

Dynamic Cone / Std Penetration: 20 40 60 80

Shear Strength (PP) kPa / Shear Strength (FV) kPa: 50 100 150 200 — Initial / Remold

Water Content (%): WP WL — 10 20 30

Groundwater Observations and Standpipe Details

- native backfill
- bentonite seal
- native cave

At drilling completion, wet cave at 3.20 m.

Vertical Scale = 1 : 70.0

Reviewed by: *D.Gonser*

Drafted by: *E.Ciochon*

Sheet: *1 of 1*

Notes:

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CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 19-1

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE January 28, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLE NUMBER	SAMPLE TYPE	"N" VALUES
	SURFACE ELEVATION 304.39				
0.0 / 304.4	PAVEMENT STRUCTURE: 130 mm of asphalt, over 170 mm granular base, damp, over 900 mm granular subbase, damp		1	SS	50/75mm
1.2 / 303.2	FILL: Brown silty sand, some gravel, moist		2	SS	25
			3	SS	17
			4	SS	11
			5	SS	6
			6	SS	10
			7	SS	11
7.6 / 296.8	SILT: Dense brown silt, some sand, some gravel, saturated		8	SS	31
9.1 / 295.3	SAND: Compact brown sand, some silt, saturated		9	SS	16
10.7 / 293.7	becoming loose		10	SS	6
12.2 / 292.2	becoming very loose		11	SS	4*
12.7 / 291.7	BOREHOLE TERMINATED AT 12.7 m				

ELEVATION SCALE: 304, 303, 302, 301, 300, 299, 298, 297, 296, 295, 294, 293, 292

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER O Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Flushmount Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen
Bentonite Bottom

Water Level Readings:

Date	Depth	Elev.
2019-01-28	6.5	297.9

NOTES * Low N value due to Hydraulic disturbace

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LOG OF BOREHOLE/MONITORING WELL NO. 19-2

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE January 29, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES
		SURFACE ELEVATION 304.39				
0.0	304.4	PAVEMENT STRUCTURE: 140 mm of asphalt, over 160 mm of granular base, damp, over 1100 mm of granular subbase, damp		1	SS	50/75mm
1.0				2	SS	25
1.4	303.0	FILL: Brown gravelly sand, some silt, damp		3	SS	39
2.0				4	SS	7
3.0				5	SS	9
4.0						
4.6	299.8	SANDY SILT: Compact brown sandy silt, trace gravel, wet		6	SS	12
5.0						
6.0				7	SS	11
7.0						
7.6	296.8	SAND: Compact brown sand, some gravel, trace silt, saturated		8	SS	13
8.0						
9.0				9	SS	15
10.0						
11.0				10	SS	25
11.7	292.7	SANDY SILT: Loose brown sandy silt, trace gravel, saturated				
12.0				11	SS	9
12.7	291.7	BOREHOLE TERMINATED AT 12.7 m				
13.0						
14.0						
15.0						

ELEVATION SCALE: 304, 303, 302, 301, 300, 299, 298, 297, 296, 295, 294, 293, 292

SHEAR STRENGTH (kPa)
+FIELD VANE △TORVANE ○ Qu
▲POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Flushmount Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen
Bentonite Bottom

Water Level Readings:

Date	Depth	Elev.
2019-01-29	5.8	298.6

NOTES

Peto MacCallum Ltd.
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LOG OF BOREHOLE NO. 19-3

PROJECT Cambridge West Lands Development
PML REF. 18KF062
LOCATION Cambridge West Lands Development
BORING DATE April 25, 2019
ENGINEER K. Hanes
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L; WATER CONTENT (%)	GAS READINGS ppm	GROUND WATER OBSERVATIONS AND REMARKS; GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
0.0		SURFACE ELEVATION 303.53						50 100 150 200	10 20 30 40		
		FILL: Dark brown sand and gravel, some silt, numerous cobbles, wet		1A	SS	7				0	
				1B			303				
0.70	302.83	becoming damp		2	SS	12				0	
1.5	302.0	becoming moist		3	SS	8	302			0	
2.2	301.3	becoming brown gravelly sand, some silt, numerous cobbles, moist		4	SS	7	301			0	
				5A	SS	8				0	
3.7				5B			300				
	299.8	SANDY SILT: Loose to compact brown sandy silt, trace gravel, moist to wet		6	SS	16				0	
				7	SS	8	299			0	
5.2	298.3	BOREHOLE TERMINATED AT 5.2 m									Upon completion of augering Cave at 3.35 m No free water

NOTES

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LOG OF BOREHOLE NO. 19-4

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE April 25, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres) / ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES
	SURFACE ELEVATION 303.40			
0.28 / 303.12	TOPSOIL: Dark brown sandy silt, some gravel, moist	1A, 1B	SS	4
	SANDY SILT: Loose to compact brown sandy silt, moist	2	SS	7
		3	SS	12
2.2 / 301.2	SILTY SAND: Compact light brown silty sand, moist	4	SS	24
		5A, 5B	SS	22
3.7 / 299.7	becoming wet	6	SS	16
		7	SS	16
		8	SS	16
7.2 / 296.2	becoming dense	9	SS	39
8.2 / 295.2	BOREHOLE TERMINATED AT 8.2 m			

SHEAR STRENGTH (kPa): + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER O Q; DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●

PLASTIC LIMIT (w_P) — NATURAL MOISTURE CONTENT (w) — LIQUID LIMIT (w_L); WATER CONTENT (%)

GAS READINGS (ppm): 0, 0, 0, 0, 0, 0, 0, 0, 0

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Upon completion of augering
Cave at 4.27 m
No free water

NOTES

Peto MacCallum Ltd.
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LOG OF BOREHOLE NO. 19-5

PROJECT Cambridge West Lands Development
PML REF. 18KF062
LOCATION Cambridge West Lands Development
BORING DATE January 21, 2019
ENGINEER K. Hanes
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES
	316.54	SURFACE ELEVATION 316.54				
0.0	316.34	TOPSOIL: Dark brown silty sand, damp		1A	SS	15
				1B		
		SILTY SAND: Compact brown silty sand, trace gravel, damp		2	SS	20
1.0						
1.5	315.0	becoming very dense, some gravel		3	SS	58
2.0						
2.3	314.2	SAND AND GRAVEL: Dense brown sand and gravel, trace silt, occasional cobbles, damp		4	SS	38
3.0				5	SS	45
4.0						
				6	SS	48
5.0						
6.0				7	SS	39
7.0						
7.6	308.9	SAND: Compact brown sand, trace gravel, trace silt, wet to saturated		8	SS	21
8.0						
9.0						
9.3	307.2	SILTY SAND: Dense to very dense brown silty sand, wet to saturated		9	SS	36
10.0						
				10	SS	57
11.0						
12.0	12.2					
	304.3	SILT: Dense brown silt, some sand, saturated		11	SS	36
13.0						
				12	SS	39
14.0						
15.0		CONTINUED				

ELEVATION SCALE: 316, 315, 314, 313, 312, 311, 310, 309, 308, 307, 306, 305, 304, 303, 302

SHEAR STRENGTH (kPa)
+FIELD VANE △TORVANE ○ Qu
▲POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Sampler wet below 7.6 m

NOTES

Peto MacCallum Ltd.
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LOG OF BOREHOLE NO. 19-5

PROJECT Cambridge West Lands Development
PML REF. 18KF062
LOCATION Cambridge West Lands Development
BORING DATE January 21, 2019
ENGINEER K. Hanes
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Patterson

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	GAS READINGS ppm	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
15.0	CONTINUED FROM PREVIOUS PAGE									
15.2										
301.3	SILTY SAND: Very dense to dense brown silty sand, saturated		13	SS	53	301				
			14	SS	32	300				
18.0						299				
298.5	becoming compact		15	SS	21	298				
18.8										
297.7	BOREHOLE TERMINATED AT 18.8 m									Upon completion of augering Cave at 7.9 m Free water at 7.6 m

SHEAR STRENGTH (kPa): + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; 50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●; 20 40 60 80
PLASTIC LIMIT w_P NATURAL MOISTURE CONTENT w LIQUID LIMIT w_L
WATER CONTENT (%) 10 20 30 40

NOTES

Peto MacCallum Ltd.
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LOG OF BOREHOLE NO. 19-6

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE January 22, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLE NUMBER	SAMPLE TYPE	"N" VALUES
		SURFACE ELEVATION 312.76				
0.0	312.60	TOPSOIL: Dark brown silty sand, trace gravel, wet		1A	SS	38
				1B		
		SILTY SAND: Compact brown silty sand, trace gravel, wet		2	SS	22
1.5	311.3	SAND: Compact brown sand, some gravel, some silt, damp		3	SS	14
2.3	310.5	SAND AND GRAVEL: Dense brown sand and gravel, trace silt, damp		4	SS	35
				5	SS	30
4.6	308.2	becoming compact, occasional cobbles, moist		6	SS	15
6.1	306.7	SILTY SAND: Compact to very dense brown silty sand, wet to saturated		7	SS	52
				8	SS	18
				9	SS	38
10.7	302.1	SAND AND SILT: Compact brown sand and silt, trace gravel, saturated		10	SS	24
				11	SS	14
14.2	298.6	BOREHOLE TERMINATED AT 14.2 m		12	SS	25

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER O Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Sampler wet below 6.1 m

Upon completion of augering
Cave at 3.35 m
No free water

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 19-7

PROJECT Cambridge West Lands Development — **PML REF.** 18KF062
LOCATION Cambridge West Lands Development — **BORING DATE** January 18, 2019 — **ENGINEER** K. Hanes
BORING METHOD Continuous Flight Hollow Stem Augers — **TECHNICIAN** D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLE NUMBER	SAMPLE TYPE	"N" VALUES
		SURFACE ELEVATION 318.17				
0.0	318.04	TOPSOIL: Dark brown silty sand, wet		1A	SS	11
0.13		SILTY SAND: Loose to compact brown silty sand, some gravel, moist		1B		
1.0				2	SS	7
2.0				3	SS	27
3.0				4	SS	16
3.1	315.1	SAND: Compact grey sand, trace silt, damp		5	SS	19
4.0						
4.5	313.7	becoming dense		6	SS	48
5.0						
6.0				7	SS	34
7.0						
7.6	310.6	SAND AND GRAVEL: Very dense brown sand and gravel, trace silt, occasional cobbles, damp		8	SS	79
8.0						
9.0						
9.1	309.1	SAND: Dense brown fine sand, trace silt, saturated		9	SS	35
10.0						
10.7	307.5	SILTY SAND: Compact to dense brown silty sand, saturated		10	SS	39
11.0						
12.0				11	SS	17
13.0						
13.7	304.5	SILT: Compact brown silt, some sand, saturated		12	SS	28
14.0						
14.7	303.5	becoming loose				
15.0		CONTINUED				

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

ELEVATION SCALE: 318, 317, 316, 315, 314, 313, 312, 311, 310, 309, 308, 307, 306, 305, 304

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS (ppm)

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Sampler wet below 10.7 m

NOTES Low N value possibly due to hydraulic disturbance

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 19-7

PROJECT Cambridge West Lands Development
PML REF. 18KF062
LOCATION Cambridge West Lands Development
BORING DATE January 18, 2019
ENGINEER K. Hanes
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Patterson

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	GAS READINGS (ppm)	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
15.0	CONTINUED FROM PREVIOUS PAGE					303				
			13	SS	7*					
16.2 / 302.0	becoming compact					302				
			14	SS	15	301				
18.8 / 299.4	BOREHOLE TERMINATED AT 18.8 m		15	SS	26	300				Upon completion of augering Wet cave at 10.1 m

NOTES Low N value possibly due to hydraulic disturbance

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 19-8

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE January 18, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 311.41					
0.0	311.41						311
0.22	311.19	TOPSOIL: Black silty sand, moist		1A	SS	18	
		SILTY SAND: Compact brown silty sand, damp		1B			
0.76	310.65						
1.0		SAND AND GRAVEL: Compact to dense brown sand and gravel, trace silt, damp		2	SS	42	310
				3	SS	42	
2.0				4	SS		309
3.0				5	SS	18	308
4.0	307.4	becoming saturated					
				6	SS	47	307
5.0							
6.0	305.3	SAND: Compact brown sand, some gravel, trace silt, saturated		7	SS	22	306
6.1							305
7.0							
8.0				8	SS	30	304
							303
9.0							
9.5	301.8	SANDY SILT: Brown sandy silt, saturated		9	SS	11	302
10.0		BOREHOLE TERMINATED AT 9.6 m					
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+FIELD VANE △TORVANE ○ Qu
▲POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Upon completion of augering
Cave at 3.7 m
Free water at 2.7 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 19-9

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE January 23, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES
		SURFACE ELEVATION 303.15			
0.0	303.0				
0.19	302.96	FILL: Dark brown sandy silt topsoil, trace gravel, moist	1	SS	11
1.0	302.0	becoming brown sandy silt, trace gravel, moist	2	SS	5
1.5	301.7	SANDY SILT: Loose brown sandy silt, wet to saturated	3	SS	9
2.0	301.0		4	SS	8
3.1	300.1	becoming compact, saturated	5	SS	10
4.0	299.0				
4.6	298.6	SAND AND SILT: Compact brown sand and silt, some sand, saturated	6	SS	27
5.0	298.0				
6.0	297.0		7	SS	14
7.0	296.0				
8.0			8	SS	11
8.1	295.1	BOREHOLE TERMINATED AT 8.1 m			
9.0					
10.0					
11.0					
12.0					
13.0					
14.0					
15.0					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Stickup Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen
Bentonite Bottom

Water Level Readings:

Date	Depth	Elev.
2019-01-23	4.9	298.3
2019-04-17	3.4	299.8

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 19-10

PROJECT Cambridge West Lands Development
PML REF. 18KF062
LOCATION Cambridge West Lands Development
BORING DATE January 23, 2019
ENGINEER K. Hanes
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Patterson

DEPTH / ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / WATER CONTENT (%)	GAS READINGS ppm	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
	SURFACE ELEVATION 302.84								
0.40 / 302.44	PAVEMENT STRUCTURE: 65 mm of asphalt, over 335 mm of granular base, moist		1	SS	50/100mm				
	FILL: Dark brown silty sand, some organics, wet		2	SS	8	302			
1.5 / 301.3	SANDY SILT: Loose to compact brown sandy silt, trace gravel, wet to saturated		3	SS	5	301			Sampler wet below 1.5 m
			4	SS	16	300			
			5	SS	8	299			
5.0 / 297.8	BOREHOLE TERMINATED AT 5.0 m		6	SS	12	298			Upon completion of augering Cave at 2.7 m No free water

SHEAR STRENGTH (kPa): + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; 50 100 150 200; DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●; 20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L; WATER CONTENT (%): 10 20 30 40

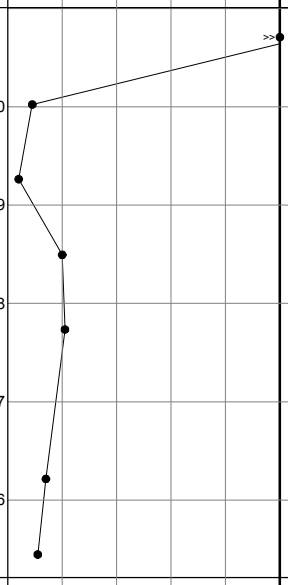
NOTES

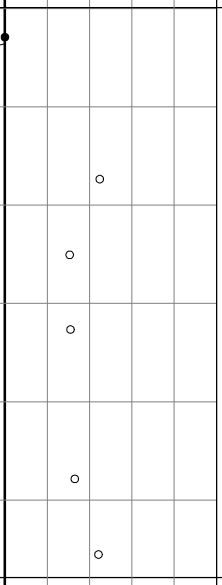
Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 19-11

PROJECT Cambridge West Lands Development
PML REF. 18KF062
LOCATION Cambridge West Lands Development
BORING DATE January 23, 2019
ENGINEER K. Hanes
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES
		SURFACE ELEVATION 301.01				
0.0	300.84	PAVEMENT STRUCTURE: 85 mm of asphalt, over 85 mm granular base, moist		1	SS	50/125mm
1.0		FILL: Brown sand and gravel, trace silt, wet		2	SS	9
1.5	299.5	PEAT: Black amorphous peat, trace gravel, trace sand, some wood, some organics, saturated		3	SS	4
2.0						
2.3	298.7	SAND: Compact brown sand, trace silt, saturated		4	SS	20
3.0				5	SS	21
4.0						
5.0				6	SS	14
5.8				7	SS	11
6.0	295.2	BOREHOLE TERMINATED AT 5.8 m				
7.0						
8.0						
9.0						
10.0						
11.0						
12.0						
13.0						
14.0						
15.0						



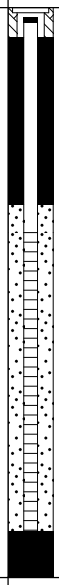


ELEVATION SCALE: 300, 299, 298, 297, 296

GAS READINGS (ppm)

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL



Water Level Readings:

Date	Depth	Elev.
2019-01-23	4.9	296.1
2019-04-17	1.6	299.4

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 19-12

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE January 30, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES
		SURFACE ELEVATION 315.35				
0.0	315.35					
0.23	315.12	TOPSOIL: Dark brown sandy silt, moist		1A	SS	26
		SANDY SILT: Compact brown sandy silt, wet		1B		
0.76	314.59	SILTY SAND: Compact brown silty sand, some gravel, moist		2	SS	11
1.5	313.9	SAND AND GRAVEL: Dense brown sand and gravel, trace silt, damp to moist, occasional cobbles		3	SS	31
2.0				4	SS	34
3.0				5	SS	35
4.0						
4.6	310.8	becoming compact		6	SS	18
5.0						
6.0						
6.1	309.3	becoming dense		7	SS	40
7.0						
7.6	307.8	SILT: Compact to dense brown silt, some sand, saturated		8	SS	37
8.0						
9.0				9	SS	16
10.0						
10.7	304.7	SILTY SAND: Compact brown silty sand, saturated		10	SS	12
11.0	304.3	BOREHOLE TERMINATED AT 11.1 m				
11.1						
12.0						
13.0						
14.0						
15.0						

ELEVATION SCALE: 315, 314, 313, 312, 311, 310, 309, 308, 307, 306, 305

SHEAR STRENGTH (kPa)
+FIELD VANE △TORVANE ○ Qu
▲POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Stickup Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen
Bentonite Bottom

Water Level Readings:

Date	Depth	Elev.
2019-01-30	7.3	308.1
2019-04-17	6.7	308.7

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 19-13

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE January 30, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES
	319.09	SURFACE ELEVATION 319.09				
0.0	319.09	FILL: Grey sand and gravel, trace silt, moist to wet, occasional cobbles		1	SS	50/75mm
				2	SS	39
				3	SS	28
2.3	316.8	SAND AND GRAVEL: Compact brown sand and gravel, trace silt, occasional cobbles, moist		4	SS	29
3.1	316.0	becoming dense		5	SS	36
				6	SS	36
				7	SS	50
7.6	311.5	SILTY SAND: Compact brown silty sand, saturated		8	SS	29
9.1	310.0	SILT: Compact brown silt, trace sand, saturated		9	SS	24
10.7	308.4	becoming dense		10	SS	38
12.2	306.9	becoming compact		11	SS	28
13.7	305.4	becoming very dense		12	SS	56
15.0		CONTINUED				

SHEAR STRENGTH (kPa)
+FIELD VANE △TORVANE ○ Qu
▲POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Stickup Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 19-13

PROJECT Cambridge West Lands Development
PML REF. 18KF062
LOCATION Cambridge West Lands Development
BORING DATE January 30, 2019
ENGINEER K. Hanes
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Patterson

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT / WATER CONTENT (%)	GAS READINGS (ppm)	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
15.0	CONTINUED FROM PREVIOUS PAGE					304				
15.7			13	SS	50/150mm		>>			Bentonite Bottom
303.4	BOREHOLE TERMINATED AT 15.7 m									

Water Level Readings:

Date	Depth	Elev.
2019-01-30	10.3	308.8
2019-04-17	9.8	309.3

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE/MONITORING WELL NO. 19-14

PROJECT Cambridge West Lands Development
LOCATION Cambridge West Lands Development
BORING METHOD Continuous Flight Hollow Stem Augers
BORING DATE January 22, 2019
PML REF. 18KF062
ENGINEER K. Hanes
TECHNICIAN D. Patterson

DEPTH (metres)	ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES
		SURFACE ELEVATION 313.60			
0.13	313.47	FILL: Dark brown silty sand topsoil, wet becoming brown silty sand, trace gravel, wet	1	SS	23
			2	SS	4
1.5	312.1	SAND AND GRAVEL: Compact to dense brown sand and gravel, trace silt, occasional cobbles, wet to moist	3	SS	32
			4	SS	29
			5	SS	33
4.6	309.0	becoming very dense	6	SS	61
6.1	307.5	becoming compact to dense	7	SS	32
			8	SS	22
			9	SS	46
10.7	302.9	SAND: Compact brown sand, some silt, some gravel, moist to wet	10	SS	17
12.2	301.4	becoming saturated	11	SS	18
12.7	300.9	BOREHOLE TERMINATED AT 12.7 m			

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER O Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL

Stickup Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen 15 68 18
Bentonite Bottom

Water Level Readings:

Date	Depth	Elev.
2019-01-22	10.9	302.7
2019-04-17	11.7	301.9

NOTES

ID No.: MW101-21

Project Name: Westwood Village Phase 2

MTE File No.: 02534-800

Client: Gatestone Developments Corp.

Site Location: North Dumfries, ON

Date Completed: 1/6/2021

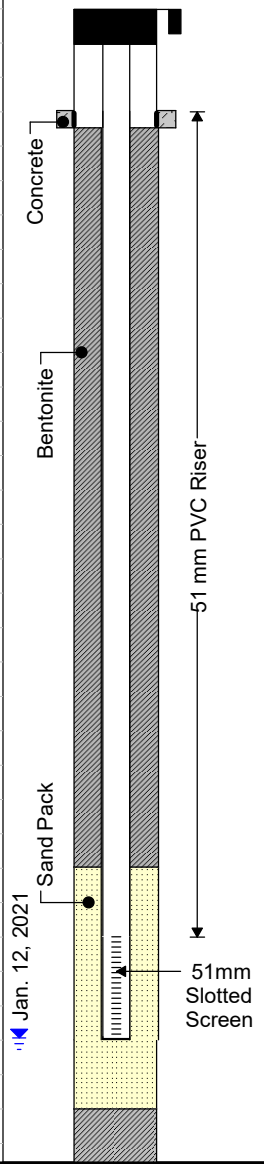
Drilling Contractor: London Soil Test

Drill Rig: D50 Turbo Track Mount

Drill Method: Hollow Stem Auger

Protective Cover: Monument

Depth Scale (ft / m)	Symbol	Soil Description	Elevation (masl) / Depth (m)	Number	Type	Recovery (%)	N-Value (Blows/305mm)	Moisture Content (%)
0 / 0		Ground Surface	316.4 / 0.0					
		FILL brown, sand and gravel, trace silt FILL, damp		1	SS	75	48	
				2	SS	85	19	
				3	SS	100	4	
				4	SS	100	21	
				5	SS	75	17	
				6	SS	50	32	
			310.9 / 5.5	7	SS	100	16	
		SAND brown SAND, trace silt, moist	310.3 / 6.1					
		SANDY SILT brownish-grey SANDY-SILT, trace gravel and clay, wet		8	SS	85	13	
		some clay, trace gravel, saturated	308.8 / 7.6	9	SS	75	16	
30 / 9			307.2 / 9.1					



Field Technician: TXG

Drafted by: TXG

Reviewed by: EMB

Water measured at beginning of Jan. 6 = 11 mbgs
Groundwater Elevation:
Jan. 12, 2021 - 308.19 mAMSL

ID No.: MW101-21

Project Name: Westwood Village Phase 2

MTE File No.: 02534-800

Client: Gatestone Developments Corp.

Site Location: North Dumfries, ON

Date Completed: 1/6/2021

Drilling Contractor: London Soil Test

Drill Rig: D50 Turbo Track Mount

Drill Method: Hollow Stem Auger

Protective Cover: Monument

Depth Scale	Symbol	Soil Description	Elevation (masl) / Depth (m)	Number	Type	Recovery (%)	N-Value (Blows/305mm)	Moisture Content (%)	Well Completion Details
32		**SILT TILL** grey, SILT TILL, trace sand and gravel, moist		10	SS	5	43		
34							50/3"		
36				11	SS	100			
38									
40			304.2 12.2	12	SS	90	100/10"		
42		**SILT** brown SILT, some sand, moist							
44							50/4"		
46				13	SS	75			
48									
50			301.1 15.2	14	SS	100	50/3"		
52		**SILT TILL** grey, SILT TILL, some sand, trace gravel and clay, moist							
54							50/3"		
56				15	SS	100			
58									
60			297.8	16	SS	100	50/6"		
62		Drilling Terminated	18.6						

Bentonite

Field Technician: TXG

Drafted by: TXG

Reviewed by: EMB

Sheet: 2 of 2

Water measured at beginning of Jan. 6 = 11 mbgs
Groundwater Elevation:
Jan. 12, 2021 - 308.19 mAMSL

ID No.: MW102-21

Project Name: Westwood Village Phase 2

MTE File No.: 02534-800

Client: Hallman Construction Ltd.

Site Location: North Dumfries, ON

Date Completed: 1/6/2021

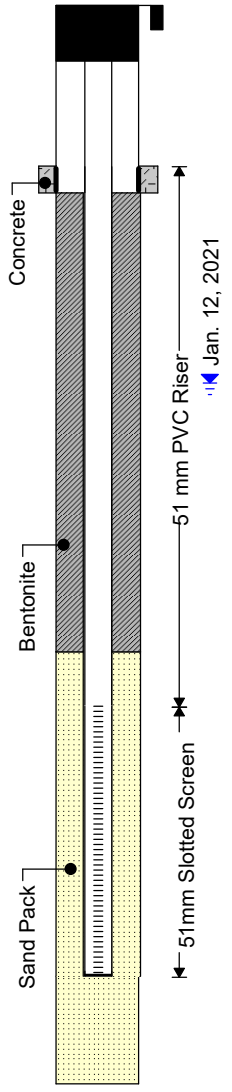
Drilling Contractor: London Soil Test

Drill Rig: D50 Turbo Track Mount

Drill Method: Hollow Stem Auger

Protective Cover: Monument

Depth Scale (ft / m)	Symbol	Soil Description	Elevation (masl) / Depth (m)	Number	Type	Recovery (%)	N-Value (Blows/305mm)	Moisture Content (%)
		Ground Surface	307.2					
0 / 0		**TOPSOIL** dark brown, TOPSOIL, silt with trace sand and gravel	0.0 / 306.9	1	SS	100	6	
		SANDY SILT Brown SILT trace sand and gravel	0.3 / 306.3					
4		**SAND** Brown SAND some silt, saturated	0.9	2	SS	75	5	
6 / 2				3	SS	25	10	
8			304.6	4	SS	100	14	
10		**SANDY SILT** brown, sandy SILT, trace gravel and clay, saturated	2.6	5	SS	75	11	
12			303.4					
14 / 4		**SAND** brown SAND, trace to some silt, trace clay, saturated	3.8	6	SS	50	4	
16				7	SS	85	8	
			302.1					
18		Drilling Terminated	5.2					



Field Technician: TXG

Drafted by: TXG

Reviewed by: EMB

Sheet: 1 of 1

Groundwater Elevations:
Jan. 12, 2021 - 306.03

Appendix D

Water Well Records

40 p 8 W.

UTM 17 Z 552250 E 6-1

C 5 R 4801350 N

Elev. 5 R 1025

Basin 23

ONTARIO

The Water-well Drillers Act, 1954

Department of Mines

Water-Well Record

~~Sherwyn Farms~~

County or Territorial District WATERLOO Township, Village, Town or City North Galt

Con. XII Lot 15 Street and Number (if in Village, Town or City)

Owner [redacted] Address Hyway # 97 Galt (Milton

Date completed 12 September 1956
(day) (month) (year)

Pipe and Casing Record

[redacted]

Casing diameter(s) 5 inch

Length(s) 123 ft

Type of screen none

Length of screen none

Pumping Test

Static level 28 ft

Pumping rate 500 G P H

Pumping level 32 ft

Duration of test 6 hrs

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
Dug well	0	28	131 ft	~~97~~ ft/03	fresh
sand	28	100			
quick sand	100	120			
sand & clay	120	128			
gravel	128	131			

For what purpose(s) is the water to be used?
farm

Is water clear or cloudy? clear

Is well on upland, in valley, or on hillside? upland

Drilling firm J L Graham

Address R R # 3 Guelph Ont.

Name of Driller George Peres

Address 12 Inkerman St.
Guelph Ont.

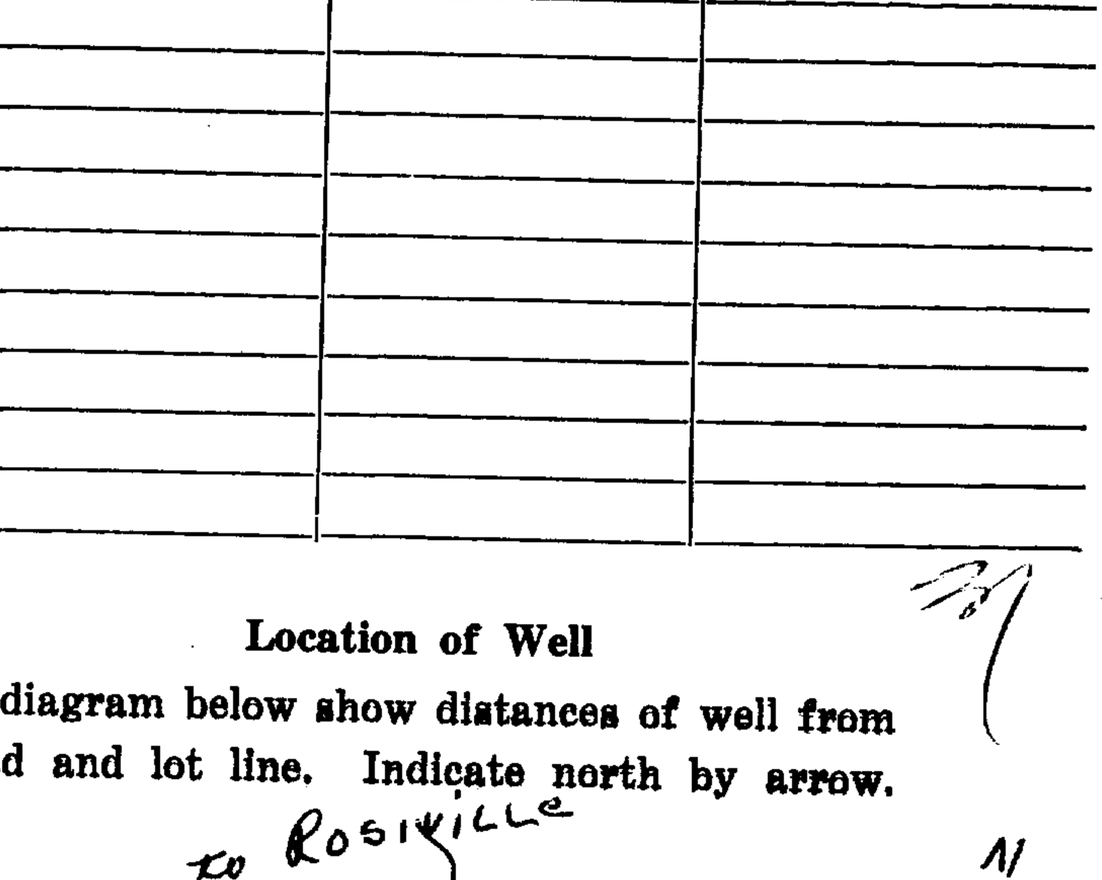
Licence Number 764

I certify that the foregoing statements of fact are true.

Date Nov 12/56 J L Graham
Signature of Licensee

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 5

Ministry of Environment and Energy
Ontario

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

WATERLOO

11 (1 2)

6507915

Municipality 65001 (10 14) Con. (15 22 23 24)

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)

Owner's surname (28-47) First name	Address	Date completed (48-53)
Regional Mun. of Waterloo	c/o Lotowater Ltd. Box 451, Paris, ON	21 day July month 95 year

21 (1 2) U T M Zone (10) Easting (12 17) Northing (18 24) RC (25) Elevation (26 30) RC (30) Basin Code (31 47) ii iii iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Brown	Sand	Silt	Soft	0	61
Grey	Clay	Cobbles	Soft	61	89
Grey	Till	Cobbles	Hard	89	126
Brown	Limestone		Medium	126	218
Grey	Limestone		Hard	218	261
Brown	Limestone		Hard	261	349
Grey	Limestone		Hard	349	481
Dk. Grey	Limestone	Shale	Soft	481	485
Brown	Limestone		Hard	485	497
Grey, Red	Shale		Soft	497	547

31 (10 14 15 21) 32 (32 43 54 65 75 80)

41 WATER RECORD

Water found at – feet	Kind of water
127 (10-13) / 146	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (14)
287 (17-18) / 296	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (19)
348 (20-23) / 394	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (24)
401 (25-28) / 442	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (29)
(30-33)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (34) (60)

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth – feet From	Depth – feet To
(10-11) 6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic (12)	.188	+1-8	129-8 (13 16)
(17-18)	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic (19)			(20-23)
(24-25)	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic (26)			(27-30)

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38) inches	Length (39-40) feet
Material and type	Depth at top of screen (41-44) feet	(30)

61 PLUGGING & SEALING RECORD

☐ Annular space ☐ Abandonment

Depth set at – feet From	Depth set at – feet To	Material and type (Cement grout, bentonite, etc.)
(10-13)	(14 17)	
(18 21)	(22-25)	
(26-29)	(30 35) (80)	

71 PUMPING TEST

Pumping test method (11) 1 ☐ Pump 2 ☐ Bailer

Pumping rate (11-14) GPM

Duration of pumping (15 16) ..... Hours ..... (17 18) Mins

(25) Water levels during 1 ☐ Pumping 2 ☐ Recovery

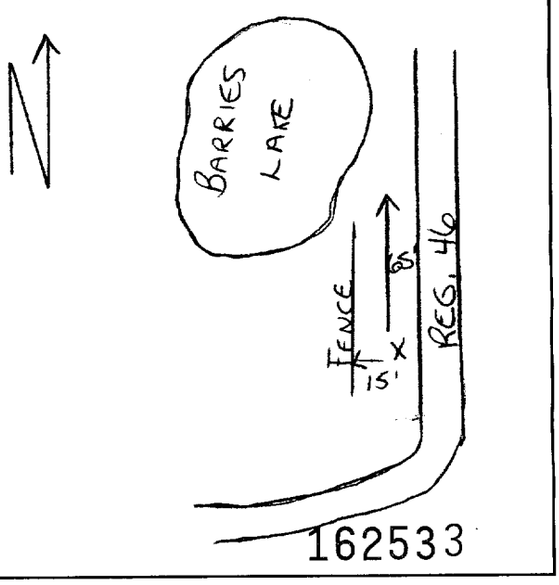
Static level	Water level end of pumping	15 minutes (26-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
(19-21) feet	(22-24) feet	feet	feet	feet	feet

If flowing give rate (38-41)	Pump intake set at	Water at end of test (42)
GPM	feet	☐ Clear ☐ Cloudy
Recommended pump type ☐ Shallow ☐ Deep	Recommended pump setting (43-45) feet	Recommended pump rate (46-49) GPM

(50-53)

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



162533

FINAL STATUS OF WELL (54)

1 ☐ Water supply
2 ☒ Observation well
3 ☐ Test hole
4 ☐ Recharge well
5 ☐ Abandoned, insufficient supply
6 ☐ Abandoned, poor quality
7 ☐ Abandoned (Other)
8 ☐ Dewatering
9 ☐ Unfinished
10 ☐ Replacement well

WATER USE (55-56)

1 ☐ Domestic
2 ☐ Stock
3 ☐ Irrigation
4 ☐ Industrial
5 ☐ Commercial
6 ☐ Municipal
7 ☐ Public supply
8 ☐ Cooling & air conditioning
9 ☒ Not used
10 ☐ Other .....

METHOD OF CONSTRUCTION (57)

1 ☐ Cable tool
2 ☒ Rotary (conventional)
3 ☐ Rotary (reverse)
4 ☐ Rotary (air)
5 ☐ Air percussion
6 ☐ Boring
7 ☐ Diamond
8 ☐ Jetting
9 ☐ Driving
10 ☐ Digging
11 ☐ Other .....

Name of Well Contractor	Well Contractor's Licence No.
Davidson Well Drilling Limited	1737
Address: Box 486, Wingham, Ontario NOG 2WO	
Name of Well Technician: G. Reavie	Well Technician's Licence No.: T0156
Signature of Technician/Contractor	Submission date: day 31 mo July yr 95

MINISTRY USE ONLY

Data source (58)	Contractor (59-62) 1737	Date received (63-68) JUN 21 1996 (80)
Date of inspection	Inspector	
Remarks: CSS.ES		

0506 (07/94) Front Form 9

2 - MINISTRY OF ENVIRONMENT & ENERGY COPY

Ministry of Environment and Energy
Ontario

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 | 6507807 | Municipality 65005 | Con. GCT

[redacted]

County or District | Township/Borough/City/Town/Village: WOOLWICH | Con block tract survey, etc.: G.C.T. | Lot: 14

Address: BOX 201 HEIDELBERG. | Date completed: 8 day 8 month 93 year

21 | T M | Northing | RC | Elevation | RC | Basin Code | ii | iii | iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth – feet From	Depth – feet To
BROWN	TOP-SOIL			0	1
BROWN	SAND		TIGHT	1	7
BROWN	SAND	FINE	TIGHT WET	7	17
BLUE	CLAY			17	35

31

32

41 WATER RECORD

Water found at – feet	Kind of water
7-17	1 ☑ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth – feet From	Depth – feet To
36	1 ☐ Steel 2 ☐ Galvanized 3 ☑ Concrete 4 ☐ Open hole 5 ☐ Plastic	3	0	17½
24	1 ☐ Steel 2 ☑ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	18	11	35
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type: GRAVEL | Depth at top of screen feet

61 PLUGGING & SEALING RECORD

☐ Annular space ☐ Abandonment

Depth set at – feet From	Depth set at – feet To	Material and type (Cement grout, bentonite, etc.)
0	8	OWNER WILL SEAL ON OWN.

71 PUMPING TEST

Pumping test method: 1 ☐ Pump 2 ☐ Bailer | Pumping rate: GPM | Duration of pumping: Hours Mins

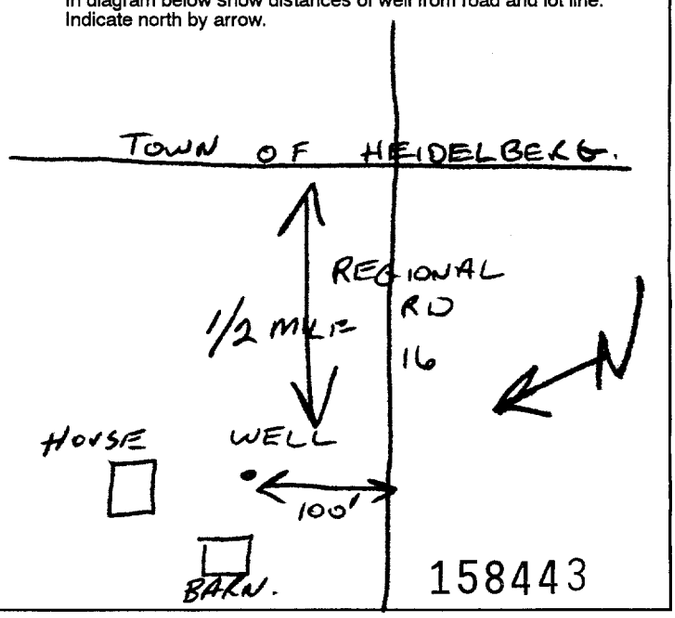
Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping 2 ☐ Recovery			
7 feet	feet	15 minutes feet	30 minutes feet	45 minutes feet	60 minutes feet

If flowing give rate: GPM | Pump intake set at: feet | Water at end of test: ☐ Clear ☐ Cloudy

Recommended pump type: ☑ Shallow ☐ Deep | Recommended pump setting: 28 feet | Recommended pump rate: 3INT GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



158443

FINAL STATUS OF WELL

1 ☑ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☑ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not used 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☐ Air percussion 6 ☑ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor: JOHNSON & BAETZ | Well Contractor's Licence No.: 3030

Address: RR#1 MT. PLEASANT

Name of Well Technician: JOHN BAETZ | Well Technician's Licence No.: T-0333

Signature of Technician/Contractor: [signature] | Submission date: day mo yr

MINISTRY USE ONLY

Data source | Contractor: 3030 | Date received: NOV 0 1 1995

Date of inspection | Inspector

Remarks

CSS.ES

MINISTRY OF ENVIRONMENT & ENERGY COPY

0506 (07/94) Front Form 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

59-94

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 6507669 MUNICIP 650.07 CON. GCT

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	WICH TWP	GCT	81

ST. CHARLES, ST. MARYHILL ONT. N0B-2J0 — DATE COMPLETED DAY 19 MO 10 YR 94

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	CLAY	STONES		0	15
GREY	CLAY	GRAVEL		15	80
BROWN	GRAVEL		COARSE	80	95
			TOTAL DEPTH	95'	
		6" DRIVE SHOE			

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
95	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	+1	95
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE — DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	25 GPM	1 HOURS 0 MINS

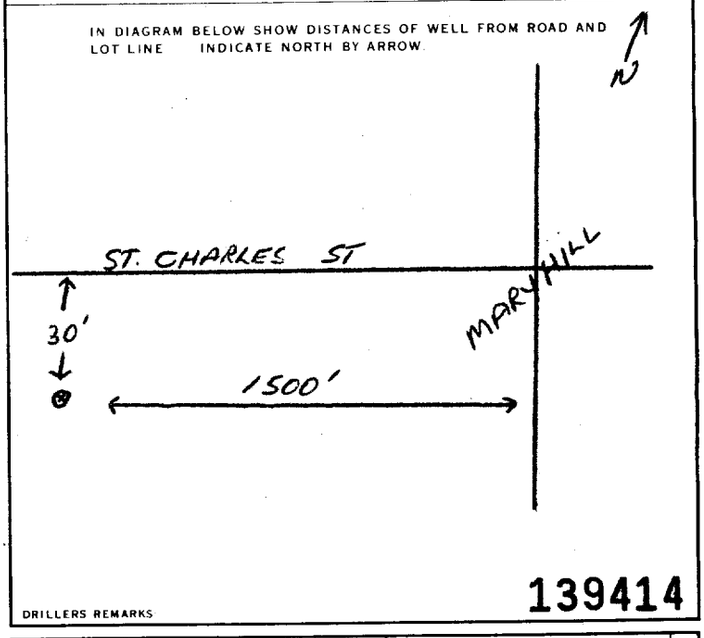
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☒ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
29' FEET	40 FEET		29 FEET	29 FEET	29 FEET	29 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	50 FEET	15 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS 139414

FINAL STATUS OF WELL
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION
1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: GRAHAM WELL DRILLING LTD — WELL CONTRACTOR'S LICENCE NUMBER: 2336

ADDRESS: RR#5 ROCKWOOD ONT N0B-2K0

NAME OF WELL TECHNICIAN: JIM WILSON — WELL TECHNICIAN'S LICENCE NUMBER: T-1924

SIGNATURE OF TECHNICIAN/CONTRACTOR: R.H. Graham — SUBMISSION DATE: DAY 030 MO. 010 YR. 94

OFFICE USE ONLY

DATA SOURCE — CONTRACTOR 2336 — DATE RECEIVED NOV 10 1994

DATE OF INSPECTION — INSPECTOR

REMARKS

CSS.ES

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FORM NO. 0506 (11/86) FORM 3

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 6507266 MUNICIP 6500 CON. CON 11

COUNTY OR DISTRICT: Waterloo
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: North Dumfries
CON. BLOCK, TRACT, SURVEY, ETC: XI
LOT: 14&15
[redacted] RR#2 Cambridge Ont
DATE COMPLETED: DAY 6 MO Dec YR 91
RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	gravel	sand		0	15
Grey	gravel	silt		15	25
Grey	silt	clay		25	70
Grey	clay	gravel		70	129
Grey	Limestone		Broken & Layered	129	130

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
130	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	188	0	129
6 1/8	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		129	130
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET	MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)

71 PUMPING TEST

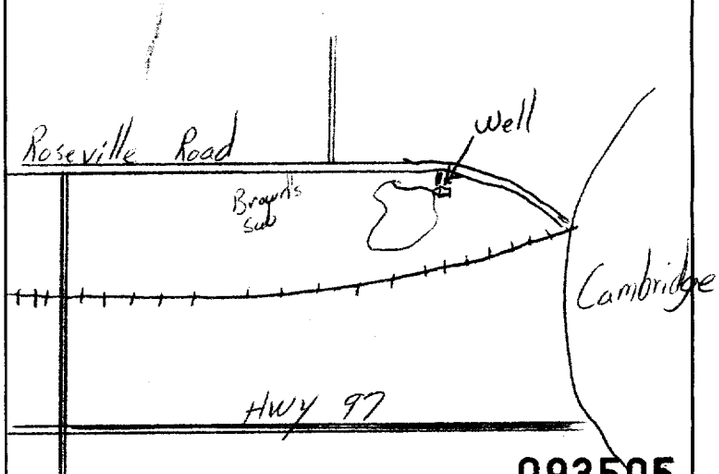
PUMPING TEST METHOD: 1 ☒ PUMP (Air) 2 ☐ BAILER
PUMPING RATE: 50 GPM
DURATION OF PUMPING: 1 HOURS 0 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
27 FEET	125 FEET	30 FEET	28 FEET	27 FEET	27 FEET

IF FLOWING GIVE RATE: GPM
PUMP INTAKE SET AT: FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 75 FEET
RECOMMENDED PUMPING RATE: 15 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 093505

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☒ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: Packham Well Drilling Inc
WELL CONTRACTOR'S LICENCE NUMBER: 4207
ADDRESS: RR # 2 Lancaster Ont
NAME OF WELL TECHNICIAN: Mervyn Packham
WELL TECHNICIAN'S LICENCE NUMBER: 10058
SIGNATURE OF TECHNICIAN/CONTRACTOR: Mervyn Packham
SUBMISSION DATE: DAY 6 MO Dec YR 91

OFFICE USE ONLY

DATA SOURCE
CONTRACTOR: 4207
DATE RECEIVED: MAR 16 1992
DATE OF INSPECTION
INSPECTOR
REMARKS: CSS.ES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 6507650 | MUNICIP 650011 | CON. CON

COUNTY OR DISTRICT: [redacted]
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: North Dumfries
CON: XI
LOT: 17
DATE COMPLETED: DAY 17 MO June YR 94
RC: ELEVATION: RC: BASIN CODE:

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	top soil			0	5
Grey	gravel	sand		5	30
Grey	silt	fine sand		30	148
Grey	limestone			148	158

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
156	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	188	0	148
6 1/4	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		148	158
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE: | DEPTH TO TOP OF SCREEN FEET:

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

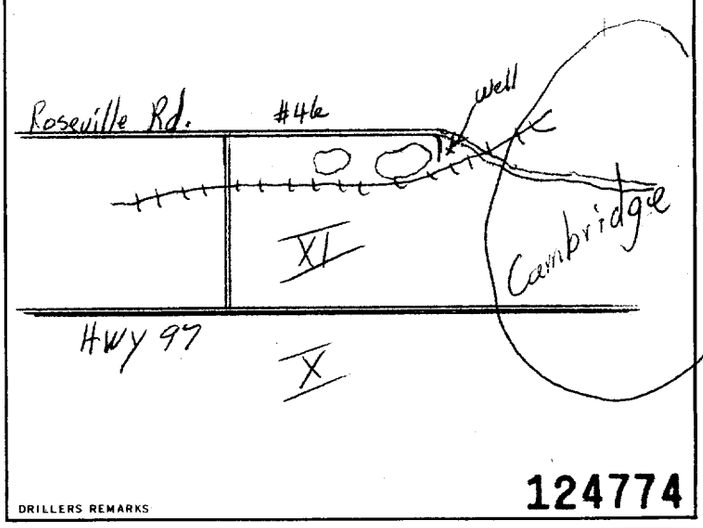
PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER — Air
PUMPING RATE: 30 GPM
DURATION OF PUMPING: 1 HOURS 0 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
17 FEET	150 FEET	25 FEET	18 FEET	17 FEET	17 FEET

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 75 FEET
RECOMMENDED PUMPING RATE: 20 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 124774

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: Packham Well Drilling Inc
WELL CONTRACTOR'S LICENCE NUMBER: 4207
ADDRESS: RR#2 Ancaster Ontario
NAME OF WELL TECHNICIAN: Mervyn Packham
WELL TECHNICIAN'S LICENCE NUMBER: 10058
SIGNATURE OF TECHNICIAN/CONTRACTOR: Mervyn Packham
SUBMISSION DATE: DAY 17 MO June YR 94

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 4207 | DATE RECEIVED SEP 20 1994
DATE OF INSPECTION | INSPECTOR
REMARKS

CSS.ES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Appendix E

Tables

Table 1A: Groundwater Level Measurements (m btoc)
Monitoring Wells

Date	BH07-10 Lower	BH07-10 Upper	BH09-10 Lower	BH09-10 Upper	BH11-10	BH12-10 Lower	BH12-10 Upper	BH13-10 Lower	BH13-10 Upper	BH14-10 Lower	BH14-10 Upper	BH15-10	BH19-10	BH104-10 Lower	BH104-10 Upper	BH105-10	BH111-10 Lower	BH111-10 Upper	BH112-10	BH113-10
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
27-Jun-14	4.06	NM	5.94	5.96	2.14	6.77	4.50	6.92	6.09	3.52	3.60	1.78	2.74	7.09	7.05	3.70	5.84	1.15	3.46	1.92
8-Apr-15	4.32	Blocked	6.17	6.22	2.03	7.07	NM	NM	NM	3.81	3.89	2.14	3.09	NM	NM	NM	NM	NM	3.73	NM
22-May-15	4.21	Blocked	6.14	6.16	2.11	7.07	4.48	7.18	6.24	3.83	3.9	2.07	3.02	7.39	7.34	3.74	6.11	1.16	3.71	1.97
27-Oct-15	4.56	Blocked	6.42	6.46	2.41	7.33	5.9	7.53	Dry	4.12	4.2	2.45	3.4	7.79	7.77	3.87	6.46	1.04	4.01	2.1
20-Jan-16	4.22	Blocked	NM	NM	NM	7.24	5.23	7.6	Dry	4.03	4.09	2.27	3.22	7.46	7.42	3.95	6.36	1.08	3.93	NM
25-Jan-16	NM	NM	6.17	Dry	2.23	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.94
7-Jun-16	4.05	Blocked	5.95	5.98	2.15	NM	NM	NM	NM	NM	NM	NM	NM	7.08	7.03	3.73	5.92	1.15	NM	1.9
10-Jun-16	NM	NM	NM	NM	NM	6.9	4.58	7.03	6.1	3.61	3.7	1.88	2.83	NM	NM	NM	NM	NM	3.54	NM
19-Jan-17	4.15	Blocked	NM	NM	NM	7.05	NM	7.18	6.07	3.83	3.91	2.03	2.97	7.30	7.27	3.80	6.22	1.01	3.74	NM
20-Jan-17	NM	NM	5.95	Dry	2.01	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.75
28-Apr-17	3.71	Blocked	5.75	Dry	1.99	6.70	1.70	6.75	5.74	3.39	3.47	1.60	2.55	6.77	6.70	3.47	5.64	1.15	3.33	0.93
15-May-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	4.01	Blocked	NM	NM	NM	6.55	1.60	6.59	5.65	5.60	3.25	1.79	2.90	7.27	7.25	3.75	5.48	1.04	3.49	NM
11-Aug-17	NM	NM	5.93	5.96	1.90	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.95
10-Jan-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	3.235	NM	NM	NM	NM	NM	NM	NM
11-Jan-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	3.99	4.07	2.26	NM	NM	NM	NM	NM	NM	3.905	NM
29-May-18	3.86	Blocked	5.84	Blocked	2.06	6.68	Blocked	6.80	5.88	3.44	3.50	NM	NM	6.89	6.85	3.60	5.72	1.16	3.36	Blocked
31-May-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.67	2.63	NM	NM	NM	NM	NM	NM	NM
28-Nov-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	2.02	2.96	NM	NM	NM	6.12	1.17	NM	NM
29-Nov-18	4.08	Blocked	6.01	Blocked	2.13	7.02	NM	7.22	6.23	3.77	3.85	NM	NM	7.29	7.18	3.60	NM	NM	3.70	Blocked
20-Aug-19	3.98	Blocked	NM	NM	NM	6.75	Dry	NM	NM	3.59	3.64	1.80	2.96	7.14	7.11	3.77	5.86	1.16	3.44	NM
21-Aug-19	NM	NM	6.01	Blocked	2.18	NM	NM	7.01	5.96	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	3.72	Blocked	5.74	Blocked	1.99	6.55	Blocked	6.68	5.86	3.3	3.43	1.55	2.52	6.75	6.7	3.56	Dry	1.17	3.26	Frozen
13-Feb-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
24-Apr-20	3.85	Blocked	5.78	Blocked	2.02	6.52	Blocked	6.67	5.96	3.25	3.34	1.51	2.48	6.86	6.83	3.63	Dry	Blocked	3.2	Blocked
21-May-20	3.99	Blocked	5.87	Blocked	2.06	6.6	Blocked	6.78	6.11	3.31	3.39	1.59	2.56	7.05	7.03	3.71	Dry	Blocked	3.26	Blocked
15-Jun-20	3.23	Blocked	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	3.73	5.76	1.18	NM	NM
29-Jul-20	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Damaged	Damaged	3.69	3.8	2.01	NM	NM	NM	Decommissioned	Decommissioned	Decommissioned	3.63	NM
25-Aug-20	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	Decommissioned	NM	NM
21-Sep-20	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	NM	NM	2.23	3.18	NM	NM	Decommissioned	Decommissioned	Decommissioned	NM	NM
28-Sep-20	Decommissioned	Decommissioned	6.4	Dry	2.56	7.09	Blocked	Decommissioned	Decommissioned	3.98	4.08	NM	NM	7.42	7.39	Decommissioned	Decommissioned	Decommissioned	3.89	Blocked
5-Oct-20	Decommissioned	Decommissioned	6.32	Dry	2.49	7.13	Blocked	Decommissioned	Decommissioned	4	4.09	2.37	3.39	7.49	7.43	Decommissioned	Decommissioned	Decommissioned	3.9	Blocked
13-Oct-20	Decommissioned	Decommissioned	6.35	Dry	2.49	7.15	Blocked	Decommissioned	Decommissioned	4.07	4.14	2.52	3.56	7.5	7.46	Decommissioned	Decommissioned	Decommissioned	3.93	Blocked
19-Oct-20	Decommissioned	Decommissioned	6.31	Dry	2.48	7.17	Blocked	Decommissioned	Decommissioned	4.11	4.18	2.6	3.65	7.52	7.48	Decommissioned	Decommissioned	Decommissioned	3.97	Blocked
26-Oct-20	Decommissioned	Decommissioned	6.24	Dry	2.45	7.17	Blocked	Decommissioned	Decommissioned	4.15	4.22	2.66	3.72	7.48	7.42	Decommissioned	Decommissioned	Decommissioned	3.99	Blocked
2-Nov-20	Decommissioned	Decommissioned	6.3	Dry	2.45	7.21	Blocked	Decommissioned	Decommissioned	4.2	4.27	2.71	3.78	7.56	7.53	Decommissioned	Decommissioned	Decommissioned	4.04	Blocked
9-Nov-20	Decommissioned	Decommissioned	6.32	Dry	2.47	7.24	Blocked	Decommissioned	Decommissioned	4.26	4.35	2.78	3.85	7.61	7.59	Decommissioned	Decommissioned	Decommissioned	4.1	Blocked
16-Nov-20	Decommissioned	Decommissioned	6.32	Blocked	2.44	7.27	Blocked	Decommissioned	Decommissioned	4.31	4.38	2.8	3.83	7.65	7.61	Decommissioned	Decommissioned	Decommissioned	4.14	Blocked
8-Dec-20	Decommissioned	Decommissioned	NM	NM	2.38	7.27	Blocked	Decommissioned	Decommissioned	4.31	4.39	2.68	3.68	7.58	7.51	Decommissioned	Decommissioned	Decommissioned	4.18	Blocked

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 2020. Monitoring well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands.
8. BH09-10 was decommissioned in January 2021.

Table 1B: Groundwater Level Measurements (m bgs)
Monitoring Wells

Date	BH07-10 Lower	BH07-10 Upper	BH09-10 Lower	BH09-10 Upper	BH11-10	BH12-10 Lower	BH12-10 Upper	BH13-10 Lower	BH13-10 Upper	BH14-10 Lower	BH14-10 Upper	BH15-10	BH19-10	BH104-10 Lower	BH104-10 Upper	BH105-10	BH111-10 Lower	BH111-10 Upper	BH112-10	BH113-10
Stick Up (m)	0.75	0.81	0.76	0.80	0.77	0.82	0.85	0.79	0.81	0.70	0.70	0.76	0.89	0.82	0.90	0.79	0.59	0.66	0.68	0.75
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
27-Jun-14	3.31	NM	5.18	5.16	1.37	5.95	3.65	6.13	5.28	2.82	2.90	1.02	1.85	6.27	6.15	2.91	5.25	0.49	2.78	1.17
8-Apr-15	3.57	Blocked	5.41	5.42	1.26	6.25	NM	NM	NM	3.11	3.19	1.38	2.20	NM	NM	NM	NM	NM	3.05	NM
22-May-15	3.46	Blocked	5.38	5.36	1.34	6.25	3.63	6.39	5.43	3.13	3.20	1.31	2.13	6.57	6.44	2.95	5.52	0.50	3.03	1.22
27-Oct-15	3.81	Blocked	5.66	5.66	1.64	6.51	5.05	6.74	Dry	3.42	3.50	1.69	2.51	6.97	6.87	3.08	5.87	0.38	3.33	1.35
20-Jan-16	3.47	Blocked	NM	NM	NM	6.42	4.38	6.81	Dry	3.33	3.39	1.51	2.33	6.64	6.52	3.16	5.77	0.42	3.25	NM
25-Jan-16	NM	NM	5.41	Dry	1.46	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.19
7-Jun-16	3.30	Blocked	5.19	5.18	1.38	NM	NM	NM	NM	NM	NM	NM	NM	6.26	6.13	2.94	5.33	0.49	NM	1.15
10-Jun-16	NM	NM	NM	NM	NM	6.08	3.73	6.24	5.29	2.91	3.00	1.12	1.94	NM	NM	NM	NM	NM	2.86	NM
19-Jan-17	3.40	Blocked	NM	NM	NM	6.23	NM	6.39	5.26	3.13	3.21	1.27	2.08	6.48	6.37	3.01	5.63	0.35	3.06	NM
20-Jan-17	NM	NM	5.19	Dry	1.24	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.00
28-Apr-17	2.96	Blocked	4.99	Dry	1.22	5.88	0.85	5.96	4.93	2.69	2.77	0.84	1.66	5.95	5.80	2.68	5.05	0.49	2.65	0.18
15-May-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	3.26	Blocked	NM	NM	NM	5.73	0.75	5.80	4.84	4.90	2.55	1.03	2.01	6.45	6.35	2.96	4.89	0.38	2.81	NM
11-Aug-17	NM	NM	5.17	5.16	1.13	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.20
10-Jan-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	2.35	NM	NM	NM	NM	NM	NM	NM
11-Jan-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	3.29	3.37	1.50	NM	NM	NM	NM	NM	NM	3.23	NM
29-May-18	3.11	Blocked	5.08	Blocked	1.29	5.86	Blocked	6.01	5.07	2.74	2.80	NM	NM	6.07	5.95	2.81	5.13	0.50	2.68	Blocked
31-May-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.91	1.74	NM	NM	NM	NM	NM	NM	NM
28-Nov-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.26	2.07	NM	NM	NM	5.53	0.51	NM	NM
29-Nov-18	3.33	Blocked	5.25	Blocked	1.36	6.20	NM	6.43	5.42	3.07	3.15	NM	NM	6.47	6.28	2.81	NM	NM	3.02	Blocked
20-Aug-19	3.23	Blocked	NM	NM	NM	5.93	Dry	NM	NM	2.89	2.94	1.04	2.07	6.32	6.21	2.98	5.27	0.50	2.76	NM
21-Aug-19	NM	NM	5.25	Blocked	1.41	NM	NM	6.22	5.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	2.97	Blocked	4.98	Blocked	1.22	5.73	Blocked	5.89	5.05	2.60	2.73	0.79	1.63	5.93	5.80	2.77	Dry	0.51	2.58	Frozen
13-Feb-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
24-Apr-20	3.10	Blocked	5.02	Blocked	1.25	5.70	Blocked	5.88	5.15	2.55	2.64	0.75	1.59	6.04	5.93	2.84	Dry	Blocked	2.52	Blocked
21-May-20	3.24	Blocked	5.11	Blocked	1.29	5.78	Blocked	5.99	5.30	2.61	2.69	0.83	1.67	6.23	6.13	2.92	Dry	Blocked	2.58	Blocked
15-Jun-20	2.48	Blocked	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	2.94	5.17	0.52	NM	NM
29-Jul-20	Decommed	Decommed	NM	NM	NM	NM	NM	Damaged	Damaged	2.99	3.10	1.25	NM	NM	NM	Decommed	Decommed	Decommed	2.95	NM
25-Aug-20	Decommed	Decommed	NM	NM	NM	NM	NM	Damaged	Damaged	NM	NM	NM	NM	NM	NM	Decommed	Decommed	Decommed	NM	NM
21-Sep-20	Decommed	Decommed	NM	NM	NM	NM	NM	Damaged	Damaged	NM	NM	1.47	2.29	NM	NM	Decommed	Decommed	Decommed	NM	NM
28-Sep-20	Decommed	Decommed	5.64	Blocked	1.79	6.27	Blocked	Decommed	Decommed	3.28	3.38	NM	NM	6.60	6.49	Decommed	Decommed	Decommed	3.21	Blocked
5-Oct-20	Decommed	Decommed	5.56	Blocked	1.72	6.31	Blocked	Decommed	Decommed	3.30	3.39	1.61	2.50	6.67	6.53	Decommed	Decommed	Decommed	3.22	Blocked
13-Oct-20	Decommed	Decommed	5.59	Blocked	1.72	6.33	Blocked	Decommed	Decommed	3.37	3.44	1.76	2.67	6.68	6.56	Decommed	Decommed	Decommed	3.25	Blocked
19-Oct-20	Decommed	Decommed	5.55	Blocked	1.71	6.35	Blocked	Decommed	Decommed	3.41	3.48	1.84	2.76	6.70	6.58	Decommed	Decommed	Decommed	3.29	Blocked
26-Oct-20	Decommed	Decommed	5.48	Blocked	1.68	6.35	Blocked	Decommed	Decommed	3.45	3.52	1.90	2.83	6.66	6.52	Decommed	Decommed	Decommed	3.31	Blocked
2-Nov-20	Decommed	Decommed	5.54	Blocked	1.68	6.39	Blocked	Decommed	Decommed	3.50	3.57	1.95	2.89	6.74	6.63	Decommed	Decommed	Decommed	3.36	Blocked
9-Nov-20	Decommed	Decommed	5.56	Blocked	1.70	6.42	Blocked	Decommed	Decommed	3.56	3.65	2.02	2.96	6.79	6.69	Decommed	Decommed	Decommed	3.42	Blocked
16-Nov-20	Decommed	Decommed	5.56	Blocked	1.67	6.45	Blocked	Decommed	Decommed	3.61	3.68	2.04	2.94	6.83	6.71	Decommed	Decommed	Decommed	3.46	Blocked
8-Dec-20	Decommed	Decommed	NM	NM	1.61	6.45	Blocked	Decommed	Decommed	3.61	3.69	1.92	2.79	6.76	6.61	Decommed	Decommed	Decommed	3.50	Blocked

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 2020. Monitoring well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands.
8. BH09-10 was decommissioned in January 2021.

Table 1C: Groundwater Elevations (m amsl)
Monitoring Wells

Date	BH07-10 Lower	BH07-10 Upper	BH09-10 Lower	BH09-10 Upper	BH11-10	BH12-10 Lower	BH12-10 Upper	BH13-10 Lower	BH13-10 Upper	BH14-10 Lower	BH14-10 Upper	BH15-10	BH19-10	BH104-10 Lower	BH104-10 Upper	BH105-10	BH111-10 Lower	BH111-10 Upper	BH112-10	BH113-10
TOC Elevation (mAMSL)	311.49	311.55	311.92	311.96	308.64	314.49	314.52	315.40	315.42	312.41	312.41	310.49	311.27	315.09	315.16	312.53	314.48	314.55	312.27	308.24
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	NM	NM
27-Jun-14	307.43	NM	305.98	306.00	306.50	307.72	310.02	308.48	309.33	308.89	308.81	308.71	308.53	308.00	308.11	308.83	308.64	313.40	308.81	306.32
8-Apr-15	307.17	Blocked	305.75	305.74	306.61	307.42	NM	NM	NM	308.60	308.52	308.35	308.18	-	NM	NM	NM	NM	308.54	NM
22-May-15	307.28	Blocked	305.78	305.80	306.53	307.42	310.04	308.22	309.18	308.58	308.51	308.42	308.25	307.70	307.82	308.79	308.37	313.39	308.56	306.27
27-Oct-15	306.93	Blocked	305.50	305.50	306.23	307.16	308.62	307.87	Dry	308.29	308.21	308.04	307.87	307.30	307.39	308.66	308.02	313.51	308.26	306.14
20-Jan-16	307.27	Blocked	NM	NM	NM	307.25	309.29	307.80	Dry	308.38	308.32	308.22	308.05	307.63	307.74	308.58	308.12	313.47	308.34	NM
25-Jan-16	NM	NM	305.75	Dry	306.41	NM	NM	NM	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	NM	306.30
7-Jun-16	307.44	Blocked	305.97	305.98	306.49	NM	NM	NM	NM	NM	NM	NM	NM	308.01	308.13	308.80	308.56	313.40	NM	306.34
10-Jun-16	NM	NM	NM	NM	NM	307.59	309.94	308.37	309.32	308.80	308.71	308.61	308.44	-	NM	NM	NM	NM	308.73	NM
19-Jan-17	307.34	Blocked	NM	NM	NM	307.44	NM	308.22	309.35	308.58	308.50	308.46	308.30	307.79	307.89	308.73	308.26	313.54	308.53	NM
20-Jan-17	NM	NM	305.97	Dry	306.63	NM	NM	NM	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	NM	306.49
28-Apr-17	307.78	Blocked	306.17	Dry	306.65	307.79	312.82	308.65	309.68	309.02	308.94	308.89	308.72	308.32	308.46	309.06	308.84	313.40	308.94	307.31
15-May-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	NM	NM
10-Aug-17	307.48	Blocked	NM	NM	NM	307.94	312.92	308.81	309.77	306.81	309.16	308.70	308.37	307.82	307.91	308.78	309.00	313.51	308.78	NM
11-Aug-17	NM	NM	305.99	306.00	306.74	NM	NM	NM	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	NM	306.29
10-Jan-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.04	-	NM	NM	NM	NM	NM	NM
11-Jan-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.42	308.34	308.23	NM	-	NM	NM	NM	NM	308.36	NM
29-May-18	307.63	Blocked	306.08	Blocked	306.58	307.81	Blocked	308.60	309.54	308.97	308.91	NM	NM	308.20	308.31	308.93	308.76	313.39	308.91	Blocked
31-May-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.82	308.64	-	NM	NM	NM	NM	NM	NM
28-Nov-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.47	308.31	-	NM	NM	308.36	313.38	NM	NM
29-Nov-18	307.41	Blocked	305.91	Blocked	306.51	307.47	NM	308.18	309.19	308.64	308.56	NM	NM	307.80	307.98	308.93	NM	NM	308.57	Blocked
20-Aug-19	307.51	Blocked	NM	NM	NM	307.74	Dry	NM	NM	308.82	308.77	308.69	308.31	307.95	308.05	308.76	308.62	313.39	308.83	NM
21-Aug-19	NM	NM	305.91	Blocked	306.46	NM	NM	308.39	309.46	NM	NM	NM	NM	-	NM	NM	NM	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	NM	NM
12-Feb-20	307.77	Blocked	306.18	Blocked	306.65	307.94	Blocked	308.72	309.56	309.11	308.98	308.94	308.75	308.34	308.46	308.97	Dry	313.38	309.01	Frozen
13-Feb-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	NM	NM	NM	NM	NM	NM
24-Apr-20	307.64	Blocked	306.14	Blocked	306.62	307.97	Blocked	308.73	309.46	309.16	309.07	308.98	308.79	308.23	308.33	308.90	Dry	Blocked	309.07	Blocked
21-May-20	307.50	Blocked	306.05	Blocked	306.58	307.89	Blocked	308.62	309.31	309.10	309.02	308.90	308.71	308.04	308.13	308.82	Dry	Blocked	309.01	Blocked
15-Jun-20	308.26	Blocked	NM	NM	NM	NM	NM	Damaged	Damaged	NM	NM	NM	NM	-	NM	308.80	308.72	313.37	NM	NM
29-Jul-20	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	308.72	308.61	308.48	NM	-	NM	Decommissioned	Decommissioned	Decommissioned	308.64	NM
25-Aug-20	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	-	NM	Decommissioned	Decommissioned	Decommissioned	NM	NM
21-Sep-20	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	NM	NM	308.26	308.09	-	NM	Decommissioned	Decommissioned	Decommissioned	NM	NM
28-Sep-20	Decommissioned	Decommissioned	305.52	Dry	306.08	307.40	Blocked	Decommissioned	Decommissioned	308.43	308.33	NM	NM	307.67	307.77	Decommissioned	Decommissioned	Decommissioned	308.38	Blocked
5-Oct-20	Decommissioned	Decommissioned	305.60	Dry	306.15	307.36	Blocked	Decommissioned	Decommissioned	308.41	308.32	308.12	307.88	307.60	307.73	Decommissioned	Decommissioned	Decommissioned	308.37	Blocked
13-Oct-20	Decommissioned	Decommissioned	305.57	Dry	306.15	307.34	Blocked	Decommissioned	Decommissioned	308.34	308.27	307.97	307.71	307.59	307.70	Decommissioned	Decommissioned	Decommissioned	308.34	Blocked
19-Oct-20	Decommissioned	Decommissioned	305.61	Dry	306.16	307.32	Blocked	Decommissioned	Decommissioned	308.30	308.23	307.89	307.62	307.57	307.68	Decommissioned	Decommissioned	Decommissioned	308.30	Blocked
26-Oct-20	Decommissioned	Decommissioned	305.68	Dry	306.19	307.32	Blocked	Decommissioned	Decommissioned	308.26	308.19	307.83	307.55	307.61	307.74	Decommissioned	Decommissioned	Decommissioned	308.28	Blocked
2-Nov-20	Decommissioned	Decommissioned	305.62	Dry	306.19	307.28	Blocked	Decommissioned	Decommissioned	308.21	308.14	307.78	307.49	307.53	307.63	Decommissioned	Decommissioned	Decommissioned	308.23	Blocked
9-Nov-20	Decommissioned	Decommissioned	305.60	Dry	306.17	307.25	Blocked	Decommissioned	Decommissioned	308.15	308.06	307.71	307.42	307.48	307.57	Decommissioned	Decommissioned	Decommissioned	308.17	Blocked
16-Nov-20	Decommissioned	Decommissioned	305.60	Blocked	306.20	307.22	Blocked	Decommissioned	Decommissioned	308.10	308.03	307.69	307.44	307.44	307.55	Decommissioned	Decommissioned	Decommissioned	308.13	Blocked
8-Dec-20	Decommissioned	Decommissioned	NM	NM	306.26	307.22	Blocked	Decommissioned	Decommissioned	308.10	308.02	307.81	307.59	307.51	307.65	Decommissioned	Decommissioned	Decommissioned	308.09	Blocked

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 2020. Monitoring well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands.
8. BH09-10 was decommissioned in January 2021.

Table 1D: Groundwater Level Measurements (m btoc)
Westwood Village Phase 1

Date	BH01-10 Lower	BH01-10 Upper	BH02-10 Lower	BH02-10 Upper	BH03-10	BH04-10 Lower	BH04-10 Upper	BH05-10 Lower	BH05-10 Upper	BH06-10 Lower	BH06-10 Upper	BH08-10	BH10-10 Lower	BH10-10 Upper	BH16-10 Lower	BH16-10 Upper	BH17-10 Lower	BH17-10 Upper	BH18-10	BH18-10A
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
27-Jun-14	1.56	1.60	1.16	1.20	5.24	2.30	2.37	6.65	2.63	1.32	1.37	5.01	5.36	4.69	1.38	1.34	2.57	2.64	2.67	2.65
8-Apr-15	1.68	1.695	1.43	0.48	5.52	2.6	2.68	7.17	2.79	1.69	1.73	5.2	NM	NM	1.7	1.65	2.93	2.99	2.99	2.94
22-May-15	1.83	1.86	1.41	1.46	5.5	2.51	2.58	7.15	2.67	1.62	1.67	5.18	5.6	4.69	1.66	1.67	2.89	2.96	2.98	2.93
27-Oct-15	2.18	2.16	1.71	1.76	5.86	2.815	2.87	7.24	3.17	2.00	1.67	5.5	5.79	4.94	2.05	1.93	3.19	3.25	3.26	3.23
20-Jan-16	NM	NM	1.54	1.59	NM	2.66	2.74	7.14	3.08	1.89	1.93	NM	NM	NM	1.9	1.95	NM	NM	3.14	3.06
25-Jan-16	1.99	Dry	NM	NM	NM	NM	NM	NM	NM	NM	NM	5.32	5.63	4.77	NM	NM	3.1	3.18	NM	NM
7-Jun-16	NM	NM	1.26	1.33	NM	NM	NM	6.8	2.6	NM	NM	4.95	5.39	4.74	NM	NM	2.67	2.74	2.78	2.76
10-Jun-16	1.67	1.71	NM	NM	5.34	2.35	2.43	NM	NM	1.40	1.44	NM	NM	NM	1.45	1.33	NM	NM	NM	NM
19-Jan-17	1.70	1.74	1.27	1.30	5.38	2.36	2.45	7.01	2.98	1.63	1.68	5.09	NM	NM	1.62	1.67	NM	NM	2.88	2.80
20-Jan-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	5.42	4.65	NM	NM	2.86	2.92	NM	NM
28-Apr-17	1.35	1.40	0.99	1.02	5.02	2.09	2.16	6.87	2.22	1.08	1.14	4.69	5.19	4.40	1.12	1.15	2.47	2.51	2.52	2.47
15-May-17	NM	NM	NM	NM	NM	NM	NM	6.70	2.91	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	1.59	1.64	1.21	1.25	5.21	NM	NM	6.65	2.62	NM	NM	NM	NM	NM	NM	NM	NM	NM	2.67	2.68
11-Aug-17	NM	NM	NM	NM	NM	2.39	2.45	NM	NM	1.42	1.47	4.90	5.32	4.70	1.46	1.51	2.65	2.69	NM	NM
10-Jan-18	NM	NM	1.605	1.57	NM	2.74	2.82	NM	NM	NM	NM	NM	NM	NM	1.93	1.95	NM	NM	NM	NM
11-Jan-18	1.96	1.99	NM	NM	NM	NM	NM	7.13	3.06	1.85	1.92	NM	NM	NM	NM	NM	2.98	NM	3.02	2.98
29-May-18	NM	NM	NM	NM	NM	2.16	2.25	6.69	2.43	1.17	1.22	4.82	5.30	4.59	1.23	1.12	NM	NM	NM	NM
31-May-18	1.45	1.48	1.10	1.11	5.12	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	2.49	2.55	2.56	2.54
28-Nov-18	1.73	1.76	1.31	1.32	5.46	2.46	2.55	7.14	2.68	1.61	1.66	NM	NM	NM	1.63	1.42	NM	NM	2.83	2.78
29-Nov-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	5.27	5.46	4.67	NM	NM	2.84	2.89	NM	NM
20-Aug-19	1.59	Dry	1.26	1.27	5.25	NM	NM	6.60	2.65	NM	NM	NM	NM	NM	NM	NM	2.58	2.63	2.66	2.67
21-Aug-19	NM	NM	NM	NM	NM	2.35	2.41	NM	NM	1.38	1.41	4.98	5.48	4.70	1.40	1.31	NM	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	1.32	Blocked	1.03	1.03	5.01	2.14	2.2	6.57	2.29	1.1	1.14	4.78	5.19	Dry	1.12	1.14	2.38	2.45	2.43	2.43
13-Feb-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
24-Apr-20	1.3	Blocked	1.02	0.99	4.99	2.15	2.21	6.45	2.31	1.11	1.15	4.88	5.23	4.64	1.12	1.13	2.3	2.37	2.4	2.4
21-May-20	1.37	Blocked	1.06	1.06	5.07	2.21	2.3	6.47	2.43	1.22	1.25	4.06	5.35	4.83	1.24	1.28	2.39	2.44	2.45	2.45
15-Jun-20	NM	NM	1.04	NM	5.18	2.29	NM	6.59	2.68	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
29-Jul-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
25-Aug-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
21-Sep-20	1.98	2.04	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	1.81	Blocked	NM	NM	NM	1.87	1.91	NM	NM	3.04	3.06
28-Sep-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	NM	Decommissioned	Decommissioned	Decommissioned	NM	NM	3.08	3.15	NM	NM
5-Oct-20	2.03	2.06	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	2.57	Blocked	Decommissioned	Decommissioned	Decommissioned	3.25	Dry	3.09	3.15	3.05	3.07
13-Oct-20	2.11	2.15	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	3.13	Blocked	Decommissioned	Decommissioned	Decommissioned	3.8	Dry	3.14	3.21	3.1	3.13
19-Oct-20	2.17	2.17	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	3.32	Blocked	Decommissioned	Decommissioned	Decommissioned	3.72	Dry	3.2	3.26	3.12	3.15
26-Oct-20	2.19	Dry	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	3.61	Blocked	Decommissioned	Decommissioned	Decommissioned	4.09	Dry	3.23	3.31	3.13	3.12
2-Nov-20	2.24	Dry	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	3.65	Blocked	Decommissioned	Decommissioned	Decommissioned	4.19	Dry	3.28	3.37	3.16	3.19
9-Nov-20	2.29	Dry	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	3.76	Blocked	Decommissioned	Decommissioned	Decommissioned	4.05	Dry	3.35	3.45	3.2	3.24
16-Nov-20	2.3	Dry	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	3.54	Blocked	Decommissioned	Decommissioned	Decommissioned	3.56	Dry	3.39	3.46	3.22	3.24
8-Dec-20	2.23	Blocked	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	3.02	2.84	Decommissioned	Decommissioned	Decommissioned	2.95	Dry	3.38	3.46	3.2	3.19

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1D: Groundwater Level Measurements (m btoc)
Westwood Village Phase 1

Date	BH20-10 Lower	BH20-10 Upper	BH21-10	BH22-10	BH23-10	BH24-10	BH25-10	BH26-10	BH27-10	BH101-10	BH102-10	BH103-10	BH106-10 Lower	BH106-10 Upper	BH107-10	BH108-10	BH109-10 Lower	BH109-10 Upper	BH110-10	BH114-10
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
27-Jun-14	7.09	NM	3.55	NM	10.26	7.93	NM	15.51	14.62	2.27	9.99	4.32	NM	NM	NM	NM	NM	NM	NM	1.61
8-Apr-15	7.41	Dry	3.71	13.68	10.48	8.63	4.51	15.94	14.92	2.61	NM	NM	NM	NM	NM	NM	NM	NM	1.25	NM
22-May-15	7.36	7.03	3.77	13.76	10.39	8.64	4.52	15.62	14.94	2.57	10.28	4.77	NM	NM	NM	NM	NM	NM	1.37	1.92
27-Oct-15	7.67	7.07	3.94	14.05	10.67	9.00	4.7	16.05	15.1	2.87	10.57	5.1	NM	NM	NM	NM	NM	NM	1.72	2.19
20-Jan-16	7.58	Dry	3.85	14.07	10.7	9.35	4.59	16.14	15.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
25-Jan-16	NM	NM	NM	NM	NM	NM	NM	NM	NM	2.77	10.47	4.93	7.03	Dry	8.99	6.88	5.1	Dry	1.55	2.12
7-Jun-16	7.05	6.51	NM	13.42	10.3	8.13	4.42	15.5	NM	2.36	10.1	4.59	NM	NM	NM	NM	NM	NM	1.17	NM
10-Jun-16	NM	NM	3.62	NM	NM	NM	NM	NM	14.67	NM	NM	NM	6.67	6.33	8.68	6.33	4.65	Dry	NM	1.71
19-Jan-17	7.40	Dry	NM	NM	NM	NM	NM	NM	14.91	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.28	NM
20-Jan-17	NM	NM	3.90	13.91	10.48	9.22	4.41	15.89	NM	2.50	10.21	4.67	6.92	Dry	8.82	6.75	4.89	Dry	NM	2.10
28-Apr-17	6.86	Dry	3.35	13.23	10.26	7.98	4.20	15.44	14.49	2.12	9.84	4.32	6.50	Dry	8.61	6.12	4.38	Dry	0.93	1.74
15-May-17	NM	NM	NM	NM	10.16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	7.16	6.78	NM	13.15	10.24	8.25	NM	15.30	NM	2.01	9.70	4.25	6.56	6.42	6.75	6.35	4.50	Dry	1.11	NM
11-Aug-17	NM	NM	3.66	NM	NM	NM	4.40	NM	14.71	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.89
10-Jan-18	NM	NM	NM	13.96	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
11-Jan-18	NM	NM	3.90	13.92	10.50	9.03	4.58	15.85	NM	2.68	10.36	4.905	NM	NM	NM	NM	NM	NM	1.49	NM
29-May-18	6.93	6.38	3.45	NM	NM	NM	NM	NM	14.47	NM	NM	NM	6.46	6.08	8.45	6.13	4.44	Dry	NM	1.54
31-May-18	NM	NM	NM	13.31	10.14	7.98	4.28	15.31	NM	2.18	9.85	4.46	NM	NM	NM	NM	NM	NM	1.00	NM
28-Nov-18	NM	NM	3.73	13.87	10.49	9.07	4.41	15.80	14.85	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.29	NM
29-Nov-18	7.37	4.20	NM	NM	NM	NM	NM	NM	NM	2.50	10.24	4.78	6.81	NM	8.78	6.66	4.88	Dry	NM	1.86
20-Aug-19	7.10	Dry	NM	13.18	10.31	8.22	4.39	15.45	NM	2.30	NM	NM	6.49	Dry	NM	NM	NM	NM	1.10	NM
21-Aug-19	NM	NM	3.56	NM	NM	NM	NM	NM	14.60	NM	9.95	4.59	NM	NM	8.60	6.26	4.61	Dry	NM	1.68
15-Jan-20	NM	NM	NM	NM	10.28	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	6.82	Blocked	3.36	13.38	NM	NM	4.25	NM	14.43	2.06	9.76	4.36	6.32	5.96	8.28	5.98	4.28	Dry	0.88	1.4
13-Feb-20	NM	NM	NM	NM	10.14	8.05	NM	15.28	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
24-Apr-20	6.87	Blocked	3.4	13.16	10.07	7.64	4.18	15.17	14.34	2.01	9.7	4.31	6.26	5.97	8.17	5.96	4.27	Blocked	0.85	1.34
21-May-20	6.99	Blocked	3.5	13.22	10.1	7.89	4.21	15.19	14.37	2.09	9.76	4.37	6.33	6.14	8.18	6.05	4.35	Blocked	0.92	1.42
15-Jun-20	7.63	6.68	NM	NM	NM	NM	NM	15.34	14.59	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
29-Jul-20	Decommissioned	Decommissioned	3.75	NM	NM	NM	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
25-Aug-20	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
21-Sep-20	Decommissioned	Decommissioned	3.79	13.7	10.38	8.61	4.57	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
28-Sep-20	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	2.77	10.35	4.96	6.8	6.81	8.53	6.62	4.94	Dry	1.57	2.08
5-Oct-20	Decommissioned	Decommissioned	3.84	13.75	10.48	8.7	4.58	Decommissioned	Decommissioned	2.81	10.4	4.99	6.86	Dry	8.63	6.69	4.99	Dry	1.64	2.08
13-Oct-20	Decommissioned	Decommissioned	4	13.76	10.52	8.75	4.6	Decommissioned	Decommissioned	2.81	10.44	5.01	6.87	Dry	8.62	6.71	5.02	Dry	1.77	2.12
19-Oct-20	Decommissioned	Decommissioned	4.12	13.77	10.54	8.78	4.61	Decommissioned	Decommissioned	2.98	10.47	5.04	6.91	Dry	8.64	6.73	5.04	Dry	1.85	2.16
26-Oct-20	Decommissioned	Decommissioned	4.25	13.79	10.47	8.79	4.61	Decommissioned	Decommissioned	3.03	10.46	5.07	6.89	Dry	8.62	6.75	5.05	Dry	1.89	2.18
2-Nov-20	Decommissioned	Decommissioned	4.35	13.81	10.5	8.84	4.63	Decommissioned	Decommissioned	3.09	10.52	5.1	6.95	Dry	8.67	6.79	5.08	Dry	1.95	2.23
9-Nov-20	Decommissioned	Decommissioned	4.47	13.85	10.5	8.87	4.65	Decommissioned	Decommissioned	3.14	10.54	5.13	6.96	6.86	8.68	6.8	5.11	Dry	2.02	2.3
16-Nov-20	Decommissioned	Decommissioned	4.55	13.88	10.53	8.92	4.67	Decommissioned	Decommissioned	3.17	10.58	5.15	6.98	6.86	8.71	6.87	5.17	Dry	2.13	2.33
8-Dec-20	Decommissioned	Decommissioned	4.64	13.96	10.49	9	4.64	Decommissioned	Decommissioned	3.1	10.56	5.17	7.01	6.92	8.74	6.93	5.21	Dry	1.92	2.36

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1D: Groundwater Level Measurements (m btoc)
Westwood Village Phase 1

Date	BH115-10	BH115A-10	BH6-14	BH8-14 Lower	BH8-14 Upper	BH10-14	BH12-14	BH14-14	BH19-14	BH22-14	BH26-14
12-Jun-14	NM	NM	5.90	3.80	3.63	4.21	4.04	NM	5.33	6.13	1.84
27-Jun-14	NM	NM	6.01	3.91	3.74	4.31	4.14	NM	5.42	6.23	1.93
8-Apr-15	NM	NM	NM	4.32	NM	4.72	4.52	Dry	5.71	6.35	2.19
22-May-15	3.47	3.45	6.29	4.21	2.87	4.61	4.41	Dry	5.69	6.34	2.17
27-Oct-15	3.63	3.61	6.67	4.61	3.78	4.96	4.79	Dry	6.01	6.7	2.47
20-Jan-16	NM	NM	NM	4.45	Frozen	4.88	4.63	NM	5.82	6.67	2.3
25-Jan-16	3.62	3.59	NM	NM	NM	NM	NM	Dry	NM	NM	NM
7-Jun-16	3.33	3.32	6.2	3.98	3.64	4.35	NM	Dry	5.53	6.24	2.02
10-Jun-16	NM	NM	NM	NM	NM	NM	4.21	NM	NM	NM	NM
19-Jan-17	NM	NM	6.21	4.17	2.89	4.65	4.34	Dry	NM	NM	2.03
20-Jan-17	3.44	3.42	NM	NM	NM	NM	NM	NM	5.53	6.29	NM
28-Apr-17	3.08	3.08	5.75	3.66	0.80	4.08	3.89	Dry	5.20	6.08	1.72
15-May-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	NM	NM	NM	NM	NM	NM	NM	Dry	5.09	6.18	1.75
11-Aug-17	3.21	3.22	5.92	3.79	1.45	3.89	3.70	NM	NM	NM	NM
10-Jan-18	NM	NM	6.57	NM	NM	NM	NM	NM	5.845	NM	NM
11-Jan-18	NM	NM	NM	4.465	3.625	4.88	4.64	NM	NM	NM	NM
29-May-18	NM	NM	5.88	3.76	3.49	4.16	4.00	NM	NM	NM	NM
31-May-18	3.09	3.07	NM	NM	NM	NM	NM	NM	5.31	6.08	1.83
28-Nov-18	NM	NM	6.30	4.21	Blocked	4.63	4.38	NM	5.59	6.40	2.05
29-Nov-18	3.30	3.26	NM	NM	NM	NM	NM	Dry	NM	NM	NM
20-Aug-19	NM	NM	NM	NM	NM	4.31	NM	NM	5.46	6.29	1.95
21-Aug-19	3.08	3.06	5.99	3.89	3.65	NM	4.22	Dry	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	2.91	2.89	5.81	3.66	Blocked	4.09	3.9	Dry	NM	NM	1.72
13-Feb-20	NM	NM	NM	NM	NM	NM	NM	NM	5.19	6.07	NM
24-Apr-20	2.85	2.84	5.81	3.66	Blocked	4.1	3.92	Dry	5.16	5.99	1.68
21-May-20	2.89	2.87	5.92	3.77	Blocked	4.21	4.02	Dry	5.27	6	1.75
15-Jun-20	NM	NM	6.02	3.89	3.69	4.31	4.14	NM	5.37	6.11	NM
29-Jul-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	NM	NM	Dry	Decommissioned	Decommissioned	NM
25-Aug-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	Decommissioned	Decommissioned	NM
21-Sep-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	Decommissioned	Decommissioned	2.39
28-Sep-20	3.42	3.44	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	NM
5-Oct-20	3.4	3.43	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	2.31
13-Oct-20	3.43	3.45	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	2.37
19-Oct-20	3.44	3.46	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	2.4
26-Oct-20	3.43	3.46	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	2.39
2-Nov-20	3.45	3.48	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	2.42
9-Nov-20	3.47	3.5	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	2.47
16-Nov-20	3.48	3.51	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	2.49
8-Dec-20	3.49	3.52	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	2.43

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1E: Groundwater Level Measurements (m bgs)
Westwood Village Phase 1

Date	BH01-10 Lower	BH01-10 Upper	BH02-10 Lower	BH02-10 Upper	BH03-10	BH04-10 Lower	BH04-10 Upper	BH05-10 Lower	BH05-10 Upper	BH06-10 Lower	BH06-10 Upper	BH08-10	BH09-10 Lower	BH09-10 Upper	BH10-10 Lower	BH10-10 Upper	BH17-10 Lower	BH17-10 Upper	BH18-10
Stick Up (m)	0.89	0.93	0.83	0.85	0.63	0.78	0.81	0.85	0.88	0.81	0.84	0.80	0.76	0.80	0.73	0.76	0.90	0.90	0.82
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
27-Jun-14	0.67	0.67	0.33	0.35	4.61	1.52	1.56	5.80	1.75	0.51	0.53	4.21	5.18	5.16	4.63	3.93	1.67	1.74	1.85
8-Apr-15	0.79	0.76	0.60	-0.37	4.89	1.82	1.87	6.32	1.91	0.88	0.89	4.40	5.41	5.42	NM	NM	2.03	2.09	2.17
22-May-15	0.94	0.93	0.58	0.61	4.87	1.73	1.77	6.30	1.79	0.81	0.83	4.38	5.38	5.36	4.87	3.93	1.99	2.06	2.16
27-Oct-15	1.29	1.23	0.88	0.91	5.23	2.04	2.06	6.39	2.29	1.19	0.83	4.70	5.66	5.66	5.06	4.18	2.29	2.35	2.44
20-Jan-16	NM	NM	0.71	0.74	NM	1.88	1.93	6.29	2.20	1.08	1.09	NM	NM	NM	NM	NM	NM	NM	2.32
25-Jan-16	1.10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	4.52	5.41	Dry	4.90	4.01	2.20	2.28	NM
7-Jun-16	NM	NM	0.43	0.48	NM	NM	NM	5.95	1.72	NM	NM	4.15	5.19	5.18	4.66	3.98	1.77	1.84	1.96
10-Jun-16	0.78	0.78	NM	NM	4.71	1.57	1.62	NM	NM	0.59	0.60	NM	NM	NM	NM	NM	NM	NM	NM
19-Jan-17	0.81	0.81	0.44	0.45	4.75	1.58	1.64	6.16	2.10	0.82	0.84	4.29	NM	NM	NM	NM	NM	NM	2.06
20-Jan-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	5.19	Dry	4.69	3.89	1.96	2.02	NM
28-Apr-17	0.46	0.47	0.16	0.17	4.39	1.31	1.35	6.02	1.34	0.27	0.30	3.89	4.99	Dry	4.46	3.64	1.57	1.61	1.70
15-May-17	NM	NM	NM	NM	NM	NM	NM	5.85	2.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	0.70	0.71	0.38	0.40	4.58	NM	NM	5.80	1.74	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.85
11-Aug-17	NM	NM	NM	NM	NM	1.61	1.64	NM	NM	0.61	0.63	4.10	5.17	5.16	4.59	3.94	1.75	1.79	NM
10-Jan-18	NM	NM	0.78	0.72	NM	1.96	2.01	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
11-Jan-18	1.07	1.06	NM	NM	NM	NM	NM	6.28	2.18	1.04	1.08	NM	NM	NM	NM	NM	2.08	NM	2.20
29-May-18	NM	NM	NM	NM	NM	1.38	1.44	5.84	1.55	0.36	0.38	4.02	5.08	Blocked	4.57	3.83	NM	NM	NM
31-May-18	0.56	0.55	0.27	0.26	4.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.59	1.65	1.74
28-Nov-18	0.84	0.83	0.48	0.47	4.83	1.68	1.74	6.29	1.80	0.80	0.82	NM	NM	NM	NM	NM	NM	NM	2.01
29-Nov-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	4.47	5.25	Blocked	4.73	3.91	1.94	1.99	NM
20-Aug-19	0.70	Dry	0.43	0.42	4.62	NM	NM	5.75	1.77	NM	NM	NM	NM	NM	NM	NM	1.68	1.73	1.84
21-Aug-19	NM	NM	NM	NM	NM	1.57	1.60	NM	NM	0.57	0.57	4.18	5.25	Blocked	4.75	3.94	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	0.43	Blocked	0.20	0.18	4.38	1.36	1.39	5.72	1.41	0.29	0.30	3.98	4.98	Blocked	4.46	NM	1.48	1.55	1.61
13-Feb-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
24-Apr-20	0.41	Blocked	0.19	0.14	4.36	1.37	1.40	5.60	1.43	0.30	0.31	4.08	5.02	Blocked	4.50	3.88	1.40	1.47	1.58
21-May-20	0.48	Blocked	0.23	0.21	4.44	1.43	1.49	5.62	1.55	0.41	0.41	3.26	5.11	Blocked	4.62	4.07	1.49	1.54	1.63
15-Jun-20	NM	NM	0.21	NM	4.55	1.51	NM	5.74	1.80	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
29-Jul-20	NM	NM	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
25-Aug-20	NM	NM	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
21-Sep-20	1.09	1.11	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	1.81	Blocked	NM	NM	NM	NM	NM	NM	NM	2.22
28-Sep-20	NM	NM	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	NM	NM	Decommed	5.64	Blocked	Decommed	Decommed	2.18	2.25	NM
5-Oct-20	1.14	1.13	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	1.76	Blocked	Decommed	5.56	Blocked	Decommed	Decommed	2.19	2.25	2.23
13-Oct-20	1.22	1.22	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	2.32	Blocked	Decommed	5.59	Blocked	Decommed	Decommed	2.24	2.31	2.28
19-Oct-20	1.28	1.24	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	2.51	Blocked	Decommed	5.55	Blocked	Decommed	Decommed	2.30	2.36	2.30
26-Oct-20	1.30	Dry	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	2.80	Blocked	Decommed	5.48	Blocked	Decommed	Decommed	2.33	2.41	2.31
2-Nov-20	1.35	Dry	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	2.84	Blocked	Decommed	5.54	Blocked	Decommed	Decommed	2.38	2.47	2.34
9-Nov-20	1.40	Dry	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	2.95	Blocked	Decommed	5.56	Blocked	Decommed	Decommed	2.45	2.55	2.38
16-Nov-20	1.41	Dry	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	2.73	Blocked	Decommed	5.56	Blocked	Decommed	Decommed	2.49	2.56	2.40
8-Dec-20	1.34	Blocked	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	Decommed	2.21	2.00	Decommed	NM	NM	Decommed	Decommed	2.48	2.56	2.38

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1E: Groundwater Level Measurements (m bgs)
Westwood Village Phase 1

Date	BH18-10A	BH20-10 Lower	BH20-10 Upper	BH21-10	BH22-10	BH23-10	BH24-10	BH25-10	BH26-10	BH27-10	BH101-10	BH102-10	BH103-10	BH106-10 Lower	BH106-10 Upper	BH107-10	BH108-10	BH109-10 Lower	BH109-10 Upper
Stick Up (m)	0.89	0.57	0.65	0.78	0.67	0.81	0.83	0.75	0.73	0.76	0.81	0.50	0.73	0.75	0.80	0.85	0.70	0.83	0.86
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
27-Jun-14	1.76	6.52	NM	2.77	NM	9.45	7.10	NM	14.78	13.86	1.46	9.49	3.59	NM	NM	NM	NM	NM	NM
8-Apr-15	2.05	6.84	Dry	2.93	13.01	9.67	7.80	3.76	15.21	14.16	1.80	NM	NM	NM	NM	NM	NM	NM	NM
22-May-15	2.04	6.79	6.38	2.99	13.09	9.58	7.81	3.77	14.89	14.18	1.76	9.78	4.04	NM	NM	NM	NM	NM	NM
27-Oct-15	2.34	7.10	6.42	3.16	13.38	9.86	8.17	3.95	15.32	14.34	2.06	10.07	4.37	NM	NM	NM	NM	NM	NM
20-Jan-16	2.17	7.01	Dry	3.07	13.40	9.89	8.52	3.84	15.41	14.34	NM	NM	NM	NM	NM	NM	NM	NM	NM
25-Jan-16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.96	9.97	4.20	6.28	Dry	8.14	6.18	4.27	Dry
7-Jun-16	1.87	6.48	5.86	NM	12.75	9.49	7.30	3.67	14.77	NM	1.55	9.60	3.86	NM	NM	NM	NM	NM	NM
10-Jun-16	NM	NM	NM	2.84	NM	NM	NM	NM	NM	13.91	NM	NM	NM	5.92	5.53	7.83	5.63	3.82	Dry
19-Jan-17	1.91	6.83	Dry	NM	NM	NM	NM	NM	NM	14.15	NM	NM	NM	NM	NM	NM	NM	NM	NM
20-Jan-17	NM	NM	NM	3.12	13.24	9.67	8.39	3.66	15.16	NM	1.69	9.71	3.94	6.17	Dry	7.97	6.05	4.06	Dry
28-Apr-17	1.58	6.29	Dry	2.57	12.56	9.45	7.15	3.45	14.71	13.73	1.31	9.34	3.59	5.75	Dry	7.76	5.42	3.55	Dry
15-May-17	NM	NM	NM	NM	NM	9.35	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	1.79	6.59	6.13	NM	12.48	9.43	7.42	NM	14.57	NM	1.20	9.20	3.52	5.81	5.62	5.90	5.65	3.67	Dry
11-Aug-17	NM	NM	NM	2.88	NM	NM	NM	3.65	NM	13.95	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Jan-18	NM	NM	NM	NM	13.29	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
11-Jan-18	2.09	NM	NM	3.12	13.25	9.69	8.20	3.83	15.12	NM	1.87	9.86	4.17	NM	NM	NM	NM	NM	NM
29-May-18	NM	6.36	5.73	2.67	NM	NM	NM	NM	NM	13.71	NM	NM	NM	5.71	5.28	7.60	5.43	3.61	Dry
31-May-18	1.65	NM	NM	NM	12.64	9.33	7.15	3.53	14.58	NM	1.37	9.35	3.73	NM	NM	NM	NM	NM	NM
28-Nov-18	1.89	NM	NM	2.95	13.20	9.68	8.24	3.66	15.07	14.09	NM	NM	NM	NM	NM	NM	NM	NM	NM
29-Nov-18	NM	6.80	3.55	NM	NM	NM	NM	NM	NM	NM	1.69	9.74	4.05	6.06	NM	7.93	5.96	4.05	Dry
20-Aug-19	1.78	6.53	Blocked	NM	12.51	9.50	7.39	3.64	14.72	NM	1.49	NM	NM	5.74	Dry	NM	NM	NM	NM
21-Aug-19	NM	NM	NM	2.78	NM	NM	NM	NM	NM	13.84	NM	9.45	3.86	NM	NM	7.75	5.56	3.78	Dry
15-Jan-20	NM	NM	NM	NM	NM	9.47	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	1.54	6.25	Blocked	2.58	12.71	NM	NM	3.50	NM	13.67	1.25	9.26	3.63	5.57	5.16	7.43	5.28	3.45	Dry
13-Feb-20	NM	NM	NM	NM	NM	9.33	7.22	NM	14.55	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
24-Apr-20	1.51	6.30	Blocked	2.62	12.49	9.26	6.81	3.43	14.44	13.58	1.20	9.20	3.58	5.51	5.17	7.32	5.26	3.44	Blocked
21-May-20	1.56	6.42	Blocked	2.72	12.55	9.29	7.06	3.46	14.46	13.61	1.28	9.26	3.64	5.58	5.34	7.33	5.35	3.52	NM
15-Jun-20	NM	7.06	6.03	NM	NM	NM	NM	NM	14.61	13.83	NM	NM	NM	NM	NM	NM	NM	NM	NM
29-Jul-20	NM	Decommed	Decommed	2.97	NM	NM	NM	NM	Decommed	Decommed	NM	NM	NM	NM	NM	NM	NM	NM	NM
25-Aug-20	NM	Decommed	Decommed	NM	NM	NM	NM	NM	Decommed	Decommed	NM	NM	NM	NM	NM	NM	NM	NM	NM
21-Sep-20	2.17	Decommed	Decommed	3.01	13.03	9.57	7.78	3.82	Decommed	Decommed	NM	NM	NM	NM	NM	NM	NM	NM	NM
28-Sep-20	NM	Decommed	Decommed	NM	NM	NM	NM	NM	Decommed	Decommed	1.96	9.85	4.23	6.05	6.01	7.68	5.92	4.11	Dry
5-Oct-20	2.18	Decommed	Decommed	3.06	13.08	9.67	7.87	3.83	Decommed	Decommed	2.00	9.90	4.26	6.11	Dry	7.78	5.99	4.16	Dry
13-Oct-20	2.24	Decommed	Decommed	3.22	13.09	9.71	7.92	3.85	Decommed	Decommed	2.00	9.94	4.28	6.12	Dry	7.77	6.01	4.19	Dry
19-Oct-20	2.26	Decommed	Decommed	3.34	13.10	9.73	7.95	3.86	Decommed	Decommed	2.17	9.97	4.31	6.16	Dry	7.79	6.03	4.21	Dry
26-Oct-20	2.23	Decommed	Decommed	3.47	13.12	9.66	7.96	3.86	Decommed	Decommed	2.22	9.96	4.34	6.14	Dry	7.77	6.05	4.22	Dry
2-Nov-20	2.30	Decommed	Decommed	3.57	13.14	9.69	8.01	3.88	Decommed	Decommed	2.28	10.02	4.37	6.20	Dry	7.82	6.09	4.25	Dry
9-Nov-20	2.35	Decommed	Decommed	3.69	13.18	9.69	8.04	3.90	Decommed	Decommed	2.33	10.04	4.40	6.21	6.06	7.83	6.10	4.28	Dry
16-Nov-20	2.35	Decommed	Decommed	3.77	13.21	9.72	8.09	3.92	Decommed	Decommed	2.36	10.08	4.42	6.23	6.06	7.86	6.17	4.34	Dry
8-Dec-20	2.30	Decommed	Decommed	3.86	13.29	9.68	8.17	3.89	Decommed	Decommed	2.29	10.06	4.44	6.26	6.12	7.89	6.23	4.38	Dry

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1E: Groundwater Level Measurements (m bgs)
Westwood Village Phase 1

Date	BH110-10	BH111-10 Lower	BH111-10 Upper	BH112-10	BH113-10	BH114-10	BH115-10	BH115A-10	BH6-14	BH8-14 Lower	BH8-14 Upper	BH10-14	BH12-14	BH14-14	BH19-14	BH22-14	BH26-14
Stick Up (m)	0.68	0.59	0.66	0.68	0.75	0.72	0.80	0.69	0.74	0.62	0.88	0.64	0.69	0.72	0.74	0.66	0.71
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	5.16	3.18	2.75	3.57	3.35	NM	4.58	5.47	1.13
27-Jun-14	NM	5.25	0.49	2.78	1.17	0.89	NM	NM	5.27	3.29	2.86	3.67	3.45	NM	4.68	5.57	1.22
8-Apr-15	0.57	NM	NM	3.05	NM	NM	NM	NM	NM	3.70	NM	4.08	3.83	Dry	4.97	5.69	1.48
22-May-15	0.69	5.52	0.50	3.03	1.22	1.20	2.67	2.76	5.55	3.59	1.99	3.97	3.72	Dry	4.95	5.68	1.46
27-Oct-15	1.04	5.87	0.38	3.33	1.35	1.47	2.83	2.92	5.93	3.99	2.90	4.32	4.10	Dry	5.27	6.04	1.76
20-Jan-16	NM	5.77	0.42	3.25	NM	NM	NM	NM	NM	3.83	Frozen	4.24	3.94	NM	5.08	6.01	1.59
25-Jan-16	0.87	NM	NM	NM	1.19	1.40	2.82	2.90	NM	NM	NM	NM	NM	Dry	NM	NM	NM
7-Jun-16	0.49	5.33	0.49	NM	1.15	NM	2.53	2.63	5.46	3.36	2.76	3.71	NM	Dry	4.79	5.58	1.31
10-Jun-16	NM	NM	NM	2.86	NM	0.99	NM	NM	NM	NM	NM	NM	3.52	NM	NM	NM	NM
19-Jan-17	0.60	5.63	0.35	3.06	NM	NM	NM	NM	5.47	3.55	2.01	4.01	3.65	Dry	NM	NM	1.32
20-Jan-17	NM	NM	NM	NM	1.00	1.38	2.64	2.73	NM	NM	NM	NM	NM	NM	4.79	5.63	NM
28-Apr-17	0.25	5.05	0.49	2.65	0.18	1.02	2.28	2.39	5.01	3.04	-0.08	3.44	3.20	Dry	4.46	5.42	1.01
15-May-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	0.43	4.89	0.38	2.81	NM	NM	NM	NM	NM	NM	NM	NM	NM	Dry	4.35	5.52	1.04
11-Aug-17	NM	NM	NM	NM	1.20	1.17	2.41	2.53	5.18	3.17	0.57	3.25	3.01	NM	NM	NM	NM
10-Jan-18	NM	NM	NM	NM	NM	NM	NM	NM	5.83	NM	NM	NM	NM	NM	5.10	NM	NM
11-Jan-18	0.81	NM	NM	3.23	NM	NM	NM	NM	NM	3.85	2.75	4.24	3.95	NM	NM	NM	NM
29-May-18	NM	5.13	0.50	2.68	Blocked	0.82	NM	NM	5.14	3.14	2.61	3.52	3.31	NM	NM	NM	NM
31-May-18	0.32	NM	NM	NM	NM	NM	2.29	2.38	NM	NM	NM	NM	NM	NM	4.57	5.42	1.12
28-Nov-18	0.61	5.53	0.51	NM	NM	NM	NM	NM	5.56	3.59	Blocked	3.99	3.69	NM	4.85	5.74	1.34
29-Nov-18	NM	NM	NM	3.02	Blocked	1.14	2.50	2.57	NM	NM	NM	NM	NM	Dry	NM	NM	NM
20-Aug-19	0.42	5.27	0.50	2.76	NM	NM	NM	NM	NM	NM	NM	3.67	NM	NM	4.72	5.63	1.24
21-Aug-19	NM	NM	NM	NM	NM	0.96	2.28	2.37	5.25	3.27	2.77	NM	3.53	Dry	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	0.20	Dry	0.51	2.58	Frozen	0.68	2.11	2.20	5.07	3.04	Blocked	3.45	3.21	Dry	NM	NM	1.01
13-Feb-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	4.45	5.41	NM
24-Apr-20	0.17	Dry	Blocked	2.52	Blocked	0.62	2.05	2.15	5.07	3.04	Blocked	3.46	3.23	Dry	4.42	5.33	0.97
21-May-20	0.24	Dry	Blocked	2.58	Blocked	0.70	2.09	2.18	5.18	3.15	Blocked	3.57	3.33	Dry	4.53	5.34	1.04
15-Jun-20	NM	5.17	0.52	NM	NM	NM	NM	NM	5.28	3.27	2.81	3.67	3.45	NM	4.63	5.45	NM
29-Jul-20	NM	Decommed	Decommed	2.95	NM	NM	NM	NM	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	NM
25-Aug-20	NM	Decommed	Decommed	NM	NM	NM	NM	NM	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	NM
21-Sep-20	NM	Decommed	Decommed	NM	NM	NM	NM	NM	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.68
28-Sep-20	0.89	Decommed	Decommed	3.21	Blocked	1.36	2.62	2.75	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	NM
5-Oct-20	0.96	Decommed	Decommed	3.22	Blocked	1.36	2.60	2.74	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.60
13-Oct-20	1.09	Decommed	Decommed	3.25	Blocked	1.40	2.63	2.76	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.66
19-Oct-20	1.17	Decommed	Decommed	3.29	Blocked	1.44	2.64	2.77	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.69
26-Oct-20	1.21	Decommed	Decommed	3.31	Blocked	1.46	2.63	2.77	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.68
2-Nov-20	1.27	Decommed	Decommed	3.36	Blocked	1.51	2.65	2.79	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.71
9-Nov-20	1.34	Decommed	Decommed	3.42	Blocked	1.58	2.67	2.81	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.76
16-Nov-20	1.45	Decommed	Decommed	3.46	Blocked	1.61	2.68	2.82	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.78
8-Dec-20	1.24	Decommed	Decommed	3.50	Blocked	1.64	2.69	2.83	Decommed	Decommed	Decommed	Decommed	Decommed	Dry	Decommed	Decommed	1.72

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1F: Groundwater Level Measurements (m amsl)
Westwood Village Phase 1

Date	BH01-10 Lower	BH01-10 Upper	BH02-10 Lower	BH02-10 Upper	BH03-10	BH04-10 Lower	BH04-10 Upper	BH05-10 Lower	BH05-10 Upper	BH06-10 Lower	BH06-10 Upper	BH08-10	BH10-10 Lower	BH10-10 Upper	BH16-10 Lower	BH16-10 Upper	BH17-10 Lower	BH17-10 Upper	BH18-10
TOC Elevation (mAMSL)	310.03	310.06	309.42	309.45	313.70	309.42	309.46	309.42	309.45	309.78	309.81	312.72	310.95	310.98	309.82	309.82	311.42	311.42	311.08
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
27-Jun-14	308.47	308.46	308.26	308.29	308.46	307.12	307.09	302.77	306.82	308.46	308.44	307.71	305.59	306.29	308.44	308.48	308.85	308.78	308.41
8-Apr-15	308.35	308.37	307.99	308.02	308.18	306.82	306.78	302.25	306.66	308.09	308.08	307.52	NM	NM	308.12	308.17	308.49	308.43	308.09
22-May-15	308.20	308.20	308.01	308.04	308.20	306.91	306.88	302.27	306.78	308.16	308.14	307.54	305.35	306.29	308.16	308.15	308.53	308.46	308.10
27-Oct-15	307.85	307.90	307.71	307.74	307.84	306.61	306.59	302.18	306.28	307.78	308.14	307.22	305.16	306.04	307.77	307.89	308.23	308.17	307.82
20-Jan-16	NM	NM	307.88	307.91	NM	306.76	306.72	302.28	306.37	307.89	307.88	NM	NM	NM	307.92	307.87	NM	NM	307.94
25-Jan-16	308.04	Dry	NM	NM	NM	NM	NM	NM	NM	NM	NM	307.40	305.32	306.21	NM	NM	308.32	308.24	NM
7-Jun-16	NM	NM	308.16	308.19	NM	NM	NM	302.62	306.85	NM	NM	307.77	305.56	306.24	NM	NM	308.75	308.68	308.30
10-Jun-16	308.36	308.35	NM	NM	308.36	307.07	307.03	NM	NM	308.38	308.37	NM	NM	NM	308.37	308.49	NM	NM	NM
19-Jan-17	308.33	308.32	308.15	308.18	308.32	307.06	307.01	302.41	306.47	308.15	308.13	307.63	NM	NM	308.20	308.15	NM	NM	308.20
20-Jan-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	305.53	306.33	NM	NM	308.56	308.50	NM
28-Apr-17	308.68	308.66	308.43	308.46	308.68	307.33	307.30	302.55	307.23	308.70	308.67	308.03	305.76	306.58	308.70	308.67	308.95	308.91	308.56
15-May-17	NM	NM	NM	NM	NM	NM	NM	302.72	306.54	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	308.44	308.42	308.21	308.24	308.49	NM	NM	302.77	306.83	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.41
11-Aug-17	NM	NM	NM	NM	NM	307.03	307.01	NM	NM	308.36	308.34	307.82	305.63	306.28	308.36	308.31	308.77	308.73	NM
10-Jan-18	NM	NM	307.82	307.84	NM	306.68	306.64	NM	NM	NM	NM	NM	NM	NM	307.89	307.87	NM	NM	NM
11-Jan-18	308.07	308.07	NM	NM	NM	NM	NM	302.29	306.39	307.93	307.89	NM	NM	NM	NM	NM	308.44	NM	308.06
29-May-18	NM	NM	NM	NM	NM	307.26	307.21	302.73	307.02	308.61	308.59	307.90	305.65	306.39	308.59	308.70	NM	NM	NM
31-May-18	308.58	308.58	308.32	308.35	308.58	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.93	308.87	308.52
28-Nov-18	308.30	308.30	308.11	308.14	308.24	306.96	306.91	302.28	306.77	308.17	308.15	NM	NM	NM	308.19	308.40	NM	NM	308.25
29-Nov-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	307.45	305.49	306.31	NM	NM	308.58	308.53	NM
20-Aug-19	308.44	Dry	308.16	308.19	308.45	NM	NM	302.82	306.80	NM	NM	NM	NM	NM	NM	NM	308.84	308.79	308.42
21-Aug-19	NM	NM	NM	NM	NM	307.07	307.05	NM	NM	308.40	308.40	307.74	305.47	306.28	308.42	308.51	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	308.71	NM	308.39	308.42	308.69	307.28	307.26	302.85	307.16	308.68	308.67	307.94	305.76	Dry	308.70	308.68	309.04	308.97	308.65
13-Feb-20	NM	Blocked	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
24-Apr-20	308.73	Blocked	308.40	308.43	308.71	307.27	307.25	302.97	307.14	308.67	308.66	307.84	305.72	306.34	308.70	308.69	309.12	309.05	308.68
21-May-20	308.66	Blocked	308.36	308.39	308.63	307.21	307.16	302.95	307.02	308.56	308.56	308.66	305.60	306.15	308.58	308.54	309.03	308.98	308.63
15-Jun-20	NM	NM	308.38	308.41	308.52	307.13	NM	302.83	306.77	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
29-Jul-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
25-Aug-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
21-Sep-20	308.05	308.02	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	307.97	Blocked	NM	NM	NM	307.95	307.91	NM	NM	308.04
28-Sep-20	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	NM	Decommissioned	Decommissioned	Decommissioned	NM	NM	308.34	308.27	NM
5-Oct-20	308.00	308.00	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	307.21	Blocked	Decommissioned	Decommissioned	Decommissioned	306.57	Dry	308.33	308.27	308.03
13-Oct-20	307.92	307.91	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	306.65	Blocked	Decommissioned	Decommissioned	Decommissioned	306.02	Dry	308.28	308.21	307.98
19-Oct-20	307.86	307.89	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	306.46	Blocked	Decommissioned	Decommissioned	Decommissioned	306.10	Dry	308.22	308.16	307.96
26-Oct-20	307.84	Dry	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	306.17	Blocked	Decommissioned	Decommissioned	Decommissioned	305.73	Dry	308.19	308.11	307.95
2-Nov-20	307.79	Dry	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	306.13	Blocked	Decommissioned	Decommissioned	Decommissioned	305.63	Dry	308.14	308.05	307.92
9-Nov-20	307.74	Dry	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	306.02	Blocked	Decommissioned	Decommissioned	Decommissioned	305.77	Dry	308.07	307.97	307.88
16-Nov-20	307.73	Dry	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	306.24	Blocked	Decommissioned	Decommissioned	Decommissioned	306.26	Dry	308.03	307.96	307.86
8-Dec-20	307.80	Blocked	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	306.76	306.97	Decommissioned	Decommissioned	Decommissioned	306.87	Dry	308.04	307.96	307.88

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1F: Groundwater Level Measurements (m amsl)
Westwood Village Phase 1

Date	BH18-10A	BH20-10 Lower	BH20-10 Upper	BH21-10	BH22-10	BH23-10	BH24-10	BH25-10	BH26-10	BH27-10	BH101-10	BH102-10	BH103-10	BH106-10 Lower	BH106-10 Upper	BH107-10	BH108-10	BH109-10 Lower
TOC Elevation (mAMSL)	311.05	315.35	315.42	309.11	314.47	311.25	315.15	312.02	320.08	318.90	310.94	318.57	313.32	314.04	314.08	315.29	315.03	313.36
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
27-Jun-14	308.40	308.26	NM	305.56	NM	300.99	307.22	NM	304.57	304.28	308.67	308.58	309.00	NM	NM	NM	NM	NM
8-Apr-15	308.11	307.94	Dry	305.40	300.79	300.77	306.52	307.51	304.14	303.98	308.33	NM	NM	NM	NM	NM	NM	NM
22-May-15	308.12	307.99	308.39	305.34	300.71	300.86	306.51	307.50	304.46	303.96	308.37	308.29	308.55	NM	NM	NM	NM	NM
27-Oct-15	307.82	307.68	308.35	305.17	300.42	300.58	306.15	307.32	304.03	303.80	308.07	308.00	308.22	NM	NM	NM	NM	NM
20-Jan-16	307.99	307.77	Dry	305.26	300.40	300.55	305.80	307.43	303.94	303.80	NM	NM	NM	NM	NM	NM	NM	NM
25-Jan-16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.17	308.10	308.39	307.01	Dry	306.30	308.15	308.26
7-Jun-16	308.29	308.30	308.91	NM	301.05	300.95	307.02	307.60	304.58	NM	308.58	308.47	308.73	NM	NM	NM	NM	NM
10-Jun-16	NM	NM	NM	305.49	NM	NM	NM	NM	NM	304.23	NM	NM	NM	307.37	307.75	306.61	308.70	308.71
19-Jan-17	308.25	307.95	Dry	NM	NM	NM	NM	NM	NM	303.99	NM	NM	NM	NM	NM	NM	NM	NM
20-Jan-17	NM	NM	NM	305.21	300.56	300.77	305.93	307.61	304.19	NM	308.44	308.36	308.65	307.12	Dry	306.47	308.28	308.47
28-Apr-17	308.58	308.49	Dry	305.76	301.24	300.99	307.17	307.82	304.64	304.41	308.82	308.73	309.00	307.54	Dry	306.68	308.91	308.98
15-May-17	NM	NM	NM	NM	NM	301.09	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	308.37	308.19	308.64	NM	301.32	301.01	306.90	NM	304.78	NM	308.93	308.87	309.07	307.48	307.66	308.54	308.68	308.86
11-Aug-17	NM	NM	NM	305.45	NM	NM	NM	307.62	NM	304.19	NM	NM	NM	NM	NM	NM	NM	NM
10-Jan-18	NM	NM	NM	NM	300.51	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
11-Jan-18	308.07	NM	NM	305.21	300.55	300.75	306.12	307.44	304.23	NM	308.26	308.21	308.41	NM	NM	NM	NM	NM
29-May-18	NM	308.42	309.04	305.66	NM	NM	NM	NM	NM	304.43	NM	NM	NM	307.58	308.00	306.84	308.90	308.92
31-May-18	308.51	NM	NM	NM	301.16	301.11	307.17	307.74	304.77	NM	308.76	308.72	308.86	NM	NM	NM	NM	NM
28-Nov-18	308.27	NM	NM	305.38	300.60	300.76	306.08	307.61	304.28	304.05	NM	NM	NM	NM	NM	NM	NM	NM
29-Nov-18	NM	307.98	311.22	NM	NM	NM	NM	NM	NM	NM	308.44	308.33	308.54	307.23	NM	306.51	308.37	308.48
20-Aug-19	308.38	308.25	Dry	NM	301.29	300.94	306.93	307.63	304.63	NM	308.64	NM	NM	307.55	Dry	NM	NM	NM
21-Aug-19	NM	NM	NM	305.55	NM	NM	NM	NM	NM	304.30	NM	308.62	308.73	NM	NM	306.69	308.77	308.75
15-Jan-20	NM	NM	NM	NM	NM	300.97	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	308.62	308.53	Blocked	305.75	301.09	NM	NM	307.77	NM	304.47	308.88	308.81	308.96	307.72	308.12	307.01	309.05	309.08
13-Feb-20	NM	NM	NM	NM	NM	301.11	307.10	NM	304.80	NM	NM	NM	NM	NM	NM	NM	NM	NM
24-Apr-20	308.65	308.48	Blocked	305.71	301.31	301.18	307.51	307.84	304.91	304.56	308.93	308.87	309.01	307.78	308.11	307.12	309.07	309.09
21-May-20	308.60	308.36	Blocked	305.61	301.25	301.15	307.26	307.81	304.89	304.53	308.85	308.81	308.95	307.71	307.94	307.11	308.98	309.01
15-Jun-20	NM	307.72	308.74	NM	NM	NM	NM	NM	304.74	304.31	NM	NM	NM	NM	NM	NM	NM	NM
29-Jul-20	NM	Decommissioned	Decommissioned	305.36	NM	NM	NM	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM
25-Aug-20	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM
21-Sep-20	307.99	Decommissioned	Decommissioned	305.32	300.77	300.87	306.54	307.45	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	NM	NM	NM
28-Sep-20	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	308.17	308.22	308.36	307.24	307.27	306.76	308.41	308.42
5-Oct-20	307.98	Decommissioned	Decommissioned	305.27	300.72	300.77	306.45	307.44	Decommissioned	Decommissioned	308.13	308.17	308.33	307.18	Dry	306.66	308.34	308.37
13-Oct-20	307.92	Decommissioned	Decommissioned	305.11	300.71	300.73	306.40	307.42	Decommissioned	Decommissioned	308.13	308.13	308.31	307.17	Dry	306.67	308.32	308.34
19-Oct-20	307.90	Decommissioned	Decommissioned	304.99	300.70	300.71	306.37	307.41	Decommissioned	Decommissioned	307.96	308.10	308.28	307.13	Dry	306.65	308.30	308.32
26-Oct-20	307.93	Decommissioned	Decommissioned	304.86	300.68	300.78	306.36	307.41	Decommissioned	Decommissioned	307.91	308.11	308.25	307.15	Dry	306.67	308.28	308.31
2-Nov-20	307.86	Decommissioned	Decommissioned	304.76	300.66	300.75	306.31	307.39	Decommissioned	Decommissioned	307.85	308.05	308.22	307.09	Dry	306.62	308.24	308.28
9-Nov-20	307.81	Decommissioned	Decommissioned	304.64	300.62	300.75	306.28	307.37	Decommissioned	Decommissioned	307.80	308.03	308.19	307.08	307.22	306.61	308.23	308.25
16-Nov-20	307.81	Decommissioned	Decommissioned	304.56	300.59	300.72	306.23	307.35	Decommissioned	Decommissioned	307.77	307.99	308.17	307.06	307.22	306.58	308.16	308.19
8-Dec-20	307.86	Decommissioned	Decommissioned	304.47	300.51	300.76	306.15	307.38	Decommissioned	Decommissioned	307.84	308.01	308.15	307.03	307.16	306.55	308.10	308.15

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1F: Groundwater Level Measurements (m amsl)
Westwood Village Phase 1

Date	BH109-10 Upper	BH110-10	BH111-10 Lower	BH111-10 Upper	BH112-10	BH113-10	BH114-10	BH115-10	BH115A-10	BH6-14	BH8-14 Lower	BH8-14 Upper	BH10-14	BH12-14	BH14-14	BH19-14	BH22-14	BH26-14
TOC Elevation (mAMSL)	313.38	309.63	314.48	314.55	312.27	308.24	310.46	311.62	311.57	313.81	312.32	312.58	312.59	312.30	309.55	313.73	306.18	310.13
12-Jun-14	NM	NM	NM	NM	NM	NM	NM	NM	NM	307.91	308.52	308.95	308.38	308.27	NM	308.41	300.05	308.29
27-Jun-14	NM	NM	308.64	313.40	308.81	306.32	308.85	NM	NM	307.80	308.41	308.84	308.28	308.16	NM	308.31	299.95	308.20
8-Apr-15	NM	308.38	NM	NM	308.54	NM	NM	NM	NM	NM	308.00	NM	307.87	307.78	Dry	308.02	299.83	307.94
22-May-15	NM	308.26	308.37	313.39	308.56	306.27	308.54	308.15	308.12	307.52	308.11	309.71	307.98	307.89	Dry	308.04	299.84	307.96
27-Oct-15	NM	307.91	308.02	313.51	308.26	306.14	308.27	307.99	307.96	307.14	307.71	308.80	307.63	307.51	Dry	307.72	299.48	307.66
20-Jan-16	NM	NM	308.12	313.47	308.34	NM	NM	NM	NM	NM	307.87	Frozen	307.71	307.67	NM	307.91	299.51	307.83
25-Jan-16	Dry	308.08	NM	NM	NM	306.30	308.34	308.00	307.98	NM	NM	NM	NM	NM	Dry	NM	NM	NM
7-Jun-16	NM	308.46	308.56	313.40	NM	306.34	NM	308.29	308.25	307.61	308.34	308.94	308.24	NM	Dry	308.20	299.94	308.11
10-Jun-16	Dry	NM	NM	NM	308.73	NM	308.75	NM	NM	NM	NM	NM	NM	308.09	NM	NM	NM	NM
19-Jan-17	NM	308.35	308.26	313.54	308.53	NM	NM	NM	NM	307.60	308.15	309.69	307.94	307.96	Dry	NM	NM	308.10
20-Jan-17	Dry	NM	NM	NM	NM	306.49	308.36	308.18	308.15	NM	NM	NM	NM	NM	NM	308.20	299.89	NM
28-Apr-17	Dry	308.70	308.84	313.40	308.94	307.31	308.72	308.54	308.49	308.06	308.66	311.78	308.51	308.41	Dry	308.53	300.10	308.41
15-May-17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
10-Aug-17	Dry	308.52	309.00	313.51	308.78	NM	NM	NM	NM	NM	NM	NM	NM	NM	Dry	308.64	300.00	308.38
11-Aug-17	NM	NM	NM	NM	NM	306.29	308.57	308.41	308.35	307.89	308.53	311.13	308.70	308.60	NM	NM	NM	NM
10-Jan-18	NM	NM	NM	NM	NM	NM	NM	NM	NM	307.24	NM	NM	NM	NM	NM	307.89	NM	NM
11-Jan-18	NM	308.14	NM	NM	308.36	NM	NM	NM	NM	NM	307.86	308.96	307.71	307.66	NM	NM	NM	NM
29-May-18	Dry	NM	308.76	313.39	308.91	Blocked	308.92	NM	NM	307.93	308.56	309.09	308.43	308.30	NM	NM	NM	NM
31-May-18	NM	308.63	NM	NM	NM	NM	NM	308.53	308.50	NM	NM	NM	NM	NM	NM	308.42	300.10	308.30
28-Nov-18	NM	308.34	308.36	313.38	NM	NM	NM	NM	NM	307.51	308.11	Blocked	307.96	307.92	NM	308.14	299.78	308.08
29-Nov-18	Dry	NM	NM	NM	308.57	Blocked	308.60	308.32	308.31	NM	NM	NM	NM	NM	Dry	NM	NM	NM
20-Aug-19	NM	308.53	308.62	313.39	308.83	NM	NM	NM	NM	NM	NM	NM	308.28	NM	NM	308.27	299.89	308.18
21-Aug-19	Dry	NM	NM	NM	NM	NM	308.78	308.54	308.51	307.82	308.43	308.93	NM	308.08	Dry	NM	NM	NM
15-Jan-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12-Feb-20	Dry	308.75	Dry	313.38	309.01	Frozen	309.06	308.71	308.68	308.00	308.66	Blocked	308.50	308.40	Dry	NM	NM	308.41
13-Feb-20	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.54	300.11	NM
24-Apr-20	Blocked	308.78	Dry	Blocked	309.07	Blocked	309.12	308.77	308.73	308.00	308.66	Blocked	308.49	308.38	Dry	308.57	300.19	308.45
21-May-20	Blocked	308.71	Dry	Blocked	309.01	Blocked	309.04	308.73	308.70	307.89	308.55	Blocked	308.38	308.28	Dry	308.46	300.18	308.38
15-Jun-20	NM	NM	308.72	313.37	NM	NM	NM	NM	NM	307.79	308.43	308.89	308.28	308.16	NM	308.36	300.07	NM
29-Jul-20	NM	NM	Decommissioned	Decommissioned	308.64	NM	NM	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	NM
25-Aug-20	NM	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	Decommissioned	Decommissioned	NM
21-Sep-20	NM	NM	Decommissioned	Decommissioned	NM	NM	NM	NM	NM	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	NM	Decommissioned	Decommissioned	307.74
28-Sep-20	Dry	308.06	Decommissioned	Decommissioned	308.38	Blocked	308.38	308.20	308.13	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	NM
5-Oct-20	Dry	307.99	Decommissioned	Decommissioned	308.37	Blocked	308.38	308.22	308.14	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	307.82
13-Oct-20	Dry	307.86	Decommissioned	Decommissioned	308.34	Blocked	308.34	308.19	308.12	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	307.76
19-Oct-20	Dry	307.78	Decommissioned	Decommissioned	308.30	Blocked	308.30	308.18	308.11	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	307.73
26-Oct-20	Dry	307.74	Decommissioned	Decommissioned	308.28	Blocked	308.28	308.19	308.11	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	307.74
2-Nov-20	Dry	307.68	Decommissioned	Decommissioned	308.23	Blocked	308.23	308.17	308.09	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	307.71
9-Nov-20	Dry	307.61	Decommissioned	Decommissioned	308.17	Blocked	308.16	308.15	308.07	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	307.66
16-Nov-20	Dry	307.50	Decommissioned	Decommissioned	308.13	Blocked	308.13	308.14	308.06	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Dry	Decommissioned	Decommissioned	307.64
8-Dec-20	Dry	307.71	Decommissioned	Decommissioned	308.09	Blocked	308.10	308.13	308.05	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	Decommissioned	307.70

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were decommissioned on this date
6. BH13-10 was found to be damaged on July 29, 20. Well was decommissioned.
7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Notes

1. Lower identifies a 50mm diameter monitoring well
2. Upper identifies a 19mm well installed within same well casing
3. NM = not measured
4. m btoc = metres below top of casing
5. Monitoring wells with June 15, 2020 water level measurement were dec
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7. BH08-10 and BH10-10 located on Newman Lands
8. BH09-10 to be decommissioned in January 2021

Table 1G: Groundwater Level Measurements (m btoc)
Mini Piezometers

Date	MP1		MP2		MP3		MP4		MP5		MP6		MP7		MP8		MP9		MP10		MP11	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
9-Apr-15	M	M	2.46	NM	M	M	Dry	Dry	1.86	Dry	1.09	1.12	1.80	NM	1.88	NM	1.92	NM	M	M	1.45	NM
22-May-15	M	M	2.35	Dry	M	M	1.94	Dry	1.89	Dry	1.2	Dry	1.92	Dry	2.18	Dry	2.19	Dry	2.10	Dry	1.48	Dry
27-Oct-15	M	M	2.66	Dry	M	M	2.17	Dry	2.31	Dry	1.52	Dry	NM	NM	NM	NM	NM	NM	2.14	Dry	1.76	Dry
30-Oct-15	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	2.25	Dry	2.25	Dry	2.32	Dry	NM	NM	NM	NM
20-Jan-16	M	M	NM	NM	M	M	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	NM	NM	NM	NM	NM	NM	Frozen	Frozen	Frozen	Frozen
25-Jan-16	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	2.06	Dry	2.16	Dry	Frozen	Frozen	NM	NM	NM	NM
7-Jun-16	M	M	2.3	Dry	M	M	NM	NM	NM	NM	NM	NM	1.92	Dry	2.07	Dry	2.12	2.13	NM	NM	NM	NM
10-Jun-16	M	M	NM	NM	M	M	1.76	Dry	1.68	2.66	1.12	1.12	NM	NM	NM	NM	NM	NM	1.9	Dry	1.3	1.3
28-Apr-17	M	M	1.82	1.81	M	M	1.59	1.59	1.48	1.59	M	M	NM	NM	1.76	1.72	2.01	1.87	1.6	1.6	1.15	1.11
29-May-18	M	M	2.28	Dry	M	M	2.08	1.65	2.16	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
31-May-18	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.63	1.61	1.16	1.17
28-Nov-18	M	M	2.24	Dry	M	M	2.00	Dry	NM	NM	Frozen	1.29	NM	NM	NM	NM	NM	NM	2.06	Dry	1.53	1.5
29-Nov-18	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	1.99	Dry	2.01	Dry	2.07	2.09	NM	NM	NM	NM
20-Aug-19	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1.75	1.72	1.42	Dry
21-Aug-19	M	M	2.03	Dry	M	M	1.79	Dry	2.25	Dry	NM	NM	2.02	Dry	2.04	Dry	2.1	2.11	NM	NM	NM	NM
12-Feb-20	M	M	1.74	Dry	M	M	Frozen	Frozen	M	M	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
24-Apr-20	M	M	1.74	1.7	M	M	1.64	1.58	M	M	0.87	0.87	1.70	1.72	2.00	Dry	2.03	1.98	1.43	1.45	1.04	1.00
21-May-20	M	M	1.87	Dry	M	M	NM	NM	M	M	NM	NM	1.77	Dry	1.92	Dry	2.03	2.02	NM	NM	NM	NM
29-Jul-20	M	M	2.32	Dry	M	M	2.06	Dry	M	M	1.27	1.27	NM	NM	NM	NM	NM	NM	2.05	Dry	1.43	1.43
21-Sep-20	M	M	Dry	Dry	M	M	Blocked	Dry	M	M	Dry	Dry	NM	NM	NM	NM	NM	NM	Dry	Dry	Dry	Dry
28-Sep-20	M	M	NM	NM	M	M	NM	NM	M	M	NM	NM	Dry	Dry	NM	NM	Dry	Dry	NM	NM	NM	NM
5-Oct-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Dry	Dry	2.13	Dry	NM	NM	Dry	Dry	2.15	Dry	1.63	Dry
13-Oct-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Dry	Dry	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
19-Oct-20	M	M	1.99	Dry	M	M	Dry	Dry	M	M	Dry	Dry	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
26-Oct-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	NM	NM	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
2-Nov-20	M	M	2.50	Dry	M	M	Dry	Dry	M	M	Blocked	1.35	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
9-Nov-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Dry	Dry	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
16-Nov-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Dry	Dry	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
8-Dec-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Blocked	Dry	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry

Notes:
M = missing or not located during monitoring event
NM = not measured during monitoring event

Table 1G: Groundwater Level Measurements (m btoc)
Mini Piezometers

Date	MP12		MP13		MP14		MP15		MP16		MP17		MP18		MP19		MP20		MP21		MP22	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
9-Apr-15	Dry	NM	Dry	NM	1.22	0.00	Dry	Dry	Dry	NM	2.2	NM	1.21	NM	2.05	NM	1.81	NM	0.58	Dry	M	M
22-May-15	1.95	Dry	1.26	1.27	1.25	1.26	Damaged	NM	2.52	Dry	2.2	Dry	1.39	Dry	2.05	Dry	1.89	Dry	0.58	Dry	M	M
27-Oct-15	2.06	Dry	NM	NM	NM	NM	NM	NM	2.55	Dry	2.25	Dry	1.90	Dry	2.14	Dry	1.95	Dry	0.56	Dry	M	M
30-Oct-15	NM	NM	Dry	Dry	1.46	Dry	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
20-Jan-16	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	NM	NM	Blocked	Dry	Dry	Dry	2.03	Dry	2.27	Dry	2.11	Dry	Frozen	Dry	M	M
25-Jan-16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
7-Jun-16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
10-Jun-16	1.61	Dry	1.20	Dry	1.20	1.15	Damaged	Damaged	1.51	Dry	2.18	Dry	NM	NM	1.95	1.89	1.8	Dry	0.51	Dry	M	M
28-Apr-17	1.55	1.5	1.11	1.05	0.92	0.92	NM	NM	Blocked	Dry	2.03	Dry	NM	NM	1.88	1.87	1.95	Dry	0.51	0.57	M	M
29-May-18	NM	NM	NM	NM	NM	NM	Damaged	Damaged	Blocked	Dry	2.09	Dry	1.29	Dry	1.93	Dry	NM	NM	NM	NM	M	M
31-May-18	1.17	Dry	NM	NM	NM	NM	Damaged	Damaged	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
28-Nov-18	Dry	Dry	NM	NM	NM	NM	Damaged	Damaged	Dry	Dry	Dry	Dry	1.37	Dry	1.98	1.86	NM	NM	NM	NM	M	M
29-Nov-18	NM	NM	NM	NM	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
20-Aug-19	1.3	Dry	NM	NM	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
21-Aug-19	NM	NM	NM	NM	NM	NM	M	M	Blocked	Dry	2.17	Dry	1.35	Dry	2.05	Dry	NM	NM	NM	NM	M	M
12-Feb-20	Frozen	Frozen	M	M	Frozen	Frozen	M	M	Blocked	Dry	Blocked	Dry	Blocked	Dry	1.85	Dry	M	M	Frozen	0.60	M	M
24-Apr-20	1.42	1.41	M	M	1.59	1.61	M	M	1.78	1.78	2.17	Dry	1.38	Dry	1.91	Dry	Damaged	Damaged	0.55	Dry	M	M
21-May-20	NM	NM	M	M	NM	NM	M	M	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Damaged	Damaged	0.51	Dry	M	M
29-Jul-20	M	M	M	M	M	M	M	M	Dry	Dry	Blocked	Dry	1.50	Dry	2.00	Dry	Damaged	Damaged	0.46	Dry	M	M
21-Sep-20	M	M	M	M	M	M	M	M	NM	NM	NM	NM	NM	NM	NM	NM	M	M	NM	NM	M	M
28-Sep-20	M	M	M	M	M	M	M	M	Dry	Dry	Blocked	Dry	1.53	Dry	1.52	Dry	M	M	0.44	0.60	M	M
5-Oct-20	M	M	M	M	M	M	M	M	Dry	Dry	1.49	Dry	1.36	Dry	2.03	Dry	M	M	0.39	0.59	M	M
13-Oct-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	1.54	Dry	Dry	Dry	M	M	0.4	0.59	M	M
19-Oct-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	1.59	Dry	Dry	Dry	M	M	0.41	0.60	M	M
26-Oct-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	1.66	Dry	Dry	Dry	M	M	0.42	Dry	M	M
2-Nov-20	M	M	M	M	M	M	M	M	Dry	Dry	2.24	Dry	1.76	Dry	Dry	Dry	M	M	0.43	Dry	M	M
9-Nov-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	1.87	Dry	Dry	Dry	M	M	0.47	Dry	M	M
16-Nov-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	1.83	Dry	Dry	Dry	M	M	0.47	Dry	M	M
8-Dec-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	M	M	0.47	Dry	M	M

Table 1G: Groundwater Level Measurements (m btoc)
Mini Piezometers

Date	MP23		MP24		MP25		MP26		MP27		MP28		MP29		MP30		MP31		MP32UP		MP32DOWN		MP33	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
9-Apr-15	M	M	M	M	M	M	M	M	2.03	1.7	Dry	Dry	1.82	1.82	1.82	Dry	1.70	1.71	1.04	Dry	0.72	Dry	M	M
22-May-15	M	M	1.72	Dry	1.91	Dry	M	M	NM	NM	1.85	Dry	1.98	Dry	2.08	Dry	1.86	1.82	1.26	Dry	0.73	Dry	M	M
27-Oct-15	M	M	1.88	Dry	2.09	Dry	M	M	2.03	Dry	1.88	Dry	2.08	Dry	2.33	Dry	2.25	Dry	1.55	Dry	0.74	Dry	M	M
30-Oct-15	M	M	NM	NM	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
20-Jan-16	M	M	NM	NM	NM	NM	M	M	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	1.43	Frozen	0.76	Frozen	M	M
25-Jan-16	M	M	1.26	Dry	1.9	Dry	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
7-Jun-16	M	M	1.75	Dry	1.93	Dry	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
10-Jun-16	M	M	NM	NM	NM	NM	M	M	1.85	Dry	1.8	Dry	1.8	1.81	1.85	1.89	1.71	1.69	1.09	0.97	0.575	0.59	M	M
28-Apr-17	M	M	1.68	Dry	1.88	1.87	M	M	1.51	1.52	1.42	1.41	1.505	1.51	1.68	1.65	1.58	1.56	0.76	0.72	0.295	0.275	M	M
29-May-18	M	M	NM	NM	Blocked	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
31-May-18	M	M	NM	NM	NM	NM	M	M	NM	NM	1.42	1.48	1.58	1.58	1.63	1.64	3.17	1.48	0.86	0.77	0.51	0.38	M	M
28-Nov-18	M	M	NM	NM	Blocked	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
29-Nov-18	M	M	NM	NM	1.87	Dry	M	M	NM	NM	Frozen	Frozen	1.88	Dry	1.93	1.87	1.77	1.76	1.12	Dry	Broken	Broken	M	M
20-Aug-19	M	M	NM	NM	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Broken	Broken	M	M
21-Aug-19	M	M	NM	NM	Blocked	Dry	M	M	NM	NM	1.55	1.58	1.7	1.7	1.75	1.76	3.22	1.51	0.97	0.8	Broken	Broken	M	M
12-Feb-20	M	M	M	M	1.85	Dry	M	M	M	M	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	M	M	Broken	Broken	M	M
24-Apr-20	M	M	M	M	M	M	M	M	1.45	1.45	Unsafe	Unsafe	M	M	1.46	1.46	M	M	M	M	Broken	Broken	M	M
21-May-20	M	M	M	M	M	M	M	M	NM	NM	NM	NM	M	M	NM	NM	M	M	M	M	Broken	Broken	M	M
29-Jul-20	M	M	M	M	M	M	M	M	1.73	1.74	1.89	Dry	M	M	NM	NM	M	M	M	M	M	M	M	M
21-Sep-20	M	M	M	M	M	M	M	M	Dry	Dry	1.89	1.89	M	M	2.27	Dry	M	M	M	M	M	M	M	M
28-Sep-20	M	M	M	M	M	M	M	M	NM	NM	NM	NM	M	M	NM	NM	M	M	M	M	M	M	M	M
5-Oct-20	M	M	M	M	M	M	M	M	1.90	1.91	2.05	Dry	M	M	Dry	Dry	M	M	M	M	M	M	M	M
13-Oct-20	M	M	M	M	M	M	M	M	1.94	Dry	Dry	Dry	M	M	2.29	Dry	M	M	M	M	M	M	M	M
19-Oct-20	M	M	M	M	M	M	M	M	1.99	Dry	Dry	Dry	M	M	2.31	Dry	M	M	M	M	M	M	M	M
26-Oct-20	M	M	M	M	M	M	M	M	1.98	Dry	Dry	Dry	M	M	2.31	Dry	M	M	M	M	M	M	M	M
2-Nov-20	M	M	M	M	M	M	M	M	1.98	Dry	Dry	Dry	M	M	2.37	Dry	M	M	M	M	M	M	M	M
9-Nov-20	M	M	M	M	M	M	M	M	2.15	Dry	Dry	Dry	M	M	Dry	Dry	M	M	M	M	M	M	M	M
16-Nov-20	M	M	M	M	M	M	M	M	Dry	Dry	2.2	Dry	M	M	2.32	Dry	M	M	M	M	M	M	M	M
8-Dec-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	M	M	2.38	Dry	M	M	M	M	M	M	M	M

Table 1G: Groundwater Level Measurements (m btoc)
Mini Piezometers

Date	MP34		MP35	
	IN	OUT	IN	OUT
9-Apr-15	M	M	M	M
22-May-15	M	M	1.85	Dry
27-Oct-15	M	M	2.02	Dry
30-Oct-15	M	M	NM	NM
20-Jan-16	M	M	Frozen	Frozen
25-Jan-16	M	M	NM	NM
7-Jun-16	M	M	1.57	1.57
10-Jun-16	M	M	NM	NM
28-Apr-17	M	M	1.47	1.44
29-May-18	M	M	NM	NM
31-May-18	M	M	1.52	1.55
28-Nov-18	M	M	1.75	Dry
29-Nov-18	M	M	NM	NM
20-Aug-19	M	M	1.61	1.64
21-Aug-19	M	M	NM	NM
12-Feb-20	M	M	Frozen	Frozen
24-Apr-20	M	M	Unsafe	Unsafe
21-May-20	M	M	NM	NM
29-Jul-20	M	M	NM	NM
21-Sep-20	M	M	M	M
28-Sep-20	M	M	M	M
5-Oct-20	M	M	M	M
13-Oct-20	M	M	M	M
19-Oct-20	M	M	M	M
26-Oct-20	M	M	M	M
2-Nov-20	M	M	M	M
9-Nov-20	M	M	M	M
16-Nov-20	M	M	M	M
8-Dec-20	M	M	M	M

Table 1H: Groundwater Elevations (m amsl)
All Mini Piezometers

Date	MP1		MP2		MP3		MP4		MP5		MP6		MP7		MP8		MP9		MP10		MP11	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TOC Ele.	310.21		310.29		310.06		310.10		309.92		309.71		308.42		308.50		308.27		310.46		310.00	
9-Apr-15	M	M	307.83	NM	M	M	Dry	Dry	308.06	Dry	308.62	308.59	306.62	NM	306.62	NM	306.35	NM	M	M	308.55	NM
22-May-15	M	M	307.94	Dry	M	M	308.16	Dry	308.03	Dry	308.51	Dry	306.50	Dry	306.32	Dry	306.08	Dry	308.36	Dry	308.52	Dry
27-Oct-15	M	M	307.63	Dry	M	M	307.93	Dry	307.62	Dry	308.19	Dry	NM	NM	NM	NM	NM	NM	308.32	Dry	308.24	Dry
30-Oct-15	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	306.17	Dry	306.25	Dry	305.95	Dry	NM	NM	NM	NM
20-Jan-16	M	M	NM	NM	M	M	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	NM	NM	NM	NM	NM	NM	Frozen	Frozen	Frozen	Frozen
25-Jan-16	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	306.36	Dry	306.34	Dry	Frozen	Frozen	NM	NM	NM	NM
7-Jun-16	M	M	307.99	Dry	M	M	NM	NM	NM	NM	NM	NM	306.50	Dry	306.43	Dry	306.15	306.14	NM	NM	NM	NM
10-Jun-16	M	M	NM	NM	M	M	308.34	Dry	308.24	307.26	308.59	308.59	NM	NM	NM	NM	NM	NM	308.56	Dry	308.70	308.70
28-Apr-17	M	M	308.47	308.48	M	M	308.51	308.51	308.44	308.34	M	M	NM	NM	306.74	306.78	306.26	306.40	308.86	308.86	308.85	308.89
29-May-18	M	M	308.01	Dry	M	M	308.02	308.45	307.76	307.77	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
31-May-18	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.83	308.85	308.84	308.83
28-Nov-18	M	M	308.05	Dry	M	M	308.10	Dry	NM	NM	Frozen	308.42	NM	NM	NM	NM	NM	NM	308.40	NM	308.47	308.50
29-Nov-18	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	306.43	Dry	306.49	Dry	306.20	306.18	NM	NM	NM	NM
20-Aug-19	M	M	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	308.71	308.74	308.58	Dry
21-Aug-19	M	M	308.26	Dry	M	M	308.31	Dry	307.67	Dry	NM	NM	306.40	Dry	306.46	Dry	306.17	306.16	NM	NM	NM	NM
12-Feb-20	M	M	308.55	Dry	M	M	Frozen	Frozen	M	M	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
24-Apr-20	M	M	308.55	308.59	M	M	308.46	308.52	M	M	308.84	308.84	306.72	306.70	306.50	Dry	306.24	306.29	309.03	309.01	308.96	309.00
21-May-20	M	M	308.42	Dry	M	M	NM	NM	M	M	NM	NM	306.65	Dry	306.58	Dry	306.24	306.25	NM	NM	NM	NM
29-Jul-20	M	M	307.97	Dry	M	M	308.04	Dry	M	M	308.44	308.44	NM	NM	NM	NM	NM	NM	308.41	Dry	308.57	308.57
21-Sep-20	M	M	Dry	Dry	M	M	Blocked	Dry	M	M	Dry	Dry	NM	NM	NM	NM	NM	NM	Dry	Dry	Dry	Dry
28-Sep-20	M	M	NM	NM	M	M	NM	NM	M	M	NM	NM	Dry	Dry	NM	NM	Dry	Dry	NM	NM	NM	NM
5-Oct-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Dry	Dry	306.29	Dry	NM	NM	Dry	Dry	308.31	Dry	308.37	Dry
13-Oct-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Dry	Dry	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
19-Oct-20	M	M	308.30	Dry	M	M	Dry	Dry	M	M	Dry	Dry	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
26-Oct-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	NM	NM	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
2-Nov-20	M	M	307.79	Dry	M	M	Dry	Dry	M	M	Blocked	308.36	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
9-Nov-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
16-Nov-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
8-Dec-20	M	M	Dry	Dry	M	M	Dry	Dry	M	M	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Notes:
M = missing or not located during monitoring event
NM = not measured during monitoring event

Table 1H: Groundwater Elevations (m amsl)
All Mini Piezometers

Date	MP12		MP13		MP14		MP15		MP16		MP17		MP18		MP19		MP20		MP21		MP22	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TOC Ele.	310.45		309.89		309.76		310.20		308.28		307.34		306.54		306.93		306.35		305.22		309.84	
9-Apr-15	Dry	NM	Dry	NM	308.54	309.76	Dry	Dry	Dry	NM	305.14	NM	305.33	NM	304.88	NM	304.54	NM	304.64	Dry	M	M
22-May-15	308.50	Dry	308.63	308.62	308.51	308.50	Damaged	Damaged	305.76	Dry	305.14	Dry	305.15	Dry	304.88	Dry	304.46	Dry	304.64	Dry	M	M
27-Oct-15	308.39	Dry	NM	NM	NM	NM	NM	NM	305.73	Dry	305.09	Dry	304.64	Dry	304.79	Dry	304.40	Dry	304.66	Dry	M	M
30-Oct-15	NM	NM	Dry	Dry	308.30	Dry	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Dry	M	M
20-Jan-16	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	NM	NM	Blocked	Dry	Dry	Dry	304.51	Dry	304.66	Dry	304.24	Dry	Frozen	NM	M	M
25-Jan-16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
7-Jun-16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
10-Jun-16	308.84	Dry	308.69	Dry	308.56	308.61	Damaged	Damaged	306.77	Dry	305.16	Dry	NM	NM	304.98	305.04	304.55	Dry	304.71	Dry	M	M
28-Apr-17	308.90	308.95	308.78	308.84	308.84	308.84	NM	NM	Blocked	Dry	305.31	Dry	NM	NM	305.05	305.06	304.40	Dry	304.71	304.65	M	M
29-May-18	NM	NM	NM	NM	NM	NM	Damaged	Damaged	Blocked	Dry	305.25	Dry	305.25	Dry	305.00	Dry	NM	NM	NM	NM	M	M
31-May-18	309.28	Dry	NM	NM	NM	NM	Damaged	Damaged	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
28-Nov-18	Dry	Dry	NM	NM	NM	NM	Damaged	Damaged	Dry	Dry	Dry	Dry	305.17	Dry	304.95	305.07	NM	NM	NM	NM	M	M
29-Nov-18	NM	NM	NM	NM	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
20-Aug-19	309.15	Dry	NM	NM	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
21-Aug-19	NM	NM	NM	NM	NM	NM	M	M	Blocked	Dry	305.17	Dry	305.19	Dry	304.88	Dry	NM	NM	NM	NM	M	M
12-Feb-20	Frozen	Frozen	M	M	Frozen	Frozen	M	M	Blocked	Dry	Blocked	Dry	Blocked	Dry	305.08	Dry	M	M	Frozen	304.62	M	M
24-Apr-20	309.03	309.04	M	M	308.17	308.15	M	M	306.50	306.50	305.17	Dry	305.16	Dry	305.02	Dry	Damaged	Damaged	304.67	Dry	M	M
21-May-20	NM	NM	M	M	NM	NM	M	M	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Damaged	Damaged	304.71	Dry	M	M
29-Jul-20	M	M	M	M	M	M	M	M	Dry	Dry	Blocked	Dry	305.04	Dry	304.93	Dry	Damaged	Damaged	304.76	Dry	M	M
21-Sep-20	M	M	M	M	M	M	M	M	NM	NM	NM	NM	NM	NM	NM	NM	M	M	NM	NM	M	M
28-Sep-20	M	M	M	M	M	M	M	M	Dry	Dry	Blocked	Dry	305.01	Dry	305.41	Dry	M	M	304.78	304.62	M	M
5-Oct-20	M	M	M	M	M	M	M	M	Dry	Dry	305.85	Dry	305.18	Dry	304.90	Dry	M	M	304.83	304.63	M	M
13-Oct-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	305.00	Dry	Dry	Dry	M	M	304.82	304.63	M	M
19-Oct-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	304.95	Dry	Dry	Dry	M	M	304.81	304.62	M	M
26-Oct-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	304.88	Dry	Dry	Dry	M	M	304.80	Dry	M	M
2-Nov-20	M	M	M	M	M	M	M	M	Dry	Dry	305.10	Dry	304.78	Dry	Dry	Dry	M	M	304.79	Dry	M	M
9-Nov-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	304.67	Dry	Dry	Dry	M	M	304.75	Dry	M	M
16-Nov-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	304.71	Dry	Dry	Dry	M	M	304.75	Dry	M	M
8-Dec-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	M	M	304.75	Dry	M	M

Table 1H: Groundwater Elevations (m amsl)
All Mini Piezometers

Date	MP23		MP24		MP25		MP26		MP27		MP28		MP29		MP30		MP31		MP32UP		MP32DOWN		MP33	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TOC Ele.	309.43		306.97		306.60		306.42		310.14		310.14		310.09		310.05		310.02		308.93		309.31		310.36	
9-Apr-15	M	M	M	M	M	M	M	M	308.11	308.44	Dry	Dry	308.27	308.27	308.23	Dry	308.32	308.31	307.89	Dry	308.59	Dry	M	M
22-May-15	M	M	305.25	Dry	304.69	Dry	M	M	NM	NM	308.29	Dry	308.11	Dry	307.97	Dry	308.16	308.20	307.67	Dry	308.58	Dry	M	M
27-Oct-15	M	M	305.09	Dry	304.51	Dry	M	M	308.11	Dry	308.26	Dry	308.01	Dry	307.72	Dry	307.77	Dry	307.38	Dry	308.57	Dry	M	M
30-Oct-15	M	M	NM	NM	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
20-Jan-16	M	M	NM	NM	NM	NM	M	M	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	307.50	Frozen	308.55	Frozen	M	M
25-Jan-16	M	M	305.71	Dry	304.70	Dry	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
7-Jun-16	M	M	305.22	Dry	304.67	Dry	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
10-Jun-16	M	M	NM	NM	NM	NM	M	M	308.29	Dry	308.34	Dry	308.29	308.28	308.20	308.16	308.31	308.33	307.84	307.96	308.74	308.72	M	M
28-Apr-17	M	M	305.29	Dry	304.72	304.73	M	M	308.63	308.62	308.72	308.73	308.58	308.58	308.37	308.40	308.44	308.46	308.17	308.21	309.02	309.04	M	M
29-May-18	M	M	NM	NM	Blocked	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
31-May-18	M	M	NM	NM	NM	NM	M	M	NM	NM	308.72	308.66	308.51	308.51	308.42	308.41	306.85	308.54	308.07	308.16	308.80	308.93	M	M
28-Nov-18	M	M	NM	NM	Blocked	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	M	M
29-Nov-18	M	M	NM	NM	304.74	Dry	M	M	NM	NM	Frozen	Frozen	308.21	Dry	308.12	308.18	308.25	308.26	307.81	Dry	Broken	Broken	M	M
20-Aug-19	M	M	NM	NM	NM	NM	M	M	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Broken	Broken	M	M
21-Aug-19	M	M	NM	NM	Blocked	Dry	M	M	NM	NM	308.59	308.56	308.39	308.39	308.30	308.29	306.80	308.51	307.96	308.13	Broken	Broken	M	M
12-Feb-20	M	M	M	M	304.75	Dry	M	M	M	M	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	M	M	Broken	Broken	M	M
24-Apr-20	M	M	M	M	M	M	M	M	308.69	308.69	Unsafe	Unsafe	M	M	308.59	308.59	M	M	M	M	Broken	Broken	M	M
21-May-20	M	M	M	M	M	M	M	M	NM	NM	NM	NM	M	M	NM	NM	M	M	M	M	Broken	Broken	M	M
29-Jul-20	M	M	M	M	M	M	M	M	308.41	308.40	308.25	Dry	M	M	NM	NM	M	M	M	M	M	M	M	M
21-Sep-20	M	M	M	M	M	M	M	M	Dry	Dry	308.25	308.25	M	M	307.78	Dry	M	M	M	M	M	M	M	M
28-Sep-20	M	M	M	M	M	M	M	M	NM	NM	NM	NM	M	M	NM	NM	M	M	M	M	M	M	M	M
5-Oct-20	M	M	M	M	M	M	M	M	308.24	308.23	308.09	Dry	M	M	Dry	Dry	M	M	M	M	M	M	M	M
13-Oct-20	M	M	M	M	M	M	M	M	308.20	Dry	Dry	Dry	M	M	307.76	Dry	M	M	M	M	M	M	M	M
19-Oct-20	M	M	M	M	M	M	M	M	308.15	Dry	Dry	Dry	M	M	307.74	Dry	M	M	M	M	M	M	M	M
26-Oct-20	M	M	M	M	M	M	M	M	308.16	Dry	Dry	Dry	M	M	307.74	Dry	M	M	M	M	M	M	M	M
2-Nov-20	M	M	M	M	M	M	M	M	308.16	Dry	Dry	Dry	M	M	307.68	Dry	M	M	M	M	M	M	M	M
9-Nov-20	M	M	M	M	M	M	M	M	307.99	Dry	Dry	Dry	M	M	Dry	Dry	M	M	M	M	M	M	M	M
16-Nov-20	M	M	M	M	M	M	M	M	Dry	Dry	307.94	Dry	M	M	307.73	Dry	M	M	M	M	M	M	M	M
8-Dec-20	M	M	M	M	M	M	M	M	Dry	Dry	Dry	Dry	M	M	307.67	Dry	M	M	M	M	M	M	M	M

Table 1H: Groundwater Elevations (m amsl)
All Mini Piezometers

Date	MP34		MP35	
	IN	OUT	IN	OUT
TOC Ele.	310.23		310.01	
9-Apr-15	M	M	M	M
22-May-15	M	M	308.16	Dry
27-Oct-15	M	M	307.99	Dry
30-Oct-15	M	M	NM	NM
20-Jan-16	M	M	Frozen	Frozen
25-Jan-16	M	M	NM	NM
7-Jun-16	M	M	308.44	308.44
10-Jun-16	M	M	NM	NM
28-Apr-17	M	M	308.54	308.57
29-May-18	M	M	NM	NM
31-May-18	M	M	308.49	308.46
28-Nov-18	M	M	308.26	Dry
29-Nov-18	M	M	NM	NM
20-Aug-19	M	M	308.40	308.37
21-Aug-19	M	M	NM	NM
12-Feb-20	M	M	Frozen	Frozen
24-Apr-20	M	M	Unsafe	Unsafe
21-May-20	M	M	NM	NM
29-Jul-20	M	M	NM	NM
21-Sep-20	M	M	M	M
28-Sep-20	M	M	M	M
5-Oct-20	M	M	M	M
13-Oct-20	M	M	M	M
19-Oct-20	M	M	M	M
26-Oct-20	M	M	M	M
2-Nov-20	M	M	M	M
9-Nov-20	M	M	M	M
16-Nov-20	M	M	M	M
8-Dec-20	M	M	M	M

Table 2: Hydraulic Conductivity (m/sec) Summary

In-Situ Hydraulic Conductivity					
Well ID	**Ground Surface Elevation**	**Sand Pack Interval (m bgs/ m amsl)**	**Sediment Description(*)**	**Hydraulic Conductivity (m/sec)**	**Analysis Method**
BH-07-10	310.74	5.0 - 7.0 303.7 - 305.7	Silty Fine Sand/ Sandy Silt Till with some Gravel	1.53×10^{-8}	Hvorslev
BH-09-10	311.16	9.1 - 11.0 300.2 - 302.1	Sandy Silt Till	2.98×10^{-6}	Hvorslev
BH-11-10	307.87	1.7 - 4.9 303.0 - 306.2	Sand, some Gravel, trace Silt/ Silt Till, trace Sand	4.65×10^{-4}	Hvorslev
BH-12-10	313.67	8.5 - 11.3 302.4 - 305.2	Sandy Silt/ Silty Sand	1.31×10^{-6}	Hvorslev
BH-13-10	314.61	8.8 - 11.3 303.3 - 305.8	Silt some Sand/ Sand and Gravel some Silt/ Silt Till with some Sand and Gravel	6.80×10^{-7}	Hvorslev
BH-14-10	311.71	5.3 - 7.9 303.8 - 306.4	Sand, trace Silt and Gravel	2.08×10^{-4}	Hvorslev
BH-15-10	309.74	2.8 - 5.0 304.7 - 306.9	Sand, trace Silt/ Sand and Gravel trace Silt	4.20×10^{-4}	Hvorslev
BH-19-10	310.38	8.8 - 11.1 299.28 - 301.6	Silt Till, some Sand, Clay and Gravel	2.89×10^{-7}	Hvorslev
BH-104-10	314.27	9.7 - 11.9 302.4 - 304.6	Sandy Silt Till some Gravel/ Sand and Gravel/ Sandy Silt till some Gravel	3.69×10^{-6}	Hvorslev
BH-105-10	311.74	3.6 - 6.1 308.1 - 305.6	Silt, some Sand/ Silt, trace Sand and Gravel	3.21×10^{-5}	Hvorslev
BH-110-10	308.95	9.5 - 12.7 296.3 - 299.5	Sand, some Silt/ Silt, trace Sand and Gravel	1.09×10^{-4}	Hvorslev
BH-112-10	311.59	6.2 - 9.6 305.4 - 302.0	Sand with trace Silt/ Silt	1.72×10^{-4}	Hvorslev
BH-113-10	307.49	4.0 - 8.1 299.4 - 303.5	Sand some Gravel trace to some Silt	3.74×10^{-5}	Hvorslev

Notes
1. m amsl = metres above mean sea level
2. m bgs = metres below ground surface
3. Sand pack interval relates to the 50 mm diameter monitoring well
4. (*) Sediment descriptions based on LVM borehole logs

Table 3A: Groundwater Chemistry
Summary
Subject Lands

				Client Sample ID	BH-11-10	BH-13-10	BH-14-10	BH-19-10	BH112-10
				Date Sampled	22-May-2020	22-May-2020	21-May-2020	21-May-2020	22-May-2020
				Time Sampled	11:05	11:25	16:10	12:15	10:25
				ALS Sample ID	L2540847-6	L2540847-7	L2450847-8	L2450847-11	L2450847-13
Parameter	Detection Limit	Units	ODWQS[1]	AO/OG[2]	Water	Water	Water	Water	Water
Physical Tests									
Colour, Apparent	2.0	CU		5	**14.3**	**18.9**	**43.7**	**71.5**	**218**
Conductivity	3.0	umhos/cm			630	663	707	662	831
Hardness (as $CaCO_3$)	0.50	mg/L		80-100	**356**	**354**	**404**	**189**	**486**
pH	0.10	pH units		6.5-8.5	7.66	7.86	7.7	7.9	7.05
Total Dissolved Solids	20	mg/L		500	356(*)	446(*)	404(*)	409(*)	506(*)
Turbidity	0.10	NTU		5	**276**	**>4000**	**41.1**	**>4000**	**65.1**
Anions and Nutrients									
Alkalinity, Total (as $CaCO_3$)	10	mg/L			343	257	351	395	470
Ammonia, Total (N)	0.020	mg/L			<0.010	0.022	0.206	0.709(*)	1.93(*)
Chloride (Cl)	0.50	mg/L		250	5.99	14.5	13.4	10.3	5.38
Fluoride (F)	0.020	mg/L	1.5		0.067	0.087	0.054	0.083	0.044
Nitrate (as N)	0.020	mg/L	10		2.32	2.76	<0.020	0.072	<0.020
Nitrite (as N)	0.010	mg/L	1		<0.010	0.016	<0.010	0.022	<0.010
Orthophosphate - Dissolved (as P)	0.0030	mg/L			<0.0030	<0.0030	<0.0030	<0.0030	0.0058
Phosphorus, Total	0.0030	mg/L			0.244	1.73(*)	0.0102	0.0879	0.128
Sulphate (SO_4)	0.30	mg/L		500	6.61	94.4	16	0.79	7.77
Total Metals									
Aluminum (Al)	0.050	mg/L		0.1	**5.18(*)**	**40.6**	**0.267**	**13.5(*)**	**1.65(*)**
Antimony (Sb)	0.0010	mg/L			<0.0010(*)	<0.0010(*)	<0.00010	<0.0010(*)	<0.0010(*)
Arsenic (As)	0.0010	mg/L	0.01		0.0083(*)	**0.0324(*)**	0.00158	0.0064(*)	0.0108(*)
Barium (Ba)	0.0010	mg/L	1.0		0.147(*)	0.440(*)	0.0545	0.189(*)	0.0967(*)
Beryllium (Be)	0.0010	mg/L			<0.0010(*)	0.0019(*)	<0.00010	<0.0010(*)	<0.0010(*)
Bismuth (Bi)	0.00050	mg/L			<0.00050(*)	<0.00050(*)	<0.00050	<0.00050(*)	<0.00050(*)
Boron (B)	0.10	mg/L			<0.10(*)	<0.10(*)	0.012	<0.10(*)	<0.10(*)
Cadmium (Cd)	0.000010	mg/L	0.005		0.000555(*)	0.00109(*)	0.0000176	0.000182(*)	0.000128(*)
Calcium (Ca)	0.50	mg/L			128(*)	853(*)	111	203(*)	151(*)
Cesium (Cs)	0.00010	mg/L			0.00057(*)	0.00305(*)	0.000034	0.00134(*)	0.00014(*_
Chromium (Cr)	0.0050	mg/L	0.05		0.0053(*)	**0.0590(*)**	<0.00050	0.0200(*)	<0.0050(*)
Cobalt (Co)	0.0010	mg/L			0.0064(*)	0.0330(*)	0.00076	0.0099(*)	0.0021(*)
Copper (Cu)	0.0050	mg/L			0.0642(*)	0.0953(*)	0.00543	0.0312(*)	0.053(*)
Iron (Fe)	0.100	mg/L			12.1(*)	73.9(*)	5.47	23.6(*)	7.61(*)
Lead (Pb)	0.00050	mg/L	0.01		**0.0215(*)**	**0.0769(*)**	0.00185	0.0341(*)	0.0138(*)
Lithium (Li)	0.010	mg/L			0.010(*)	0.076(*)	0.0013	0.030(*)	<0.010(*)
Magnesium (Mg)	0.050	mg/L			42.1(*)	212(*)	28.4	58.7(*)	38.5(*)
Manganese (Mn)	0.0050	mg/L			4.25(*)	3.92(*)	0.888	0.873(*)	0.848(*)
Molybdenum (Mo)	0.00050	mg/L			<0.00050(*)	0.00448(*)	<0.000050	0.00563(*)	<0.00050(*)
Nickel (Ni)	0.0050	mg/L			0.0123(*)	0.0677(*)	0.00110	0.0230(*)	<0.0050(*)
Potassium (K)	0.5	mg/L			1.95(*)	8.36(*)	0.944	4.09(*)	2.19(*)
Rubidium	0.0020	mg/L			0.0075(*)	0.0445(*)	0.00065	0.0187(*)	0.0027(*)
Selenium (Se)	0.00050	mg/L	0.05		<0.00050(*)	0.00053(*)	0.00005	<0.00050(*)	<0.00050(*)
Silicon (Si)	1	mg/L			10.0(*)	59.2(*)	3.69	26.0(*)	6.2(*)
Silver (Ag)	0.00050	mg/L			<0.00050(*)	<0.00050(*)	<0.000050	<0.00050(*)	<0.00050(*)
Sodium (Na)	0.5	mg/L		200	2.95(*)	9.97(*)	7.21	94.6(*)	2.93(*)
Strontium (Sr)	0.010	mg/L			0.131(*)	1.19(*)	0.119	0.321(*)	0.167(*)
Sulfur (S)	5.0	mg/L			<5.0(*)	36.(*)	6.22	<5.0(*)	<5.0(*)
Tellurium (Te)	0.0020	mg/L			<0.0020(*)	<0.0020(*)	<0.00020	<0.0020(*)	<0.0020(*)
Thallium (Tl)	0.00020	mg/L			0.00019(*)	0.00048(*)	0.000012	0.00016(*)	<0.00010(*)
Thorium(Th)	0.0010	mg/L			<0.0010(*)	0.0145(*)	<0.00010	0.0026(*)	<0.0010(*)
Tin (Sn)	0.0010	mg/L			<0.0010(*)	<0.0010(*)	<0.00010	<0.0010(*)	<0.0010(*)
Titanium (Ti)	0.0030	mg/L			0.0785(*)	0.714(*)	0.00762	0.279(*)	0.0350(*)
Tungsten (W)	0.0010	mg/L			<0.0010(*)	<0.0010(*)	<0.00010	<0.0010(*)	<0.0010(*)
Uranium (U)	0.00010	mg/L			0.00039(*)	0.00374(*)	0.000747	0.00092(*)	0.00228(*)
Vanadium (V)	0.0050	mg/L			0.0100(*)	0.0718(*)	0.00137	0.0264(*)	0.0091(*)
Zinc (Zn)	0.030	mg/L		5	0.163(*)	0.486(*)	0.0084	0.118(*)	0.224(*)

Table 3A: Groundwater Chemistry
Summary
Subject Lands

				Client Sample ID	BH-11-10	BH-13-10	BH-14-10	BH-19-10	BH112-10
				Date Sampled	22-May-2020	22-May-2020	21-May-2020	21-May-2020	22-May-2020
				Time Sampled	11:05	11:25	16:10	12:15	10:25
				ALS Sample ID	L2540847-6	L2540847-7	L2450847-8	L2450847-11	L2450847-13
Parameter	Detection Limit	Units	ODWQS[1]	AO/OG[2]	Water	Water	Water	Water	Water
Zirconium (Zr)	0.0020	mg/L			<0.0020(*)	<0.0020(*)	0.00138	0.0020(*)	0.0021(*)
Dissolved Metals									
Aluminum (Al)	0.0050	mg/L		0.1	<0.0050	<0.0050	<0.0050	<0.0050	0.0355
Antimony (Sb)	0.00010	mg/L			<0.00010	0.0001	<0.00010	0.00017	0.0004
Arsenic (As)	0.00010	mg/L	0.01		<0.00010	0.00036	0.00044	0.00088	0.00341
Barium (Ba)	0.00010	mg/L	1		0.032	0.0771	0.0458	0.0756	0.0819
Beryllium (Be)	0.00010	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)	0.000050	mg/L			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)	0.010	mg/L			0.012	0.012	0.013	0.026	0.014
Cadmium (Cd)	0.0000050	mg/L	0.005		<0.0000050	0.0000065	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)	0.050	mg/L			89.5	84.2	116	40.8	137
Chromium (Cr)	0.00050	mg/L	0.05		<0.00050	<0.00050	<0.00050	<0.00050	0.00066
Cobalt (Co)	0.00010	mg/L			<0.00010	<0.00010	0.00051	0.00021	0.00055
Copper (Cu)	0.00020	mg/L			0.00034	0.00037	0.00132	0.00184	0.00144
Iron (Fe)	0.010	mg/L			<0.010	<0.010	<0.010	0.013	0.885
Lead (Pb)	0.000050	mg/L	0.01		<0.000050	<0.000050	<0.000050	0.000127	0.000508
Magnesium (Mg)	0.0050	mg/L			32.2	35.0	27.9	21.1	35
Manganese (Mn)	0.00050	mg/L			<0.00050	0.0104	0.821	0.0182	0.774
Molybdenum (Mo)	0.000050	mg/L			<0.000050	0.00467	<0.000050	0.00716	0.000154
Nickel (Ni)	0.00050	mg/L			<0.00050	<0.00050	0.00065	0.00145	0.00086
Potassium (K)	0.050	mg/L			0.537	1.77	0.819	1.39	1.92
Selenium (Se)	0.000050	mg/L	0.05		<0.000050	0.000267	<0.000050	0.000109	0.000216
Silicon (Si)	0.050	mg/L			3.45	5.43	3.1	5.97	4.18
Silver (Ag)	0.000050	mg/L			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium (Na)	0.050	mg/L		200	2.75	7.7	7.03	88.3	2.88
Strontium (Sr)	0.000010	mg/L			0.0842	0.161	0.112	0.0902	0.138
Thallium (Tl)	0.000010	mg/L			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)	0.00010	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	0.00030	mg/L			<0.00030	<0.00030	<0.00030	<0.00030	0.00094
Tungsten (W)	0.00010	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)	0.000010	mg/L			0.000219	0.00148	0.00077	0.000226	0.00198
Vanadium (V)	0.00050	mg/L			<0.00050	<0.00050	<0.00050	0.00091	0.00195
Zinc (Zn)	0.0010	mg/L		5	<0.0010	0.0016	<0.0010	0.0016	0.0486
Zirconium (Zr)	0.00030	mg/L			<0.00030	<0.00030	0.00059	0.00117	0.00194

Notes:

1. ODWQS = Ontario Drinking Water Quality Standard (2020)
2. AO/OG = Aesthetic Objective / Operational Guideline (2006)

Results that are highlighted in yellow and **bold** indicate measured exceedances against the ODWQS 2020

Results that are highlighted in green and **bold** indicate measured exceedances against the AO/OG, 2006

(*) Detection limit raised

Table 3B: Groundwater Chemistry
Summary
Westwood Village Phase 1

				Client Sample ID	BH-01-10	BH-02-10	BH-04-10	BH-05-10	BH-06-10	BH-16-10	BH-18A-10	BH-23-10
				Date Sampled	21-May-2020	21-May-2020	21-May-2020	21-May-2020	21-May-2020	21-May-2020	21-May-2020	21-May-2020
				Time Sampled	13:10	15:30	10:40	9:15	9:55	11:20	13:55	15:00
				ALS Sample ID	L2450847-1	L2540847-2	L2540847-3	L2540847-4	L2540847-5	L2450847-9	L2450847-10	L2450847-12
Parameter	Detection Limit	Units	ODWQS[1]	AO/OG[2]	Water	Water	Water	Water	Water	Water	Water	Water
Physical Tests												
Colour, Apparent	2.0	CU		5	**59.2**	**64.2**	**10.3**	**45.9**	**10.8(*)**	**29.6**	2.8	**5.8**
Conductivity	3.0	umhos/cm			638	617	646	665	579	634	1040	601
Hardness (as $CaCO_3$)	0.50	mg/L		80-100	**362**	**351**	**363**	**1810**	**322**	**350**	**398**	**339**
pH	0.10	pH units		6.5-8.5	7.45	7.46	7.49	7.69	7.6	7.54	7.63	7.74
Total Dissolved Solids	20	mg/L		500	389(*)	377(*)	392(*)	440(*)	378(*)	385(*)	595(*)	384
Turbidity	0.10	NTU		5	**129**	**534**	**76.4**	**>4000(*)**	**846(*)**	**177**	**335**	**>4000**
Anions and Nutrients												
Alkalinity, Total (as $CaCO_3$)	10	mg/L			342	324	284	511	259	272	290	273
Ammonia, Total (N)	0.020	mg/L			0.528(*)	0.232	0.012	0.016	0.012	0.021	<0.010	0.025
Chloride (Cl)	0.50	mg/L		250	10.7	14.1	12.4	16.5	12.7	14.2	130	15.2
Fluoride (F)	0.020	mg/L	1.5		0.054	0.049	0.054	0.055	0.05	0.059	0.062	0.045
Nitrate (as N)	0.020	mg/L	10		<0.020	<0.020	9.61	**18.3**	**13.0**	**9.66**	**14.6**	**14.7**
Nitrite (as N)	0.010	mg/L	1		<0.010	<0.010	0.067	<0.010	<0.010	0.055	<0.010	<0.010
Orthophosphate - Dissolved (as P)	0.0030	mg/L			<0.0030	<0.0030	0.0089	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Phosphorus, Total	0.0030	mg/L			0.337	0.698	0.122	0.889	1.19(*)	0.0941	0.288	1.86(*)
Sulphate (SO_4)	0.30	mg/L		500	2.32	<0.30	11.7	16.0	7.30	13.8	20.2	3.12
Total Metals												
Aluminum (Al)	0.050	mg/L		0.1	**4.03(*)**	**8.98(*)**	**1.18**	**64.7(*)**	**23.7(*)**	**1.74**	**6.02(*)**	**47.8(*)**
Antimony (Sb)	0.0010	mg/L			<0.0010(*)	<0.0010(*)	0.00032	<0.0010(*)	<0.0010(*)	0.00012	<0.0010(*)	<0.0010(*)
Arsenic (As)	0.0010	mg/L	0.01		**0.0149(*)**	**0.0278(*)**	0.00115	**0.0556(*)**	**0.0199(*)**	0.00155	0.0079(*)	0.0263(*)
Barium (Ba)	0.0010	mg/L	1.0		0.174(*)	0.155(*)	0.0745	1.20(*)	0.266(*)	0.0854	0.137(*)	0.542(*)
Beryllium (Be)	0.0010	mg/L			<0.0010(*)	<0.0010(*)	<0.00010	0.0032(*)	0.0011(*)	<0.00010	<0.0010(*)	0.0024(*)
Bismuth (Bi)	0.00050	mg/L			<0.00050(*)	<0.00050(*)	<0.000050	0.00077(*)	0.00074(*)	0.000066	<0.00050(*)	0.00071(*)
Boron (B)	0.10	mg/L			<0.10(*)	<0.10(*)	0.012	<0.10(*)	<0.10(*)	0.011	<0.10(*)	<0.10(*)
Cadmium (Cd)	0.000010	mg/L	0.005		0.000254(*)	0.000545(*)	0.0000937	0.00458(*)	0.00150(*)	0.0000678	0.000768(*)	0.00301(*)
Calcium (Ca)	0.50	mg/L			144(*)	206(*)	92.4	1680(*)	598(*)	108	157(*)	459(*)
Cesium (Cs)	0.00010	mg/L			0.00043(*)	0.00081(*)	0.000108	0.00373(*)	0.00217(*)	0.000201	0.00056(*)	0.00234(*)
Chromium (Cr)	0.0050	mg/L	0.05		0.0056(*)	0.0151(*)	0.00167	**0.0881(*)**	0.0305(*)	0.00251	0.0082(*)	0.0531(*)
Cobalt (Co)	0.0010	mg/L			0.0046(*)	0.0084(*)	0.00229	0.0743(*)	0.0240(*)	0.00168	0.0084(*)	0.0407(*)
Copper (Cu)	0.0050	mg/L			0.0710(*)	0.142(*)	0.00972	0.247(*)	0.218(*)	0.029	0.110(*)	0.218(*)
Iron (Fe)	0.100	mg/L			10.6(*)	31.6(*)	1.97	115(*)	50.5(*)	6.36	14.9(*)	91.3(*)
Lead (Pb)	0.00050	mg/L	0.01		**0.0238(*)**	**0.0677(*)**	0.00510	**0.250(*)**	**0.0559(*)**	0.00545	0.0513(*)	0.269(*)
Lithium (Li)	0.010	mg/L			<0.010(*)	0.018(*)	0.0027	0.098(*)	0.050(*)	0.0039	0.013(*)	0.099(*)
Magnesium (Mg)	0.050	mg/L			42.5(*)	61.4(*)	28.7	415(*)	117(*)	29.4	46.3(*)	112(*)
Manganese (Mn)	0.0050	mg/L			1.22(*)	1.79(*)	1.05	19.8(*)	3.85(*)	0.896	1.22(*)	3.19(*)
Molybdenum (Mo)	0.00050	mg/L			<0.00050(*)	<0.00050(*)	0.000169	0.00064(*)	<0.00050(*)	0.000134	<0.0050(*)	0.00106(*)
Nickel (Ni)	0.0050	mg/L			0.0092(*)	0.0168(*)	0.00254	0.123(*)	0.0486(*)	0.00335	0.0152(*)	0.0819(*)
Potassium (K)	0.5	mg/L			1.61(*)	2.78(*)	2.86	11.5(*)	4.48(*)	2.4	5.38(*)	5.66(*)
Rubidium	0.0020	mg/L			0.0046(*)	0.0109(*)	0.00183	0.0705(*)	0.0248(*)	0.00323	0.0070(*)	0.0373(*)
Selenium (Se)	0.00050	mg/L	0.05		0.00085(*)	<0.00050(*)	0.000627	0.00076(*)	0.00072(*)	0.000305	<0.000520(*)	0.00054(*)
Silicon (Si)	1	mg/L			9.0(*)	14.5(*)	4.42	81.1(*)	32.7(*)	5.73	11.5(*)	51.0(*)
Silver (Ag)	0.00050	mg/L			<0.00050(*)	<0.00050(*)	<0.000050	<0.000520(*)	<0.00050(*)	<0.000050	<0.00050(*)	<0.00050(*)
Sodium (Na)	0.5	mg/L		200	5.96(*)	8.66(*)	2.55	6.44(*)	4.12(*)	2.79	61.3(*)	11.5(*)
Strontium (Sr)	0.010	mg/L			0.155(*)	0.213(*)	0.0975	1.87(*)	0.658(*)	0.111	0.157(*)	0.580(*)
Sulfur (S)	5.0	mg/L			<5.0(*)	<5.0(*)	4.58	6.9(*)	<5.0(*)	4.95	6.4(*)	<5.0(*)
Tellurium (Te)	0.0020	mg/L			<0.0020(*)	<0.0020(*)	<0.00020	<0.0020(*)	<0.0020(*)	<0.00020	<0.0020(*)	<0.0020(*)
Thallium (Tl)	0.00020	mg/L			<0.00020(*)	<0.00020(*)	0.000043	0.00137(*)	0.00041(*)	0.000026	0.00028(*)	<0.00060(*)
Thorium(Th)	0.0010	mg/L			<0.0010(*)	0.0022	<0.00010	0.0290(*)	0.0062(*)	0.00029	0.0014(*)	0.0171(*)
Tin (Sn)	0.0010	mg/L			<0.0010(*)	<0.0010(*)	0.00011	<0.0010(*)	<0.0010(*)	<0.00010	<0.0010(*)	<0.0010(*)
Titanium (Ti)	0.0030	mg/L			0.0645(*)	0.116(*)	0.0228	1.11(*)	0.274(*)	0.0307	0.117(*)	0.202(*)
Tungsten (W)	0.0010	mg/L			<0.0010(*)	<0.0010(*)	<0.00010	<0.0010(*)	<0.0010(*)	<0.00010	<0.0010(*)	<0.0010(*)
Uranium (U)	0.00010	mg/L			0.00049(*)	0.00059(*)	0.000973	0.00418(*)	0.00133(*)	0.000566	0.00051(*)	0.00185(*)
Vanadium (V)	0.0050	mg/L			0.0089(*)	0.0229(*)	0.00247	0.112(*)	0.0458(*)	0.0045	0.0164(*)	0.0680(*)

Table 3B: Groundwater Chemistry
Summary
Westwood Village Phase 1

				Client Sample ID	BH-01-10	BH-02-10	BH-04-10	BH-05-10	BH-06-10	BH-16-10	BH-18A-10	BH-23-10
				Date Sampled	21-May-2020	21-May-2020	21-May-2020	21-May-2020	21-May-2020	21-May-2020	21-May-2020	21-May-2020
				Time Sampled	13:10	15:30	10:40	9:15	9:55	11:20	13:55	15:00
				ALS Sample ID	L2450847-1	L2540847-2	L2540847-3	L2540847-4	L2540847-5	L2450847-9	L2450847-10	L2450847-12
Parameter	Detection Limit	Units	ODWQS[1]	AO/OG[2]	Water	Water	Water	Water	Water	Water	Water	Water
Zinc (Zn)	0.030	mg/L		5	0.266(*)	0.299(*)	0.0197	1.56(*)	0.598(*)	0.077	0.327(*)	1.43(*)
Zirconium (Zr)	0.0020	mg/L			<0.0020(*)	<0.0020(*)	0.00026	<0.0020(*)	<0.0020(*)	0.00037	<0.0020(*)	<0.0020(*)
Dissolved Metals												
Aluminum (Al)	0.0050	mg/L		0.1	0.0062	<0.0050	<0.0050	<0.050(*)	<0.0050	<0.0050	<0.0050	<0.0050
Antimony (Sb)	0.00010	mg/L			0.00024	<0.00010	0.00019	<0.0010(*)	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	0.00010	mg/L	0.01		0.00214	0.0009	0.00032	<0.0010(*)	0.00010	0.00026	<0.00010	<0.00010
Barium (Ba)	0.00010	mg/L	1		0.146	0.0779	0.0576	0.413(*)	0.0583	0.0533	0.0754	0.102
Beryllium (Be)	0.00010	mg/L			<0.00010	<0.00010	<0.00010	<0.0010(*)	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)	0.000050	mg/L			<0.000050	<0.000050	<0.000050	<0.00050(*)	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)	0.010	mg/L			0.012	0.012	0.012	<0.10(*)	<0.010	0.010	0.013	0.012
Cadmium (Cd)	0.0000050	mg/L	0.005		0.0000184	0.0000095	0.0000331	0.00192(*)	<0.0000050	0.0000163	0.0000165	<0.0000050
Calcium (Ca)	0.050	mg/L			96.8	95.4	99.4	659(*)	90.3	99.2	106	92.3
Chromium (Cr)	0.00050	mg/L	0.05		<0.00050	<0.00050	<0.00050	<0.0050(*)	<0.0050	<0.00050	<0.00050	<0.00050
Cobalt (Co)	0.00010	mg/L			0.00096	0.00052	<0.00010	0.0021(*)	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)	0.00020	mg/L			0.0114	0.00679	0.00129	<0.0020(*)	0.00077	0.00421	0.00096	<0.00020
Iron (Fe)	0.010	mg/L			0.027	0.012	<0.010	<0.10(*)	<0.010	<0.010	<0.010	<0.010
Lead (Pb)	0.000050	mg/L	0.01		0.000134	<0.000050	<0.000050	<0.00050(*)	<0.00050	<0.000050	<0.000050	<0.000050
Magnesium (Mg)	0.0050	mg/L			29.3	27.3	28	38.9(*)	23.4	24.8	32.5	26.3
Manganese (Mn)	0.00050	mg/L			0.802	0.698	0.144	1.31(*)	<0.00050	0.356	<0.00050	<0.00050
Molybdenum (Mo)	0.000050	mg/L			0.000273	0.000336	0.000171	<0.00050(*)	0.000130	0.000115	0.000073	0.000078
Nickel (Ni)	0.00050	mg/L			0.00138	0.00071	0.0014	<0.0050(*)	<0.00050	0.00053	<0.00050	<0.00050
Potassium (K)	0.050	mg/L			0.846	1.18	2.52	2.50(*)	0.911	1.68	4.31	0.836
Selenium (Se)	0.000050	mg/L	0.05		0.000352	0.000073	0.000665	0.00060(*)	0.000644	0.000282	0.000299	0.000538
Silicon (Si)	0.050	mg/L			3.8	3.2	3.03	5.38(*)	3.36	3.17	3.48	4.39
Silver (Ag)	0.000050	mg/L			<0.000050	<0.000050	<0.000050	<0.00050(*)	<0.000050	<0.000050	<0.000050	<0.000050
Sodium (Na)	0.050	mg/L		200	5.44	8.05	2.53	3.96(*)	3.41	2.62	59.8	2.18
Strontium (Sr)	0.000010	mg/L			0.0928	0.106	0.093	0.814(*)	0.0927	0.0946	0.109	0.117
Thallium (Tl)	0.000010	mg/L			0.000026	<0.000010	0.000019	<0.00010(*)	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)	0.00010	mg/L			<0.00010	<0.00010	0.00015	<0.0010(*)	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	0.00030	mg/L			<0.00030	<0.00030	<0.00030	<0.0030(*)	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)	0.00010	mg/L			<0.00010	<0.00010	<0.00010	<0.0010(*)	<0.00010	<0.00030	<0.00010	<0.00010
Uranium (U)	0.000010	mg/L			0.00023	0.00016	0.000986	0.00096(*)	0.000246	0.000473	0.000284	0.000224
Vanadium (V)	0.00050	mg/L			0.00052	<0.00050	<0.00050	<0.0050(*)	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)	0.0010	mg/L		5	0.124	0.0092	0.0089	0.066(*)	<0.0010	0.0028	0.0019	<0.0010
Zirconium (Zr)	0.00030	mg/L			0.00089	0.00085	<0.00030	<0.0020(*)	<0.00030	<0.00030	<0.00030	<0.00030

Notes:

1. ODWQS = Ontario Drinking Water Quality Standard (2020)
2. AO/OG = Aesthetic Objective / Operational Guideline (2006)

Results that are highlighted in yellow and **bold** indicate measured exceedances against the ODWQS 2020

Results that are highlighted in green and **bold** indicate measured exceedances against the AO/OG, 2006

(*) Detection limit was raised

Table 3C: Groundwater Quality
Summary (LVM 2013)
Subject Lands and Westwood Village Phase 1

					Client Sample ID	BH-01-10	BH-01-10	BH-02-10	BH-04-10	BH-06-10	BH-10-10	BH-11-10	BH-11-10	BH-13-10	BH-14-10	BH-16-10	BH-18A-10	BH-19-10	BH-112-10
					Date Sampled	24-Feb-2010	23-Jul-2013	24-Feb-2010	24-Feb-2010	24-Feb-2010	24-Feb-2010	24-Feb-2010	23-Jul-2013	24-Feb-2010	24-Feb-2010	23-Jul-2013	23-Jul-2013	23-Jul-2013	23-Jul-2013
					Time Sampled	9:30	10:00	9:00	10:00	14:30	13:30	13:00	11:30	14:00	10:30	13:00	9:30	14:30	13:30
					ALS Sample ID	L864494-2	L1336559-5	L864494-1	L864494-3	L864494-8	L864494-6	L864494-5	L1336559-2	L864494-7	L864494-4	L1336559-4	L1336559-1	L1336559-6	L1336559-3
Parameter	Detection Limit	Units	ODWQS[1]	AO[2]/OG[3]		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Anion Scan																			
Chloride (Cl)	2.0	mg/L		250		19.7	20.9	65.1	8.8	16.4	21.1	5.5	4.6	21	7.8	17.9	152	10.5	6.8
Bromide (Br)	0.10	mg/L				<0.10		0.14	<0.10	<0.10	<0.10	<0.10		<0.10	<0.10				
Fluoride (F)	0.10	mg/L	1.5			<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.17	<0.10
Nitrite (as N)	0.10	mg/L	1			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate (as N)	0.10	mg/L	10			<0.10	<0.10	<0.10	3.54	**16**	0.13	1.21	1.35	**11.5**	<0.10	**16.4**	7.15	<0.10	<0.10
Sulfate (SO_4)	2.0	mg/L		500		6.4	15.5	14.4	6.6	22.4	71.1	12.6	19.8	80	2.4	32	15.1	12.9	138
Silica	2.1	mg/L				8.6		10.8	7.2	9.4	14.1	10.2		13.2	6.8				
Conductivity	0.40	umhos/cm				662	667	937	573	719	590	667	491	729	680	728	1160	746	1350
Detailed Ion Balance Calculation																			
Ion Balance		%				51.2		91.2	33.7	46.2	22.4	29.9		107	77.5				
Cation-Anion Balance		%				-32.2		-4.6	-49.5	-36.8	-63.4	-54.0		3.2	-12.7				
Computed Conductivity		uS/cm				856		903	906	984	1350	1170		724	711				
Conductivity % Difference		%				25.5		-3.7	45	31.2	78.5	54.4		-0.7	4.5				
TDS (Calculated)		mg/L				655		595	756	786	1220	1020		459	498				
Anion Sum		me/L				14.4		11.3	17.6	16.9	30	24.5		7.66	9.84				
Cation Sum		me/L				7.37		10.3	5.96	7.8	6.71	7.31		8.17	7.63				
Saturation pH		pH Units				6.58		6.7	6.58	6.54	6.45	6.39		7.06	6.65				
Langelier Index		no units				1.1		1.3	1.3	1.5	1.7	1.5		1	1.1				
Hardness (as $CaCO_3$)		mg/L		80-100		**350**	**380**	**451**	**289**	**367**	**314**	**360**	**326**	**388**	**377**	**430**	**456**	**238**	**827**
E. Coli	0	CFU/100mL	0			0		0	0	0	0	0		0	0				
Total Coliform Background	0	CFU/100mL				>200		>200	>200	>200	>200	6		>200	>200				
Redox Potential	-1000	mV				335		315	340	320	335	355		330	350				
Sodium Adsorption Ratio	0.030	no units				0.17		0.55	0.06	0.22	0.21	0.06		0.18	0.04				
Total Coliforms	0	CFU/100mL	0			0		0	51	2	4	0		14	105				
Total Dissolved Solids	20	mg/L		500		412	410	**544**	342	426	370	384	278	460	408	438	716	466	928
Turbidity	0.10	NTU		5		**56**	**47**	**9.7**	**20**	**5.90**	**17.5**	**9.6**	**9.5**	4.2	**15**	**22**	**8.15**	**40**	**18.8**
pH	0.10	pH units		6.5 -8.5		7.72	7.83	7.97	7.89	8.04	8.12	7.91	7.94	8.08	7.75	7.84	7.86	8.13	7.43
Individual Analytes																			
Alkalinity, Total (as $CaCO_3$)	5.0	mg/L		30-500		**831**	315	**553**	**1030**	**893**	**1680**	**1450**	262	276	**581**	290	323	399	**658**
Ammonia, Total (as N)	0.020	mg/L				0.722	0.530	0.302	0.065	0.022	0.128	0.069	<0.050	<0.020	0.117	0.282	<0.050	0.191	1.47
Bicarbonate (HCO_3)	5.0	mg/L				1010		670	1240	1080	2030	1760		332	705				
Carbonate (CO_3)	5.0	mg/L				<5.0		<5.0	<5.0	<5.0	6.0	<5.0		<5.0	<5.0				
Colour, Apparent	0.4	CU		5		**18300(**)**	**114**	**4930(**)**	**44500(**)**	**17500(**)**	**41700(**)**	**49000(**)**	**50.3**	**221(**)**	**7320(**)**	**88.6**	**90.9**	**134**	**143**
Dissolved Metals																			
Aluminum (Al)-Dissolved	0.010	mg/L		0.1		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013
Antimony (Sb)-Dissolved	0.0050	mg/L	0.006			<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Arsenic (As)-Dissolved	0.0010	mg/L	0.01			0.0112	0.0075	0.0023	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.003	0.0056
Barium (Ba)-Dissolved	0.010	mg/L	1			0.108	0.165	0.115	0.056	0.073	0.127	0.027	0.023	0.099	0.046	0.062	0.087	0.107	0.172
Beryllium (Be)-Dissolved	0.0010	mg/L				<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bismuth (Bi)-Dissolved	0.0010	mg/L				<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)-Dissolved	0.050	mg/L	5			<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cadmium (Cd)-Dissolved	0.00010	mg/L	0.005			<0.00010	<0.000090	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090
Calcium (Ca)-Dissolved	0.50	mg/L				96.0	101.0	112.0	79.3	103.0	73.2	93.2	82.1	94.2	115	117	116	61.5	225
Chromium (Cr)-Dissolved	0.0010	mg/L	0.05			0.0019	<0.00050	0.0024	0.0013	0.0017	0.0014	0.0027	<0.00050	0.0014	0.0018	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	0.00050	mg/L				0.00205	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	0.00077
Copper (Cu)-Dissolved	0.0010	mg/L		1		0.0083	<0.0010	0.0024	0.0023	0.0016	<0.0010	<0.0010	<0.0010	0.0017	0.0068	0.0037	0.0014	<0.0010	<0.0010
Iron (Fe)-Dissolved	0.050	mg/L		0.3		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.080
Lead (Pb)-Dissolved	0.001	mg/L	0.01			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	0.50	mg/L				26.8	30.7	41.7	22.2	26.7	31.8	30.9	29.5	37	21.9	33.1	40.6	20.4	64.6
Manganese (Mn)-Dissolved	0.0010	mg/L		0.05		**0.631**	**0.804**	**0.248**	**0.0675**	0.0010	**0.158**	<0.0010	**0.0812**	**0.2320**	**0.671**	**0.715**	<0.0010	**0.346**	**0.687**
Molybdenum (Mo)-Dissolved	0.0010	mg/L				0.0020	<0.0010	0.0056	<0.0010	0.0034	0.0085	<0.0010	<0.0010	0.0066	<0.0010	<0.0010	<0.0010	0.021	0.0015
Nickel (Ni)-Dissolved	0.0020	mg/L				0.0049	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Phosphorus (P)-Dissolved	0.050	mg/L				<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved	1.0	mg/L				<1.0	1.1	2.8	2.8	1.7	2.5	<1.0	<1.0	2.5	<1.0	3.2	4.7	2	7.2
Selenium (Se)-Dissolved	0.0050	mg/L	0.05			<0.0050	<0.00040	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00040	<0.0050	<0.0050	0.00055	<0.00040	<0.00040	0.00068
Silicon (Si)-Dissolved	1.0	mg/L				4.0	4.1	5.0	3.4	4.4	6.6	4.8	3.1	6.2	3.2	3.3	4.1	7.4	3.3
Silver (Ag)-Dissolved	0.00010	mg/L				<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)-Dissolved	5.0	mg/L	20	200		7.36	10.9	**27.0**	2.18	9.55	8.43	2.62	2.64	8.20	1.90	4.26	73.4	99.7	4.3
Strontium (Sr)-Dissolved	0.0010	mg/L				0.095	0.038	0.190	0.0736	0.1320	0.141	0.0862	0.0760	0.1660	0.100	0.114	0.11	0.127	0.289
Thallium (Tl)-Dissolved	0.00030	mg/L				<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tin (Sn)-Dissolved	0.0010	mg/L				<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)-Dissolved	0.0020	mg/L				<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Tungsten (W)-Dissolved	0.010	mg/L				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved	0.0050	mg/L	0.02			<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Vanadium (V)-Dissolved	0.0010	mg/L				0.0045	0.001	0.0036	0.29	0.0031	0.0032	0.0039	<0.0010	0.0028	0.0044	<0.0010	<0.0010	<0.0010	0.0011
Zinc (Zn)-Dissolved	0.0030	mg/L		5		0.0815	0.0276	0.0146	<0.0030	0.123	0.0134	<0.0030	0.0205	0.661	0.0079	0.0317	0.005	0.0038	0.0423
Zirconium (Zr)-Dissolved	0.0040	mg/L				<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Orthophosphate (PO_4-p)	0.0010	mg/L				<0.0010	0.0045	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0038	<0.0010	<0.0010	0.0033	0.0035	0.0038	0.0033

Notes:

1. ODWQS = Ontario Drinking Water Quality Standards (MECP, 2020)
2. AO = Aesthetic Objective (Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines) (MOE, 2006)
3. OG = Operational Guidelines (Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines) (MOE, 2006)

Results that are highlighted in yellow and **bold** indicate measured exceedances against the ODWQS 2020

Results that are highlighted in green and **bold** indicate measured exceedances against the Aesthetic Objectives and Operational Guidelines (2006)

Results that are highlighted in purple and **bold** indicated the detection limit was above the guideline limit

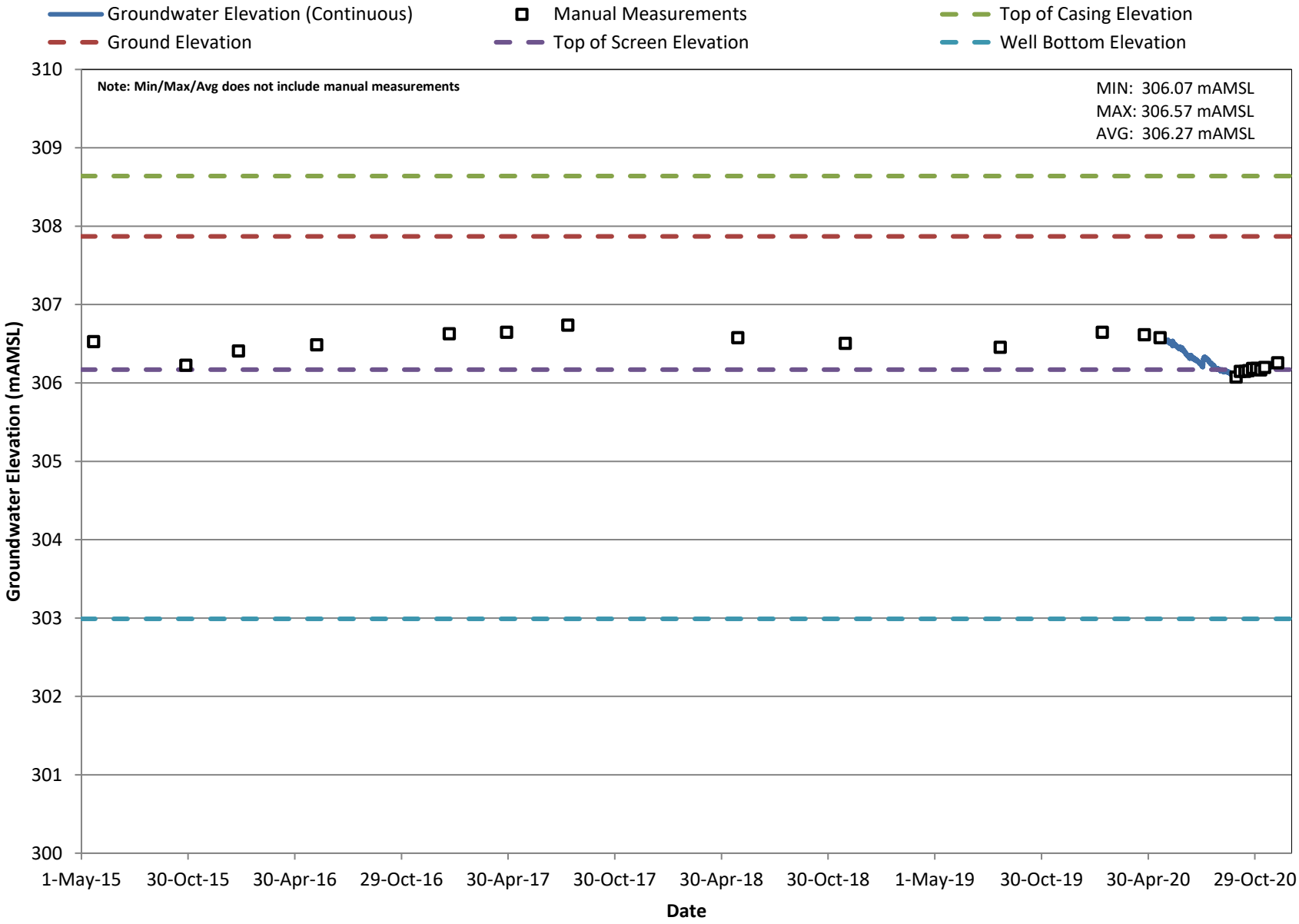
(*) Detection limit was raised

(**) Parameter exceeded recommended holding time prior to analysis

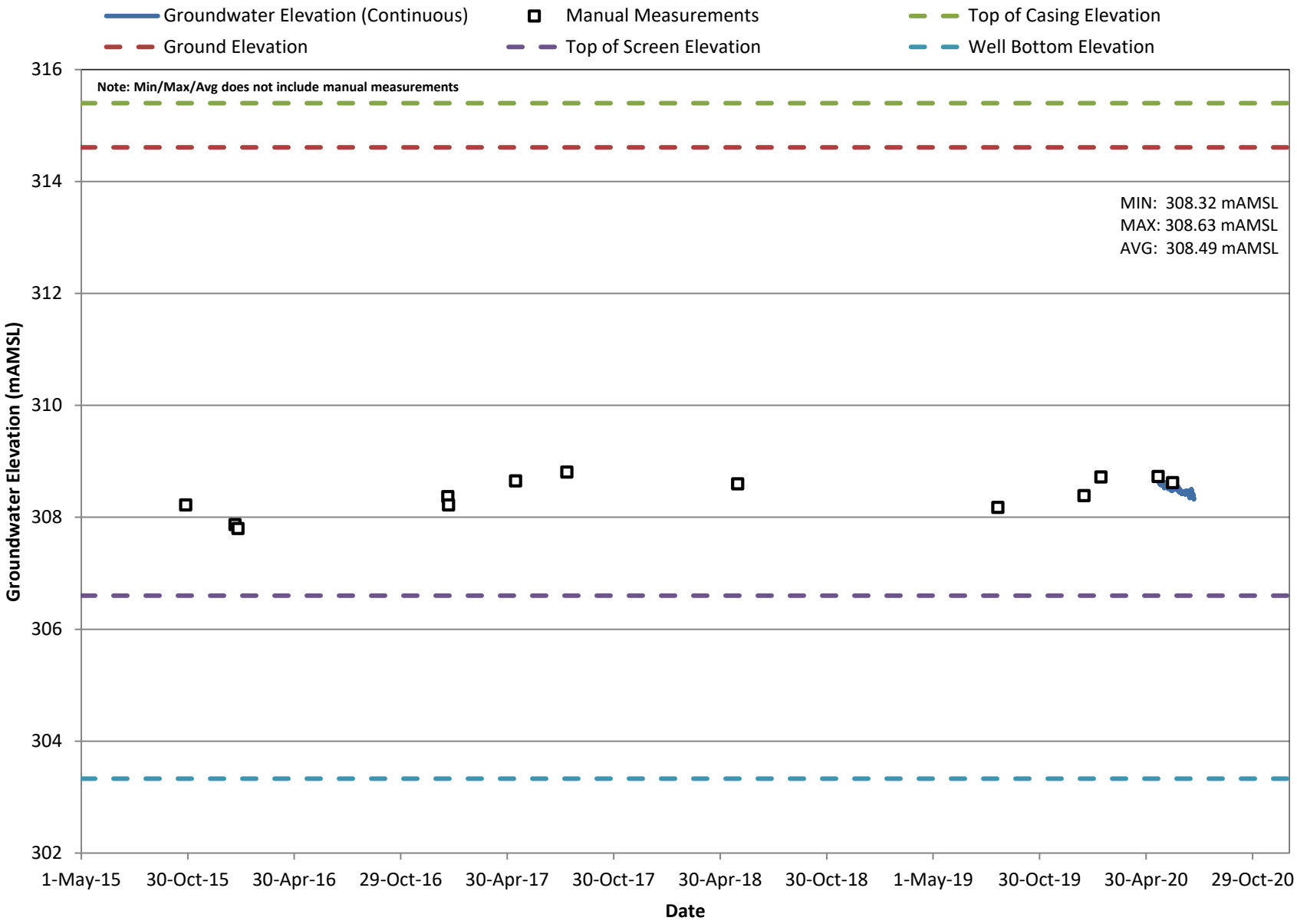
Appendix F

Hydrographs

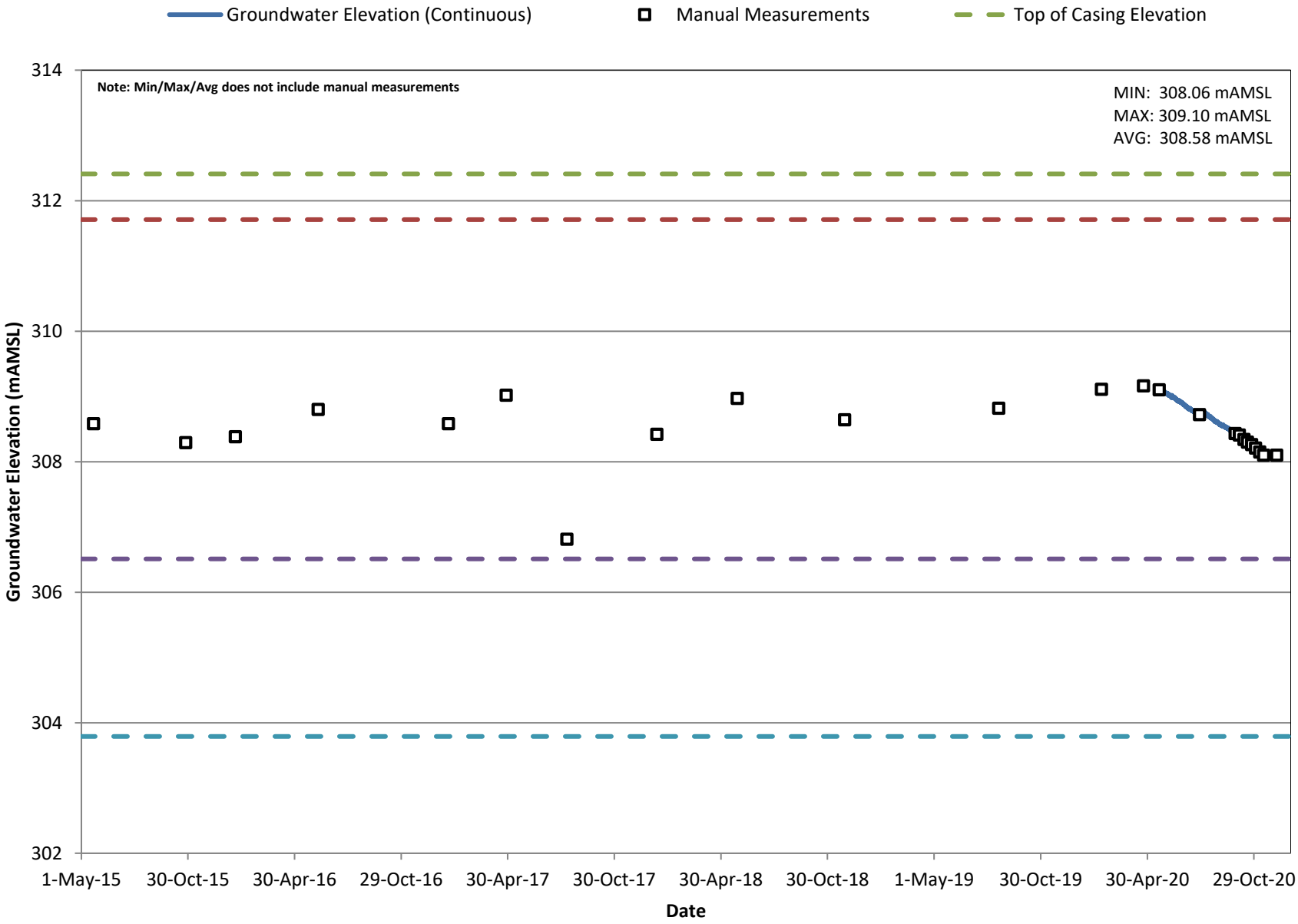
Hydrograph 1: Groundwater Elevations (mAMSL) - BH11-10



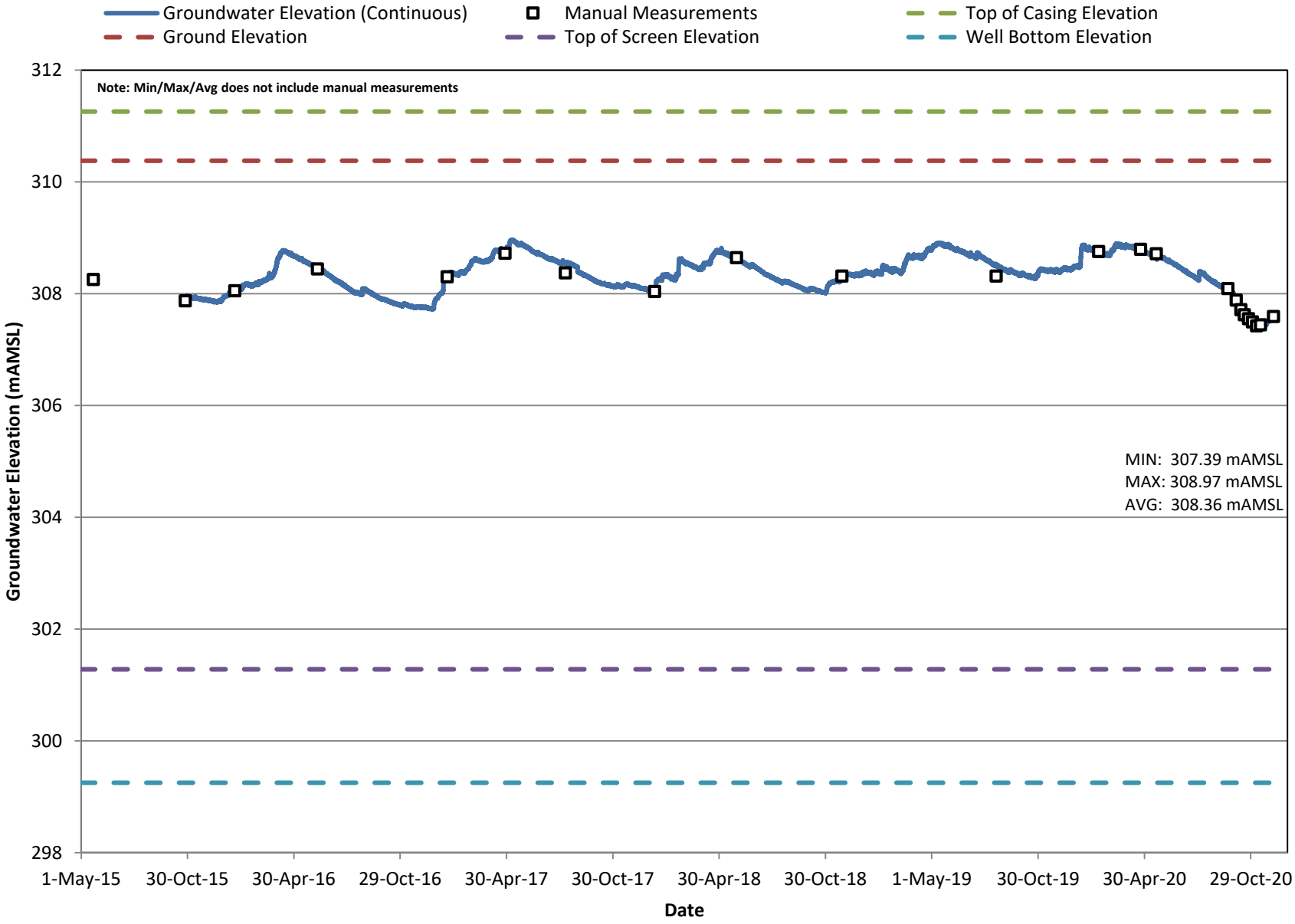
Hydrograph 2: Groundwater Elevations (mAMSL) - BH13-10



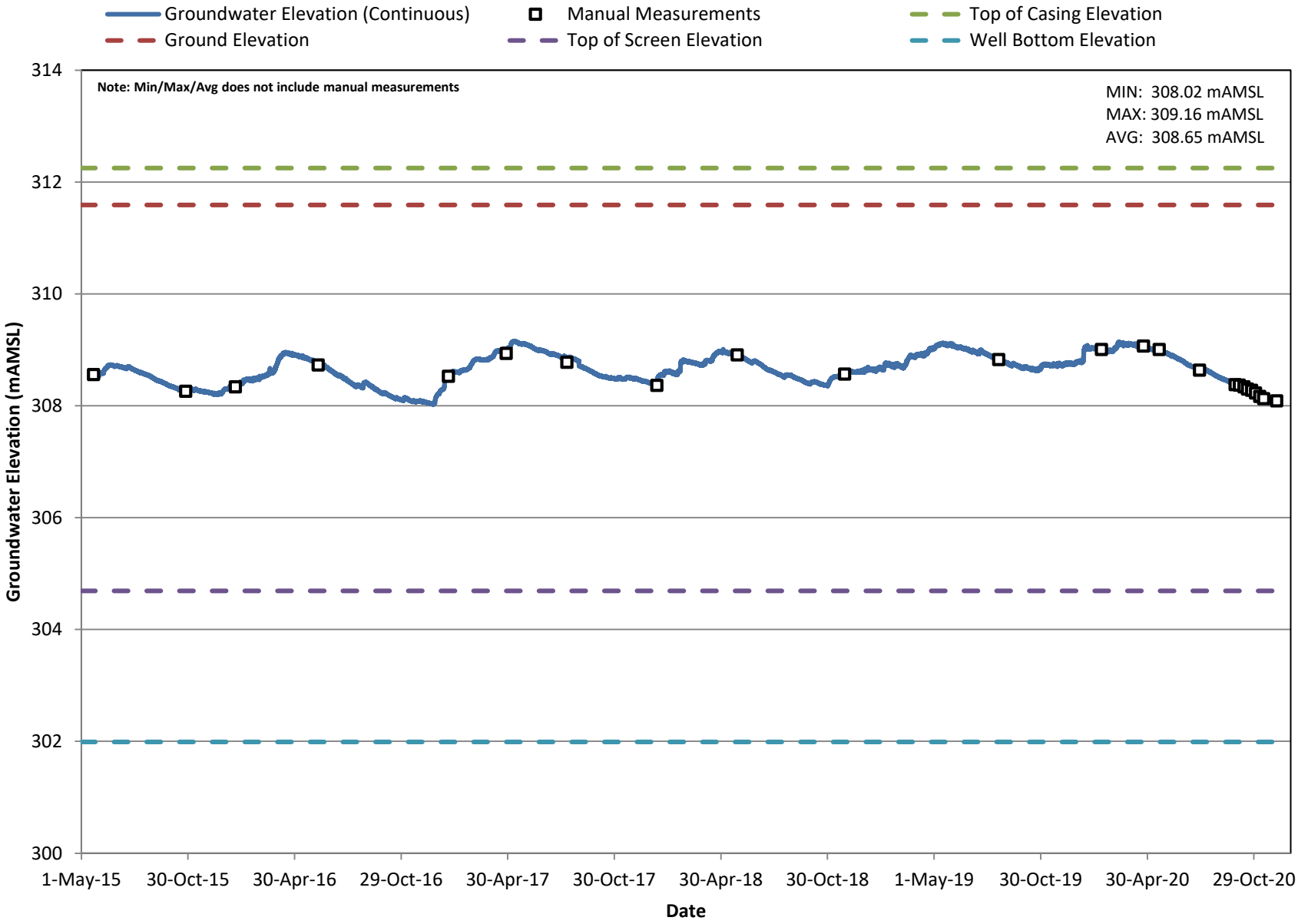
Hydrograph 3: Groundwater Elevations (mAMSL) - BH14-10



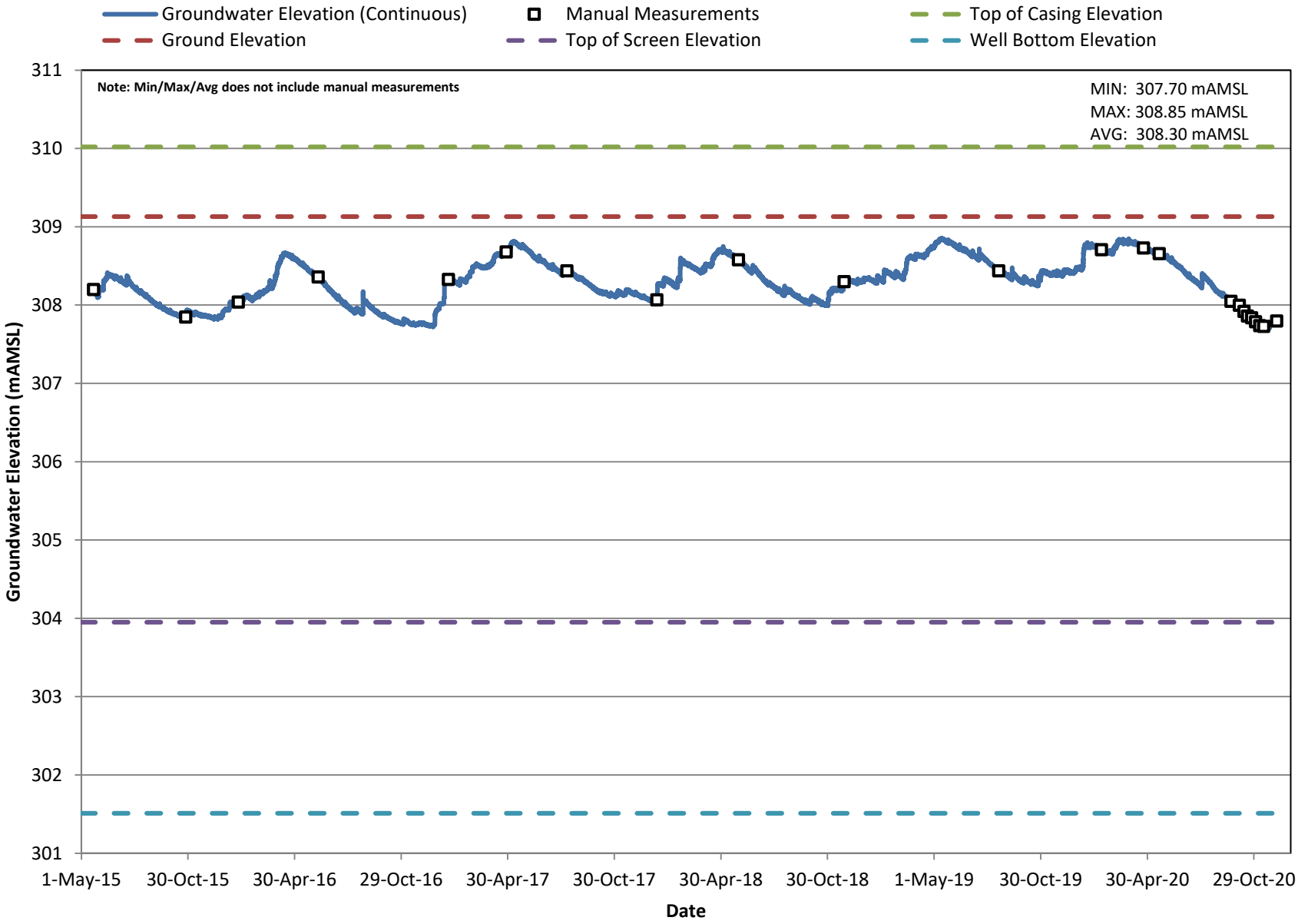
Hydrograph 4: Groundwater Elevations (mAMSL) - BH19-10



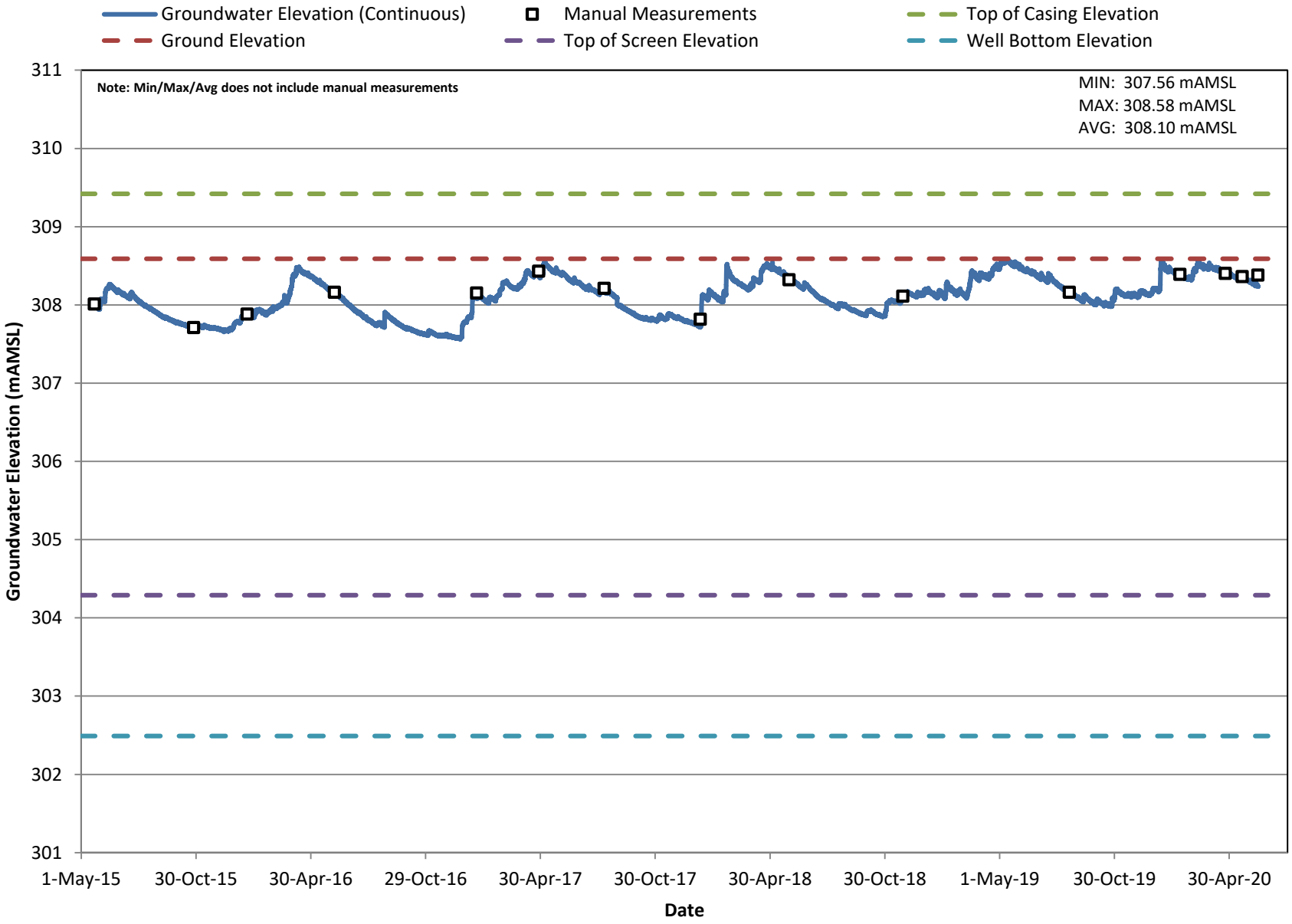
Hydrograph 5: Groundwater Elevations (mAMSL) - BH112-10



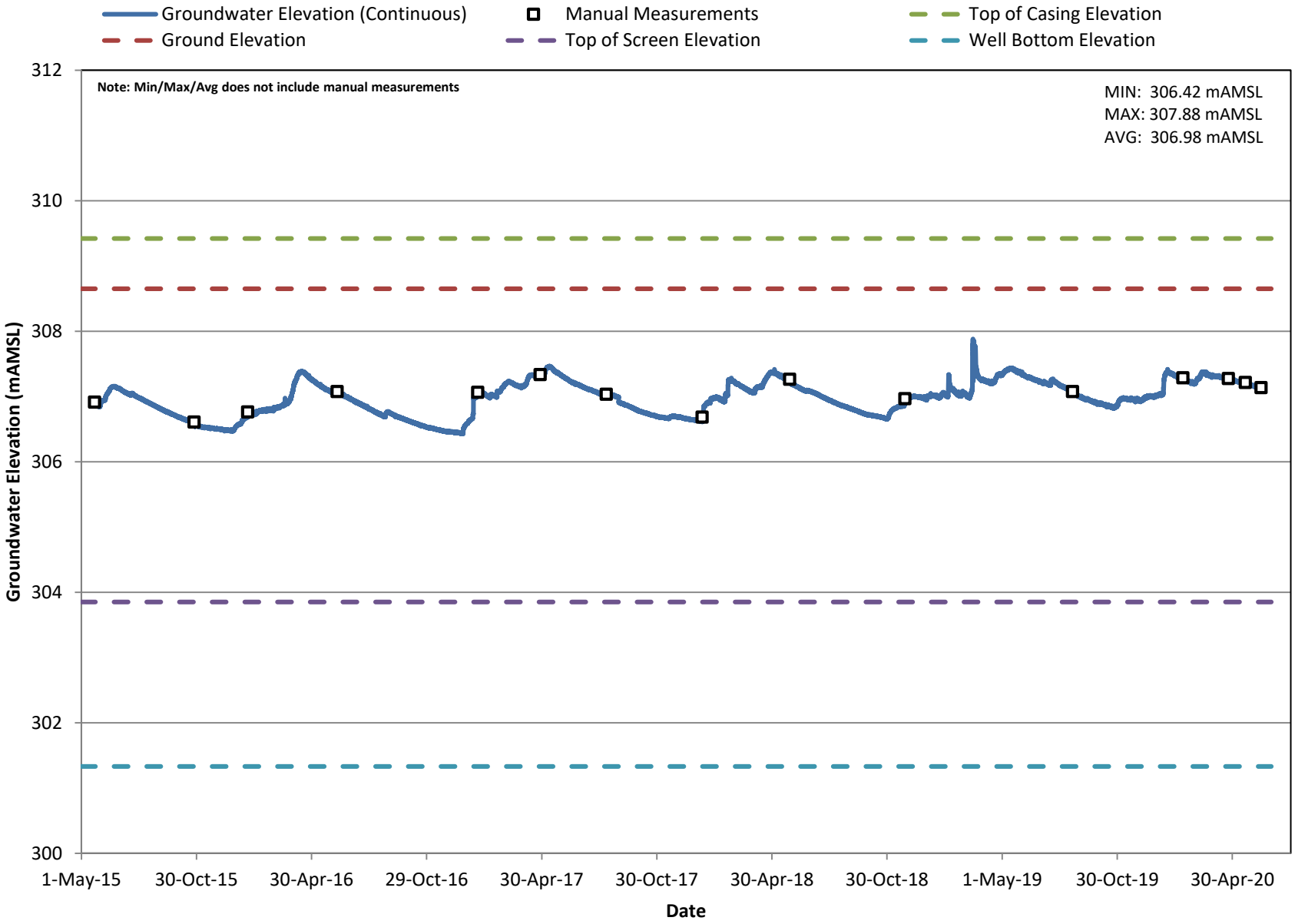
Hydrograph 6: Groundwater Elevations (mAMSL) - BH01-10



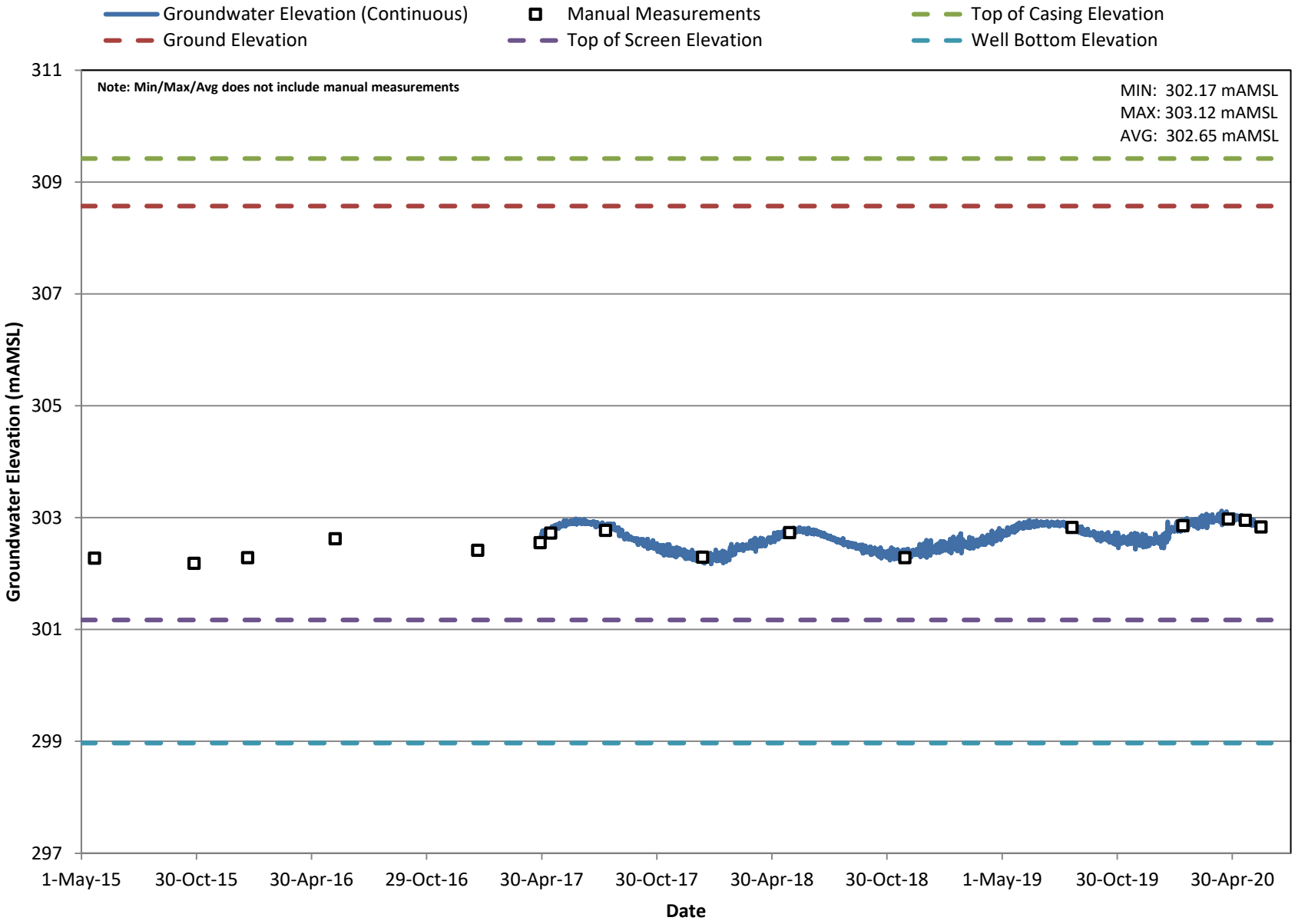
Hydrograph 7: Groundwater Elevations (mAMSL) - BH02-10



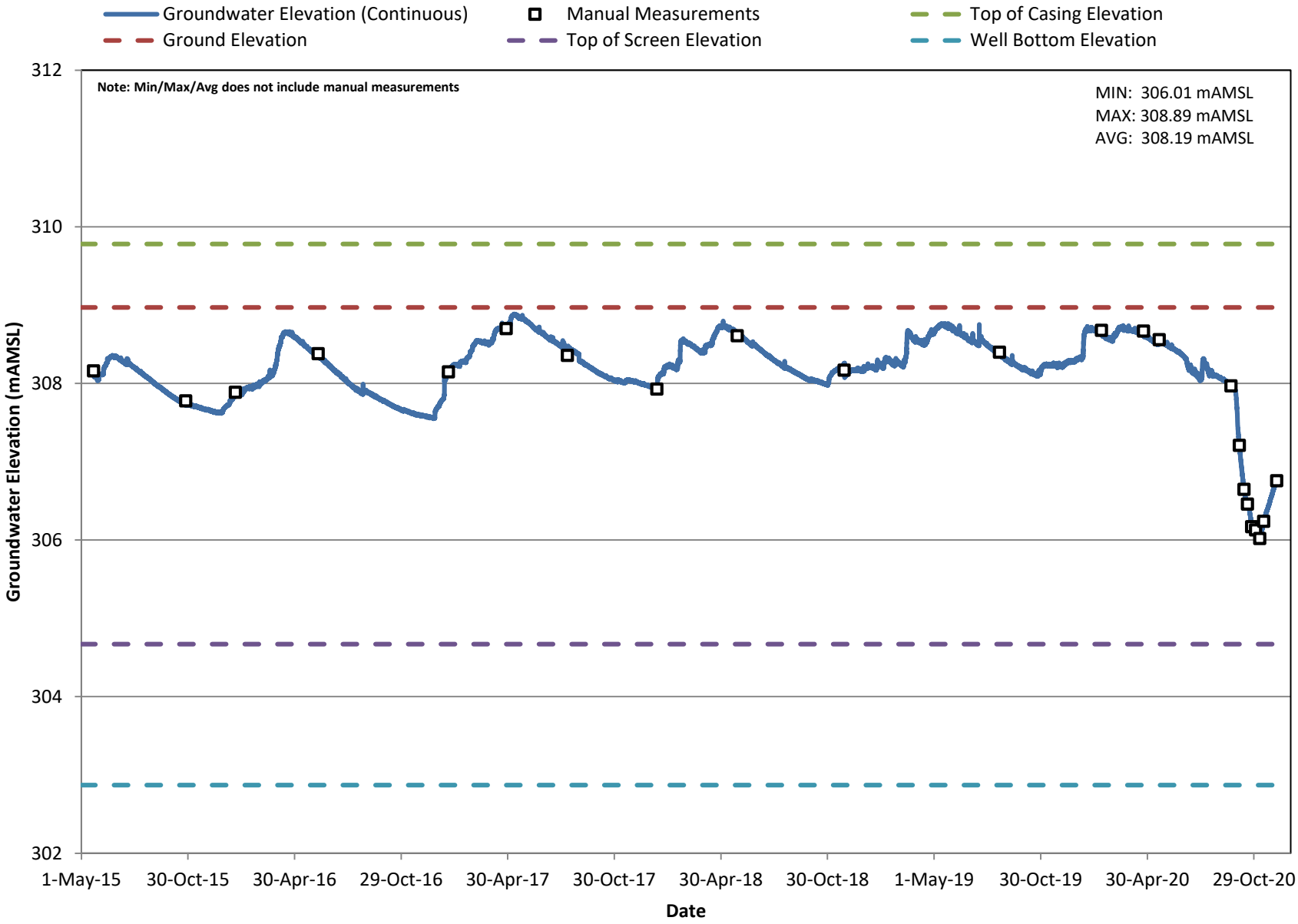
Hydrograph 8: Groundwater Elevations (mAMSL) - BH04-10



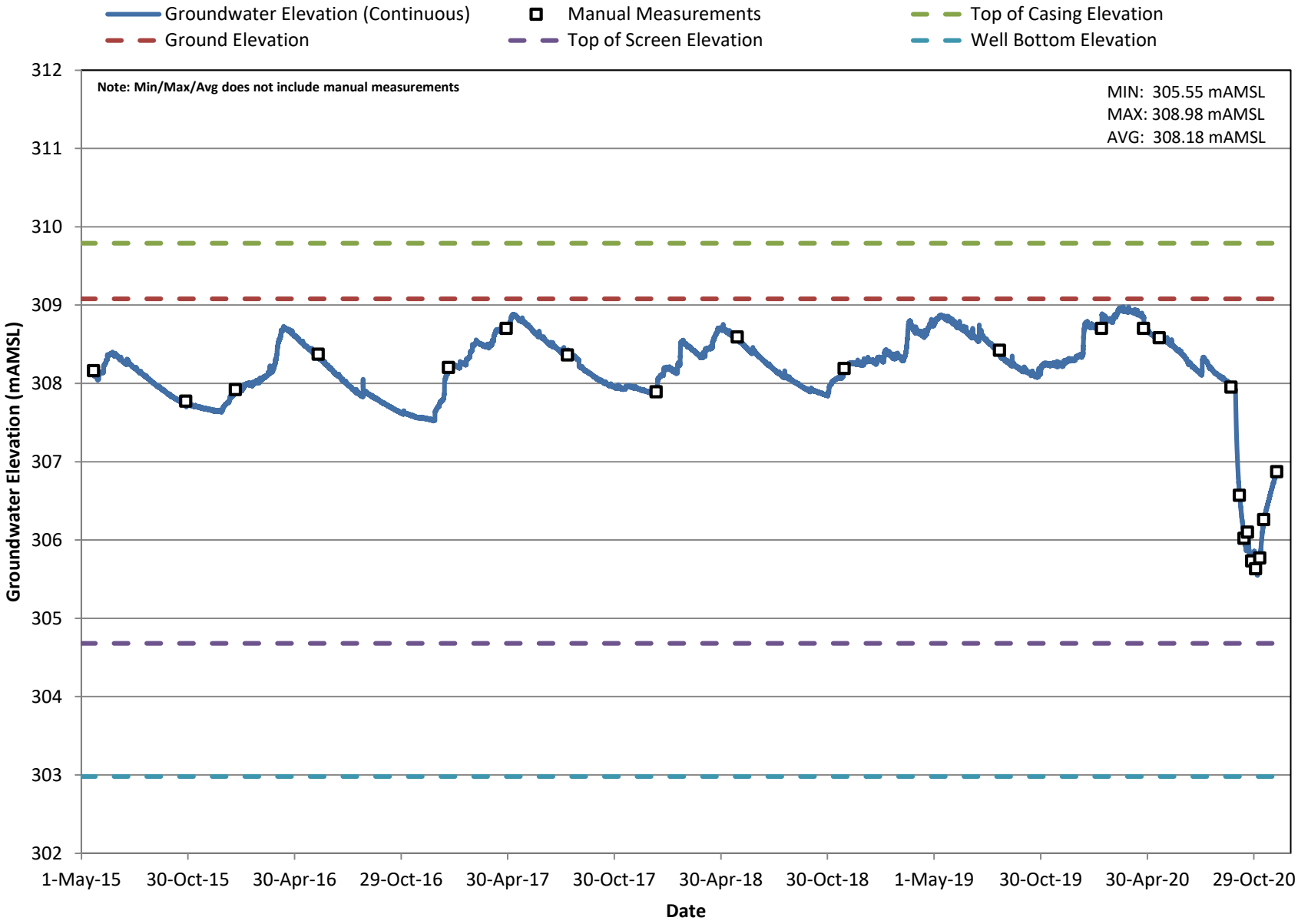
Hydrograph 9: Groundwater Elevations (mAMSL) - BH05-10



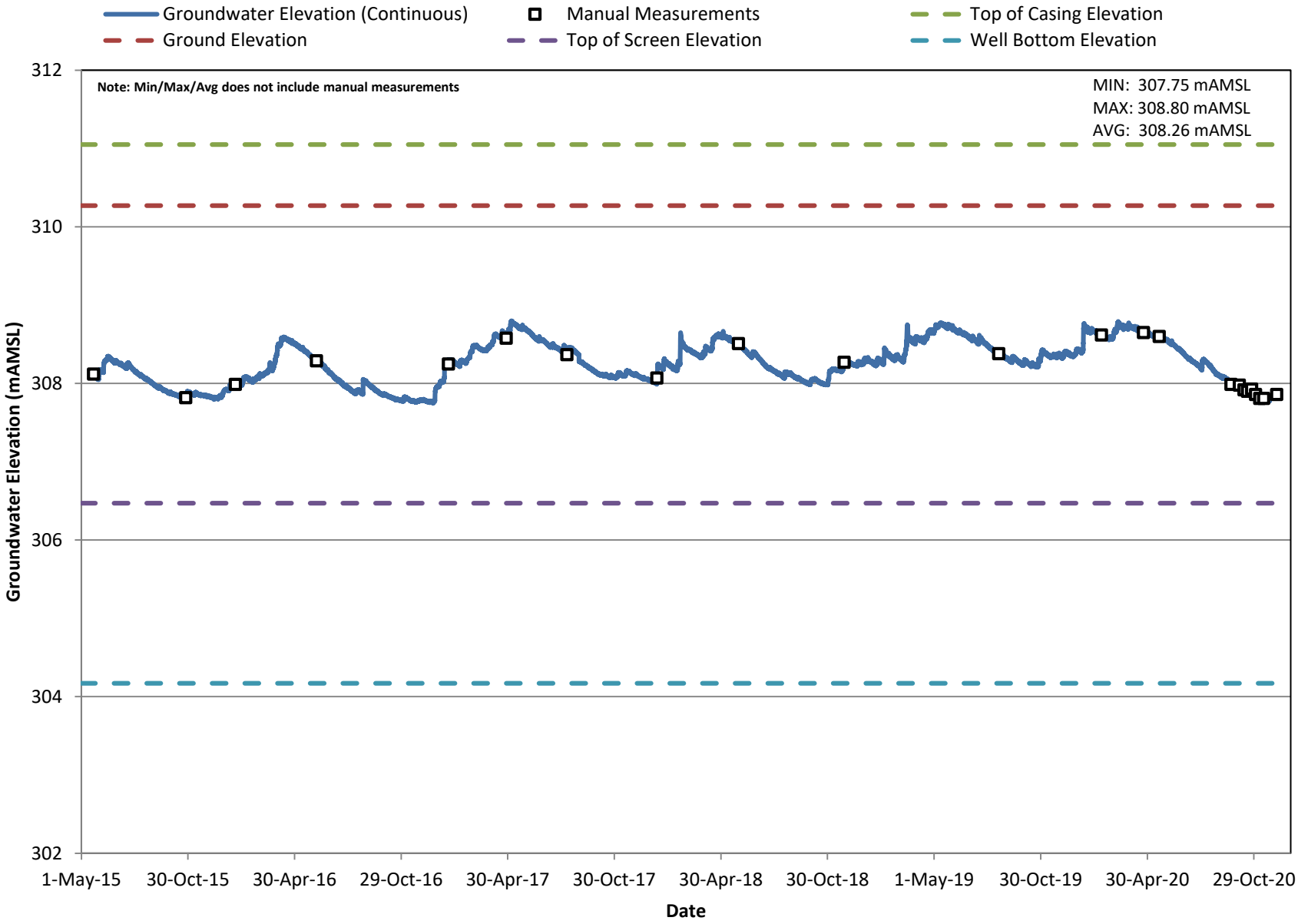
Hydrograph 10: Groundwater Elevations (mAMSL) - BH06-10



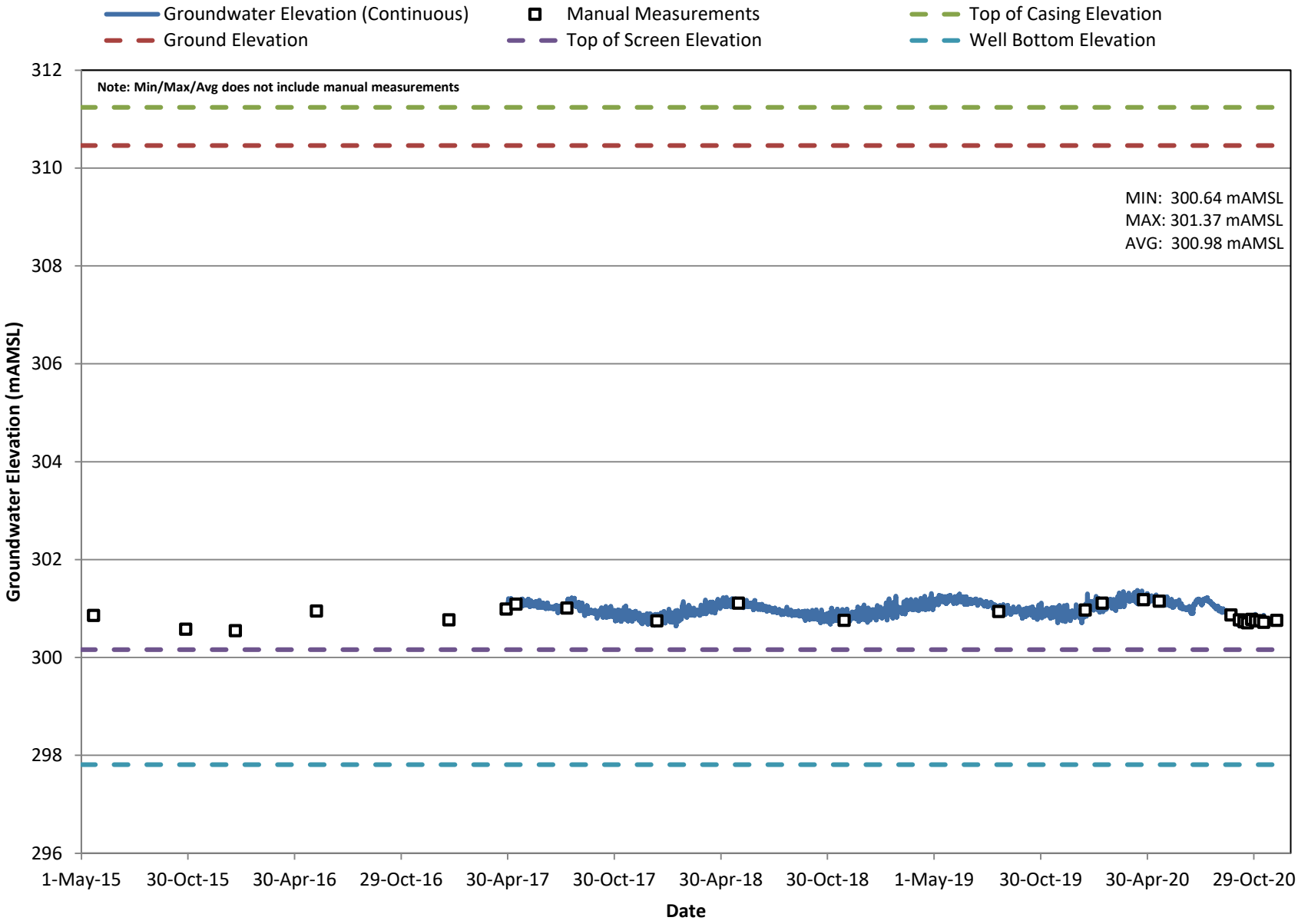
Hydrograph 11: Groundwater Elevations (mAMSL) - BH16-10



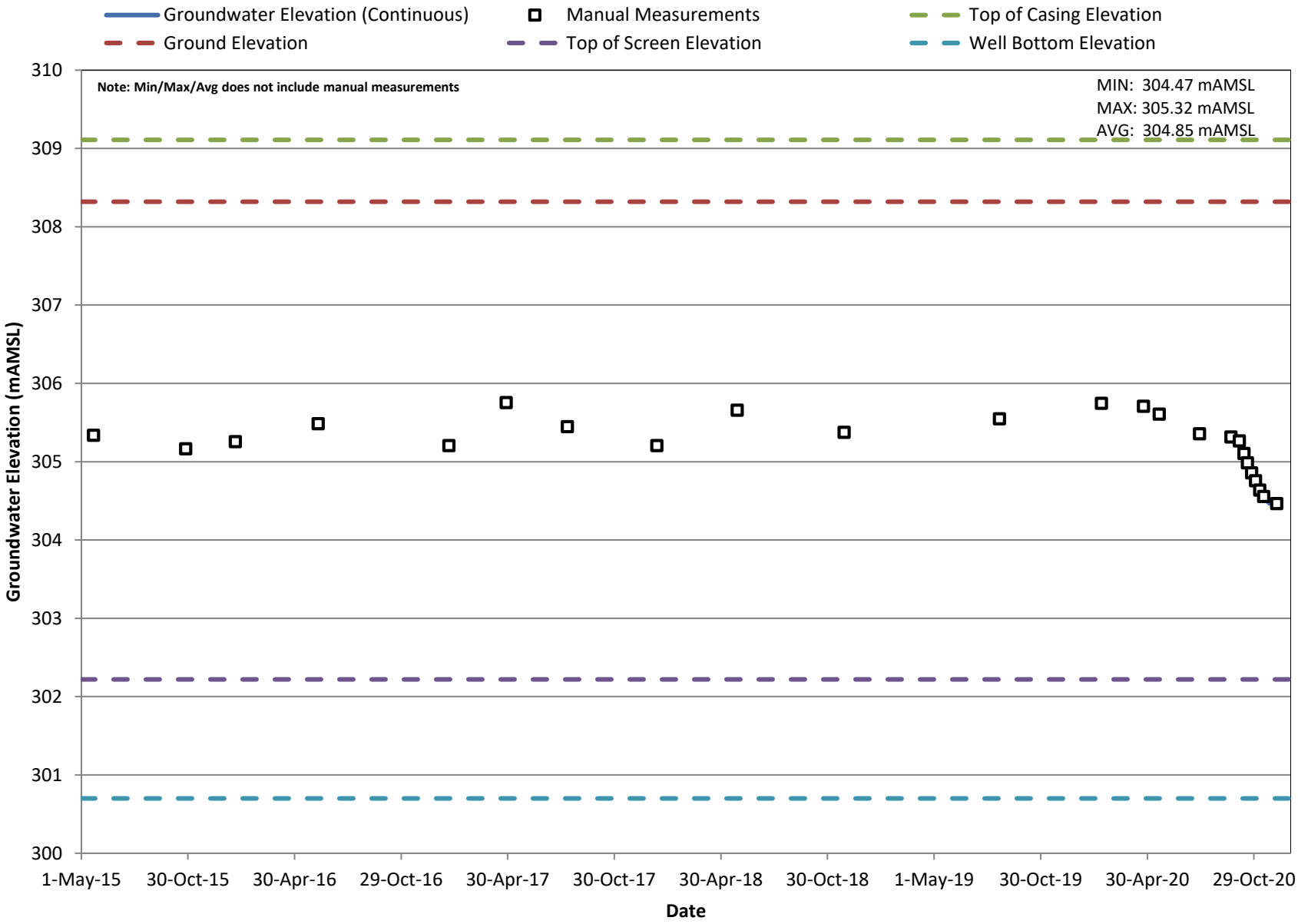
Hydrograph 12: Groundwater Elevations (mAMSL) - BH18A-10



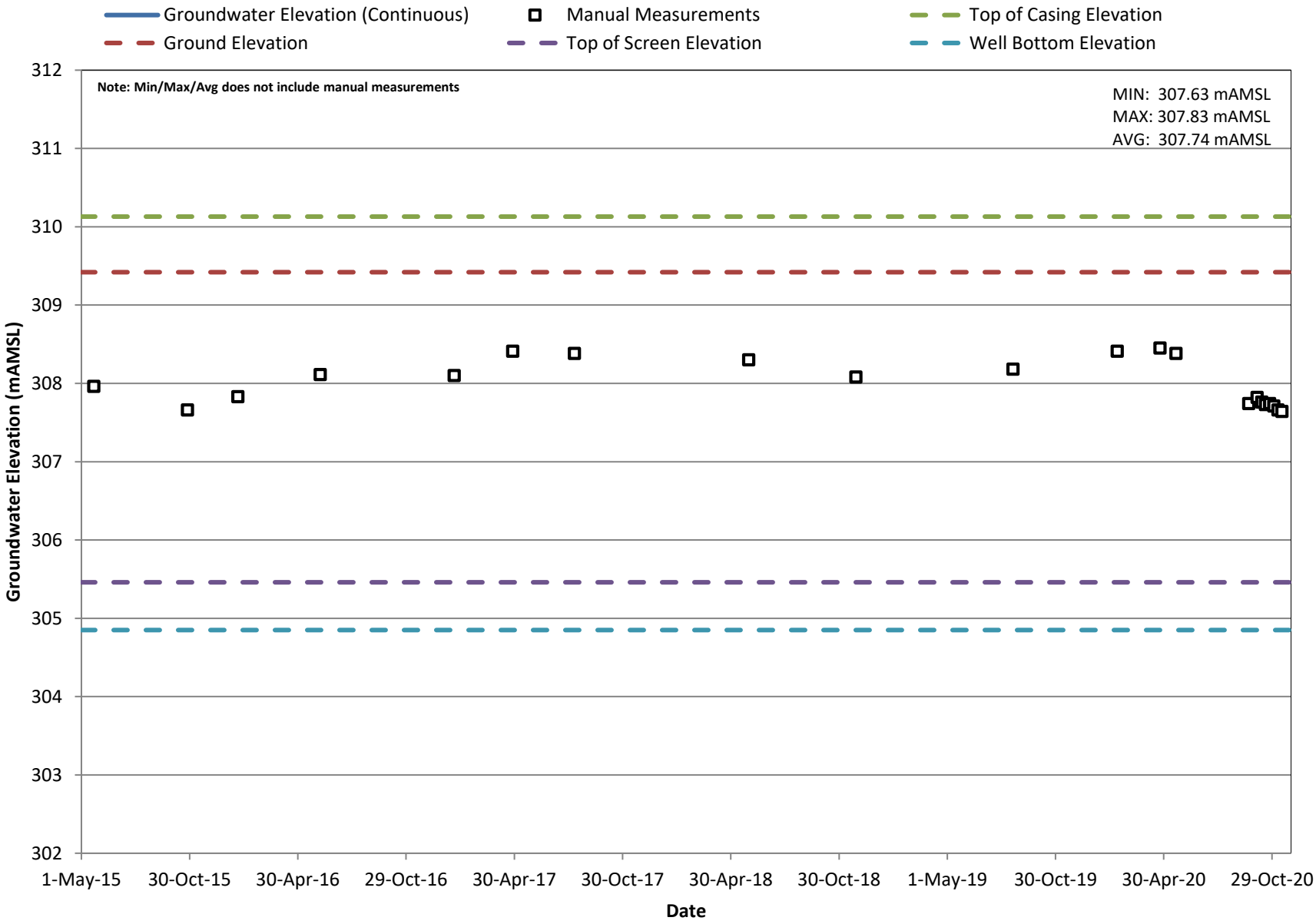
Hydrograph 13: Groundwater Elevations (mAMSL) - BH23-10



Hydrograph 14: Groundwater Elevations (mAMSL) - BH21-10



Hydrograph 15: Groundwater Elevations (mAMSL) - BH26-14

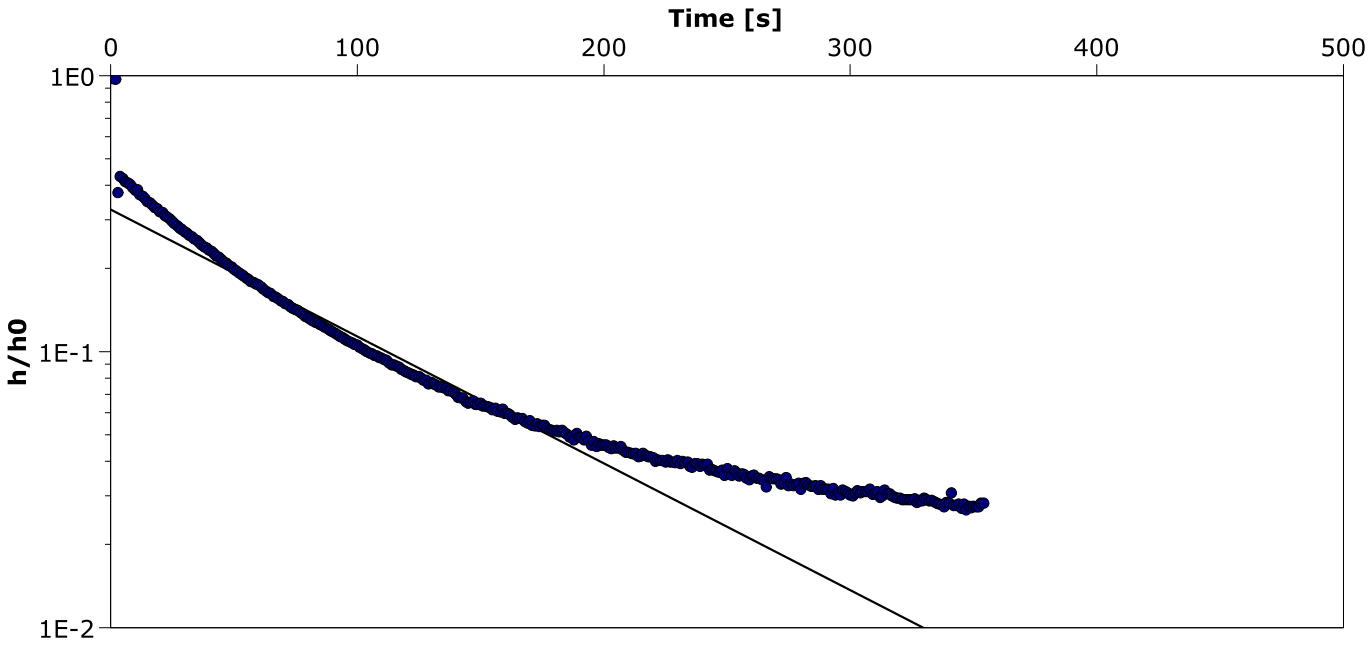


Appendix G

LVM AquiferTest© Data Sheets

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P031655-300
	Client:

Location:	Slug Test: BH 07-10	Test Well: BH 07-10
Test Conducted by: DS		Test Date: 02/23/2010
Analysis Performed by: CFH	BH 07-10	Analysis Date: 04/05/2010
Aquifer Thickness:		

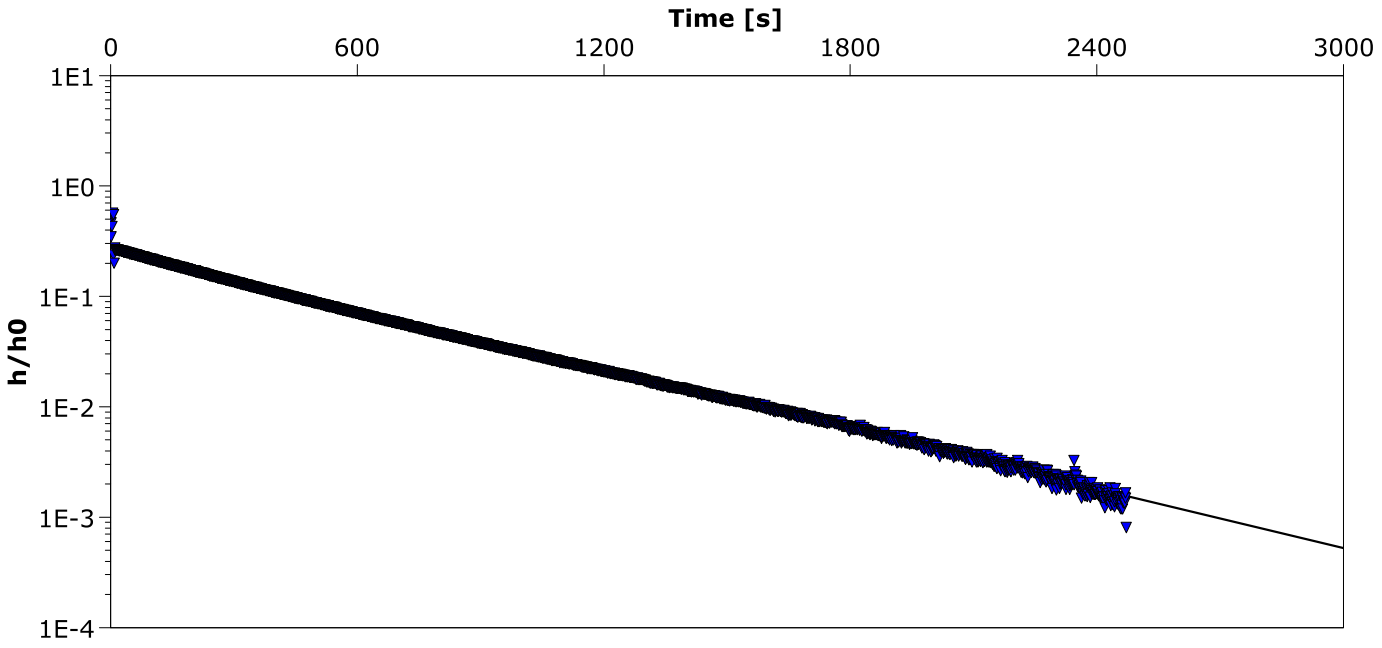


Calculation after Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 07-10	1.53×10^{-5}	

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P031655-300
	Client:

Location:	Slug Test: BH 09-10	Test Well: BH 09-10
Test Conducted by: DS		Test Date: 02/22/2010
Analysis Performed by: CFH	BH 09-10	Analysis Date: 04/05/2010
Aquifer Thickness:		

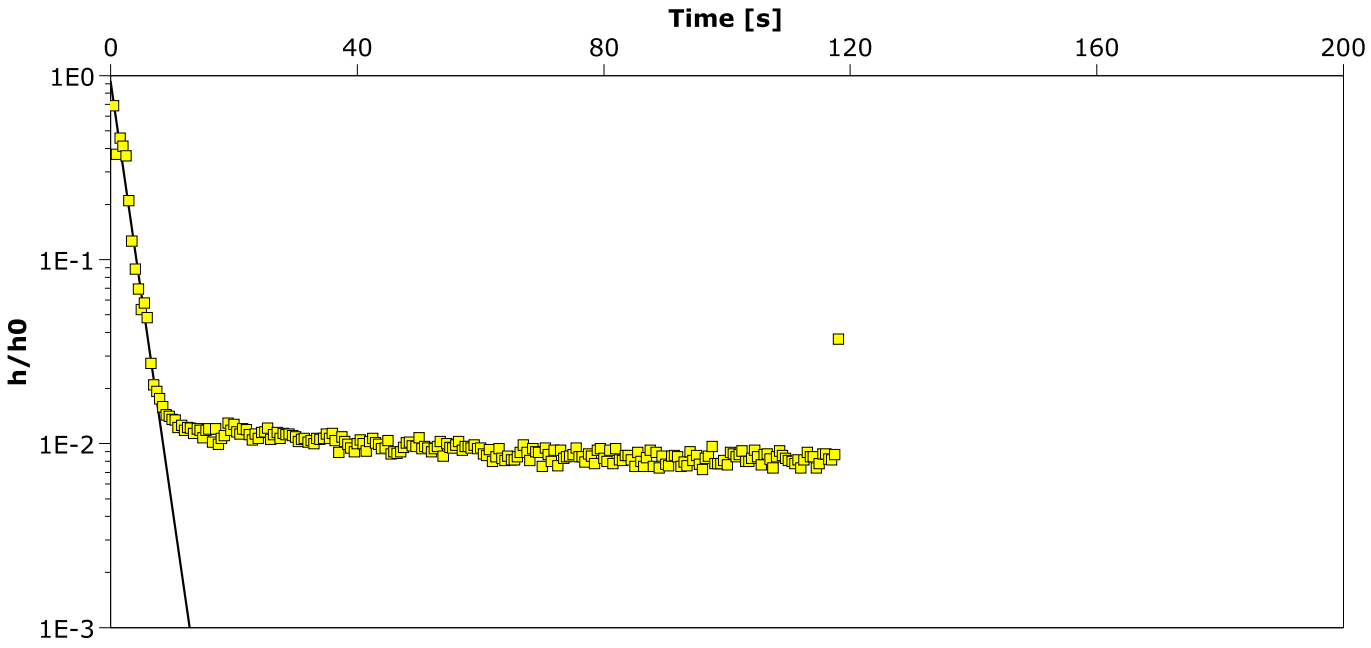


Calculation after Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 09-10	2.98×10^{-6}	

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P031655-300
	Client:

Location:	Slug Test: BH 11-10	Test Well: BH 11-10
Test Conducted by: DS		Test Date: 02/22/2010
Analysis Performed by: CFH	BH 11-10 Rising Head	Analysis Date: 04/05/2010
Aquifer Thickness:		

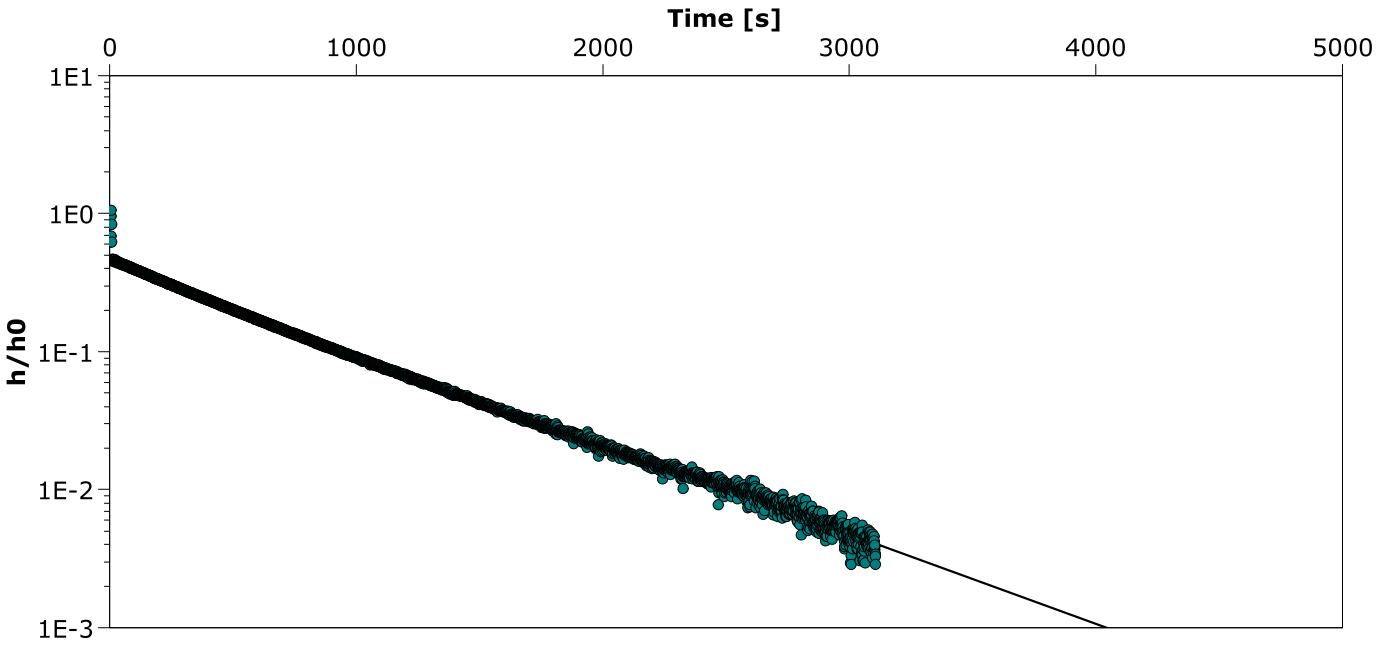


Calculation after Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 11-10	4.65×10^{-4}	

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P031655-300
	Client:

Location:	Slug Test: BH 12-10	Test Well: BH 12-10
Test Conducted by: DS		Test Date: 02/22/2010
Analysis Performed by: CFH	BH 12-10	Analysis Date: 04/05/2010
Aquifer Thickness:		

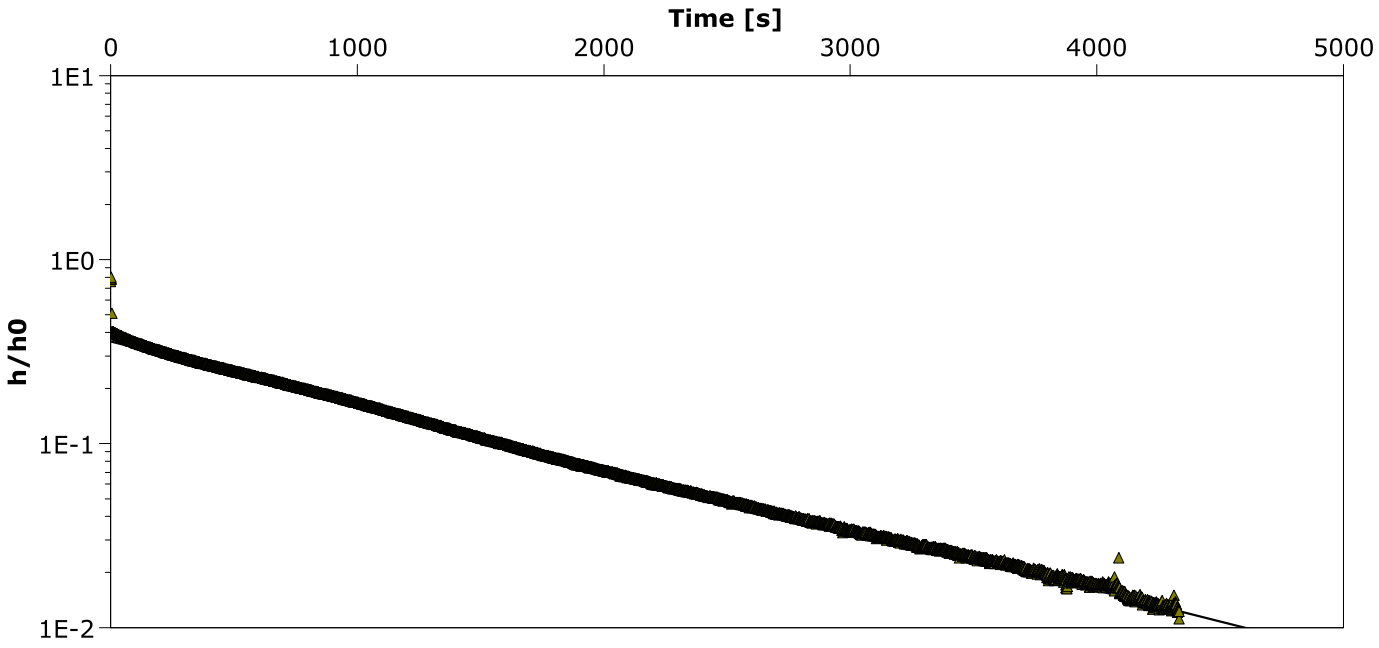


Calculation after Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 12-10	1.31×10^{-6}	

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P031655-300
	Client:

Location:	Slug Test: BH 13-10	Test Well: BH 13-10
Test Conducted by: DS		Test Date: 02/22/2010
Analysis Performed by: CFH	BH 13-10	Analysis Date: 04/05/2010
Aquifer Thickness:		

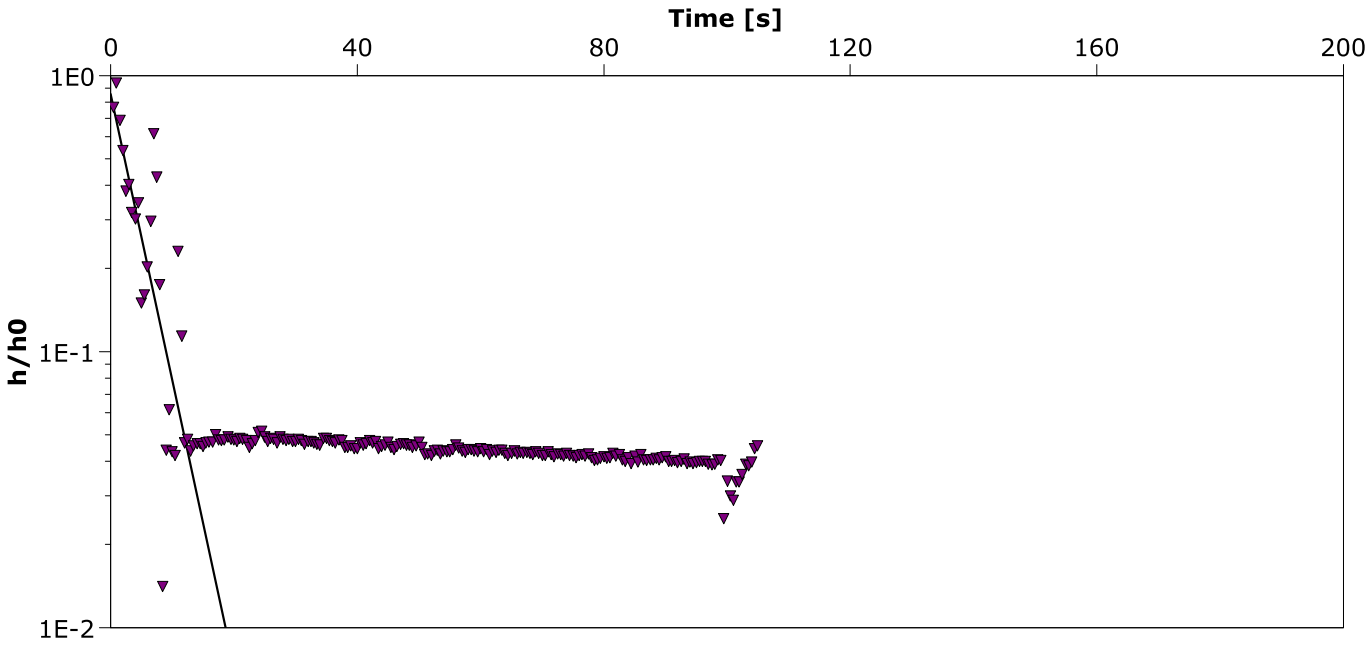


Calculation after Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 13-10	6.80×10^{-7}	

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P031655-300
	Client:

Location:	Slug Test: BH 14-10	Test Well: BH 14-10
Test Conducted by: DS		Test Date: 02/22/2010
Analysis Performed by: CFH	BH 14-10 Rising Head	Analysis Date: 04/05/2010
Aquifer Thickness:		

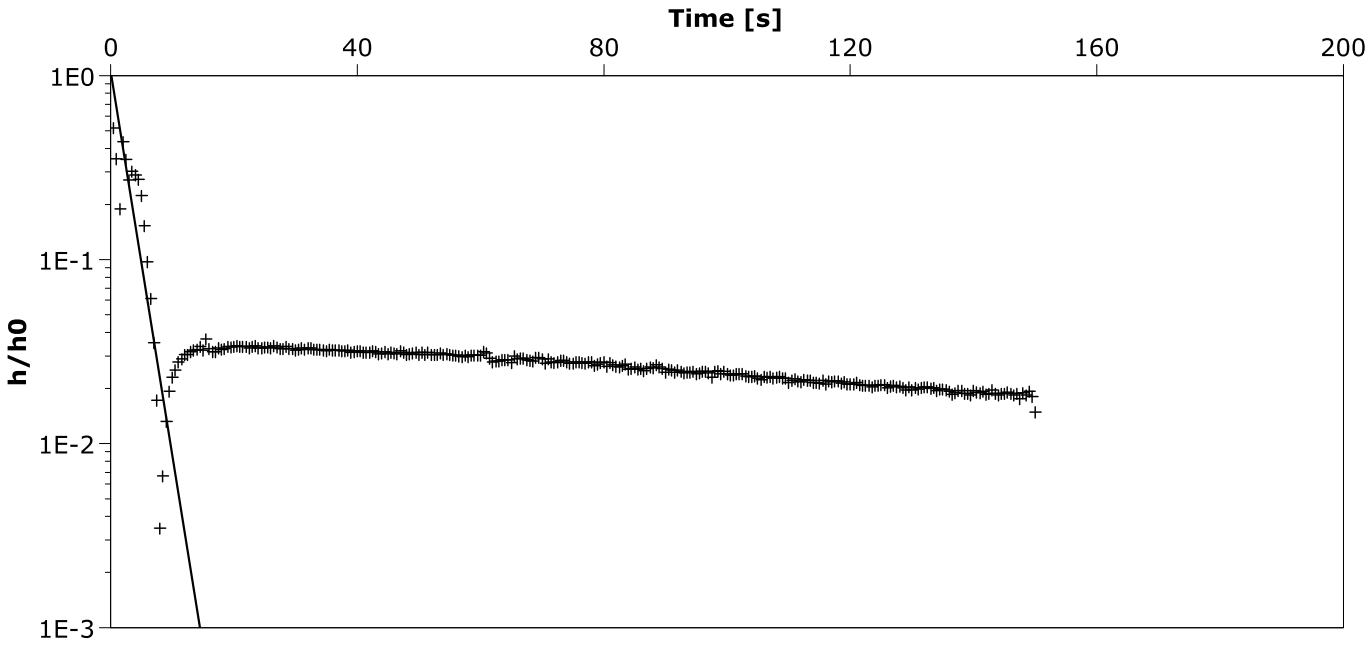


Calculation after Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 14-10	2.08×10^{-4}	

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P031655-300
	Client:

Location:	Slug Test: BH 15-10	Test Well: BH 15-10
Test Conducted by: DS		Test Date: 02/22/2010
Analysis Performed by: CFH	BH 15-10	Analysis Date: 04/05/2010
Aquifer Thickness:		

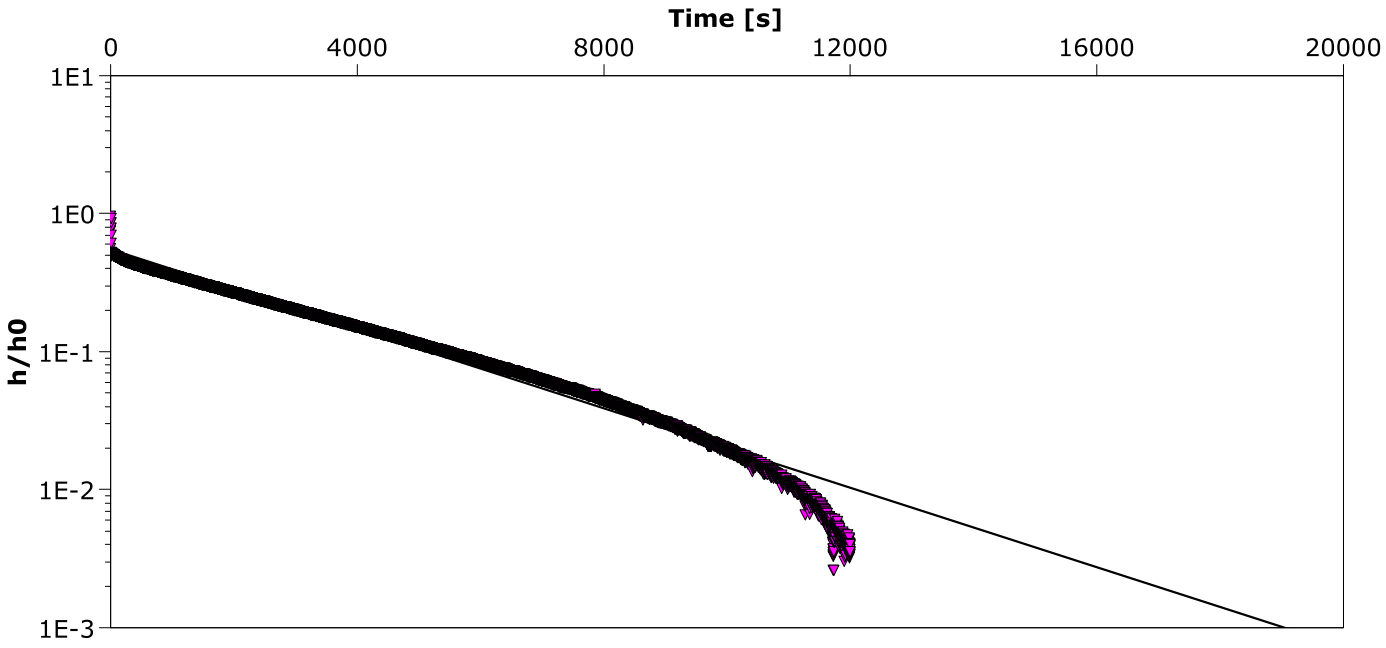


Calculation after Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 15-10	4.20×10^{-4}	

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P031655-300
	Client:

Location:	Slug Test: BH 19-10	Test Well: BH 19-10
Test Conducted by: DS		Test Date: 03/03/2010
Analysis Performed by: CFH	BH 19-10	Analysis Date: 04/05/2010
Aquifer Thickness:		

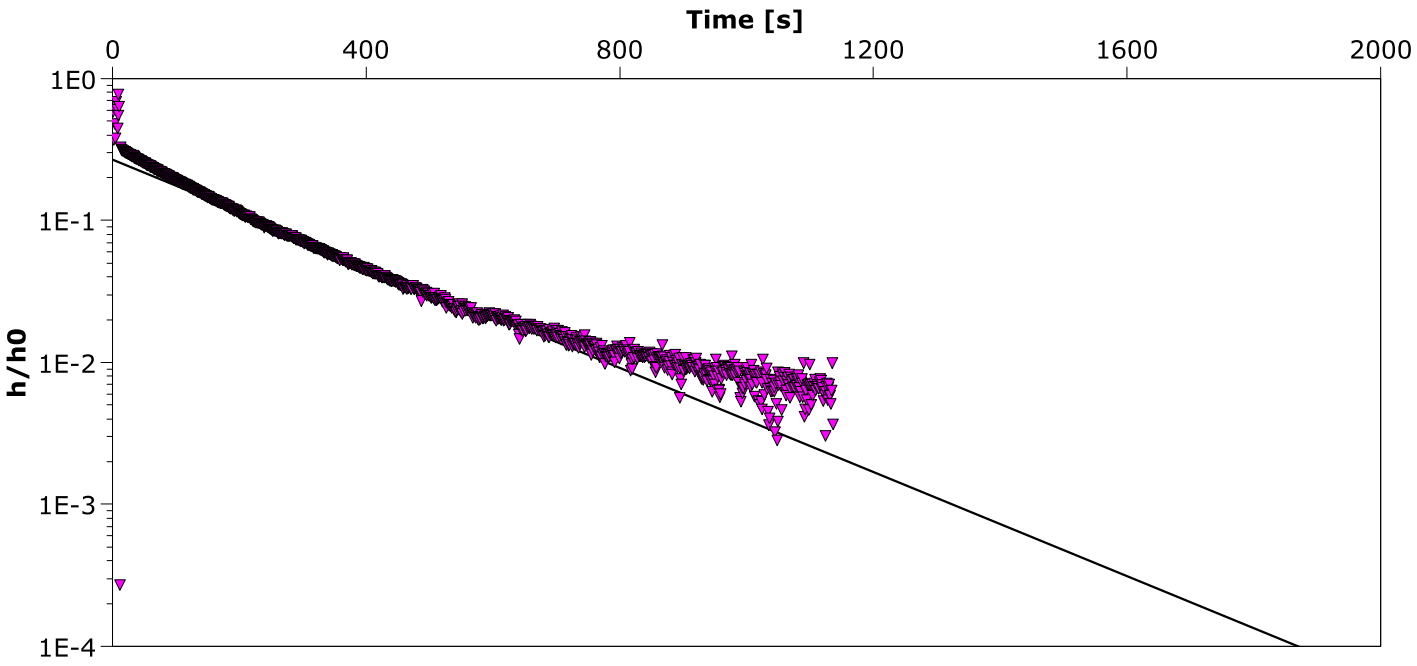


Calculation after Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 19-10	2.89×10^{-7}	

353 Bridge Street East **Kitchener, Ontario** **N2K 2Y5**	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P036589-0300
	Client:

Location: Roseville Road / Blenheim Road	Slug Test: BH 104-10	Test Well: BH 104-10
Test Conducted by:		Test Date: 11/26/2010
Analysis Performed by: CFH	BH 104-10	Analysis Date: 11/26/2010
Aquifer Thickness:		

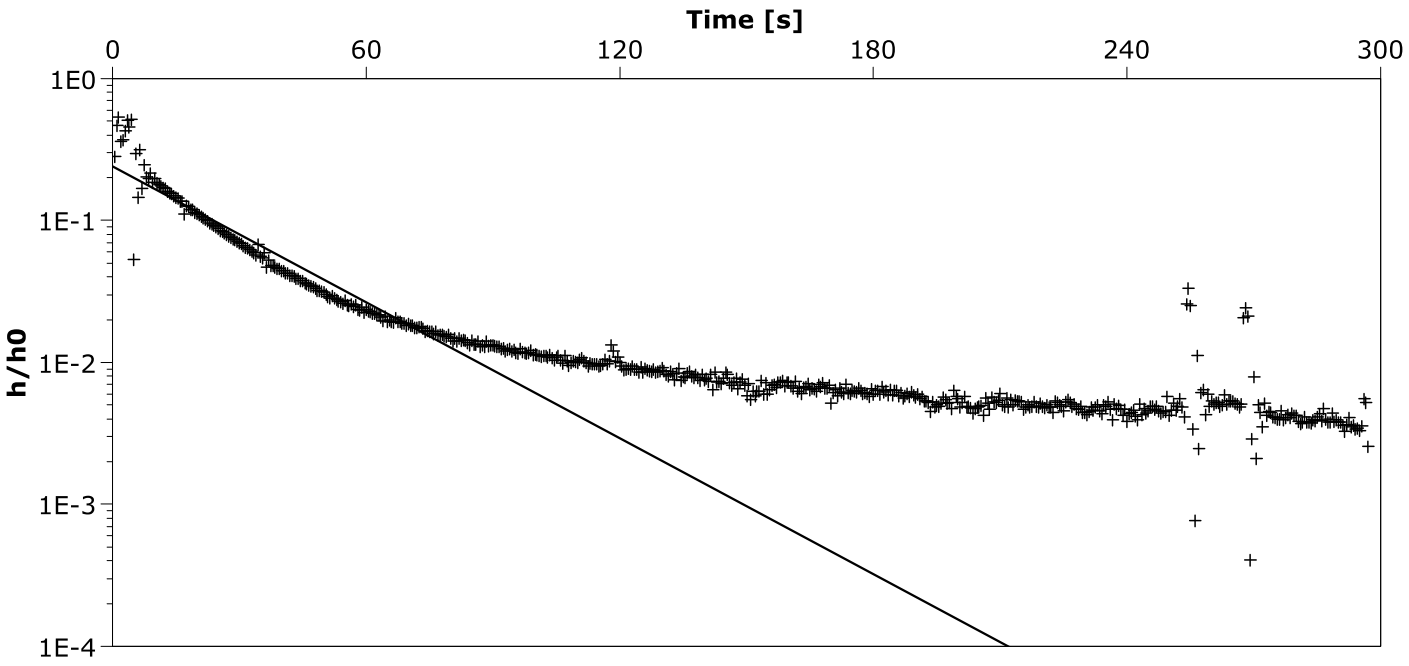


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 104-10	3.69×10^{-6}	

LVM 353 Bridge Street East Kitchener, Ontario N2K 2Y5	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P036589-0300
	Client:

Location: Roseville Road / Blenheim Road	Slug Test: BH 105-10	Test Well: BH 105-10
Test Conducted by:		Test Date: 11/26/2010
Analysis Performed by: CFH	BH 105-10	Analysis Date: 11/26/2010
Aquifer Thickness:		

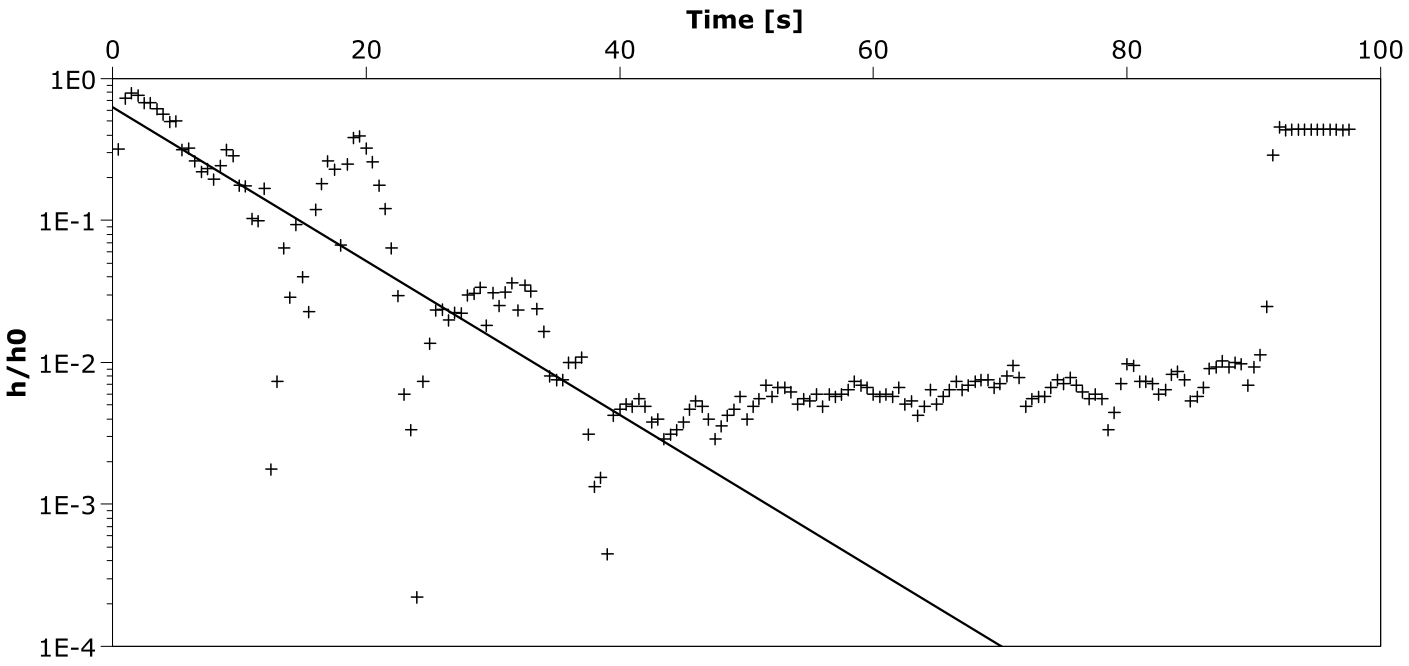


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 105-10	3.21×10^{-5}	

353 Bridge Street East **Kitchener, Ontario** **N2K 2Y5**	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P036589-0300
	Client:

Location: Roseville Road / Blenheim Road	Slug Test: BH 110-10	Test Well: BH 110-10
Test Conducted by:		Test Date: 11/26/2010
Analysis Performed by: CFH	BH 110-10 Rising Head	Analysis Date: 11/26/2010
Aquifer Thickness:		

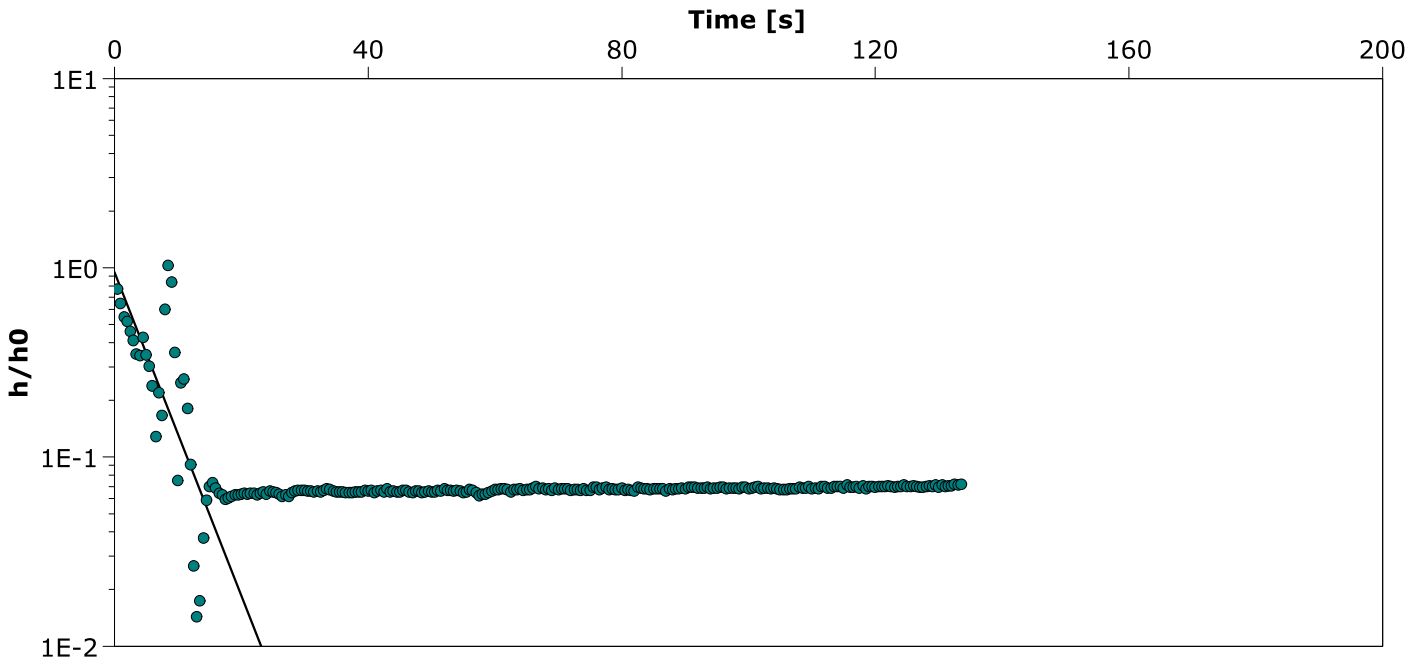


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 110-10	1.09×10^{-4}	

353 Bridge Street East **Kitchener, Ontario** **N2K 2Y5**	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P036589-0300
	Client:

Location: Roseville Road / Blenheim Road	Slug Test: BH 112-10	Test Well: BH 112-10
Test Conducted by:		Test Date: 11/26/2010
Analysis Performed by: CFH	BH 112-10 Rising Head	Analysis Date: 11/26/2010
Aquifer Thickness:		

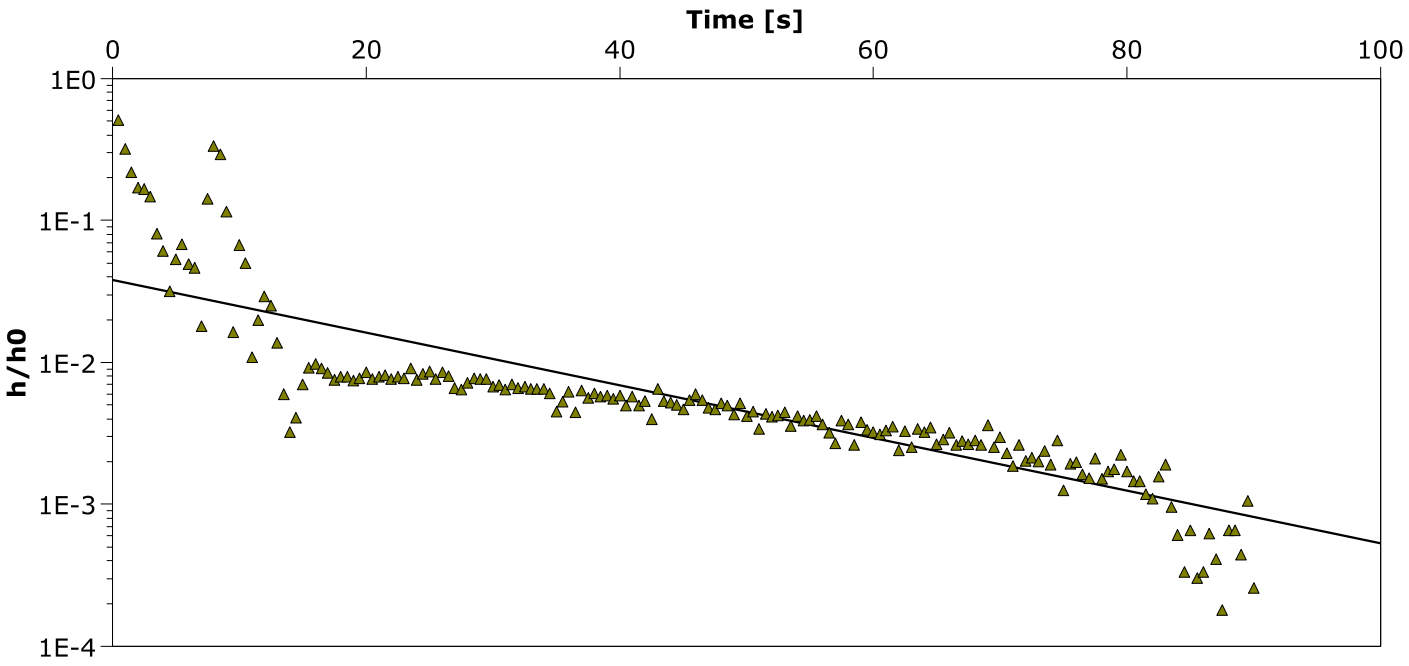


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH 112-10	1.72×10^{-4}	

353 Bridge Street East **Kitchener, Ontario** **N2K 2Y5**	**Slug Test Analysis Report**
	Project: Cambridge West
	Number: P036589-0300
	Client:

Location: Roseville Road / Blenheim Road	Slug Test: BH 113-10	Test Well: BH 113-10
Test Conducted by:		Test Date: 11/26/2010
Analysis Performed by: CFH	BH 113-10	Analysis Date: 11/26/2010
Aquifer Thickness:		



Calculation using Hvorslev

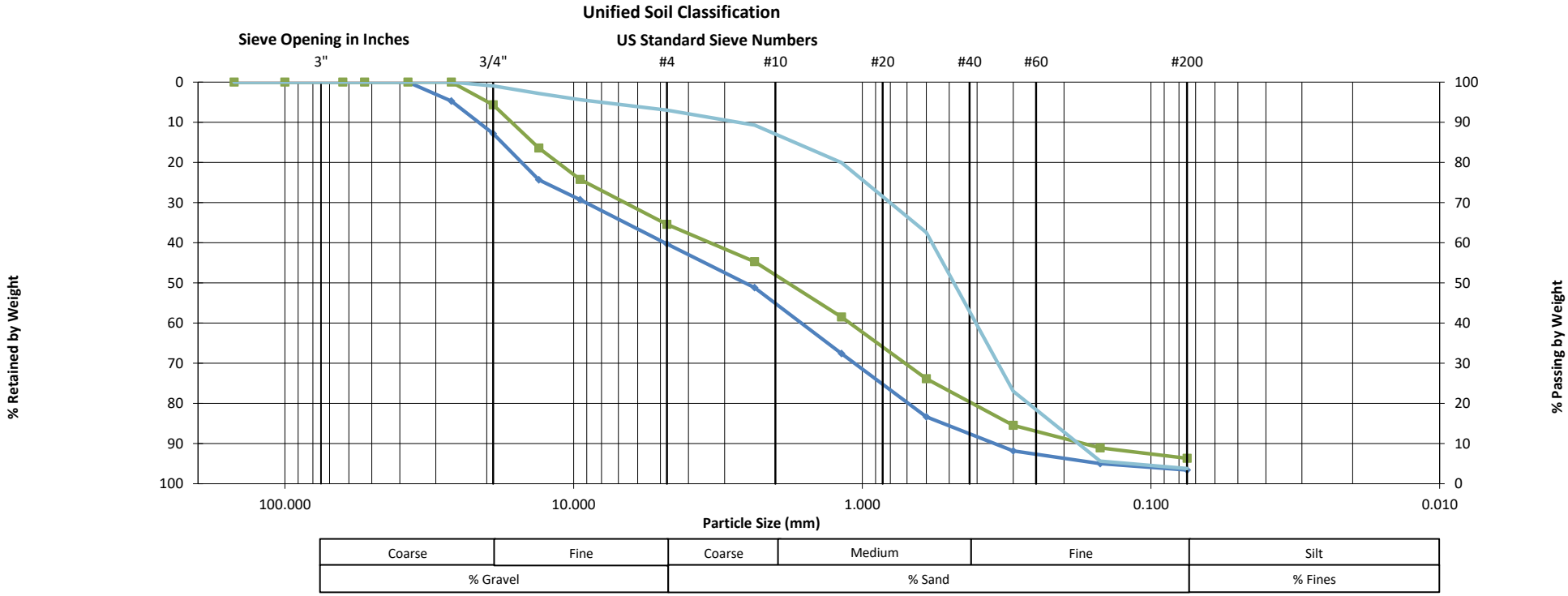
Observation Well	Hydraulic Conductivity [m/s]	
BH 113-10	3.74×10^{-5}	

Appendix H

MTE Particle Size Distribution Analyses

Particle Size Distribution Analysis Test Results

Project Name:	**Westwood Village Phase 2**	**Date Sampled:**	**March 19, 2021**	**MTE File No.:**	**02534-800**
Client:	**Hallman Construction Ltd.**	**Date Tested:**	**March 22, 2021**	**Table No.:**	**101**
Location:	**North Dumfries, Ontario**				



Symbol	Sample ID	*Sample Depth*	Description
	SS1	0 m	SAND and GRAVEL, trace Silt
	SS2	0 m	SAND and GRAVEL, trace Silt
	SS3	0 m	SAND, trace Silt and Gravel

CERTIFIED BY CCIL Canadian Council of Independent Laboratories
For specific tests as listed on www.ccil.com

NOTES:

Appendix I

Laboratory Certificate of Analysis

MTE CONSULTANTS INC. (Kitchener)
ATTN: ELYSHA BREARS
520 BINGEMANS CENTRE DRIVE
KITCHENER ON N2B 3X9

Date Received: 22-MAY-20
Report Date: 01-JUN-20 13:42 (MT)
Version: FINAL

Client Phone: 519-743-6500

Certificate of Analysis

Lab Work Order #: L2450847

Project P.O. #: NOT SUBMITTED
Job Reference: 44720-114
C of C Numbers: 17-801229
Legal Site Desc:

Emily Hansen
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-1 BH 01-10 Sampled By: TXG on 21-MAY-20 @ 13:10 Matrix: WATER							
Physical Tests							
Colour, Apparent	59.2		2.0	CU		22-MAY-20	R5095342
Conductivity	638		3.0	umhos/cm		25-MAY-20	R5098436
Hardness (as CaCO3)	362		0.50	mg/L		27-MAY-20	
pH	7.45		0.10	pH units		25-MAY-20	R5098436
Total Dissolved Solids	389	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	129		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	342		10	mg/L		25-MAY-20	R5098436
Ammonia, Total (as N)	0.528	DLHC	0.020	mg/L		28-MAY-20	R5099727
Chloride (Cl)	10.7		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.054		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	<0.020		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.337		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	2.32		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	4.03	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0149	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.174	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.000254	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	144	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00043	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0056	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0046	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.0710	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	10.6	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.0238	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	<0.010	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	42.5	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	1.22	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.0092	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	1.61	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0046	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	0.00085	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-1 BH 01-10 Sampled By: TXG on 21-MAY-20 @ 13:10 Matrix: WATER							
Total Metals							
Silicon (Si)-Total	9.0	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	5.96	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.155	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	<5.0	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	<0.00020	DLUI	0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.0645	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00049	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0089	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.266	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	0.0062		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	0.00024		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00214		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.146		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.012		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	0.0000184		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	96.8		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	0.00096		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.0114		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	0.027		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	0.000134		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	29.3		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	0.802		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.000273		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	0.00138		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	0.846		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000352		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	3.80		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	5.44		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-1 BH 01-10 Sampled By: TXG on 21-MAY-20 @ 13:10 Matrix: WATER							
Dissolved Metals							
Strontium (Sr)-Dissolved	0.0928		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	0.000026		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.000230		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	0.00052		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.124		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	0.00089		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-2 BH 02-10 Sampled By: TXG on 21-MAY-20 @ 15:30 Matrix: WATER							
Physical Tests							
Colour, Apparent	64.2		2.0	CU		22-MAY-20	R5095342
Conductivity	617		3.0	umhos/cm		26-MAY-20	R5099168
Hardness (as CaCO3)	351		0.50	mg/L		27-MAY-20	
pH	7.46	PEHT	0.10	pH units		26-MAY-20	R5099168
Total Dissolved Solids	377	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	534		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	324		10	mg/L		26-MAY-20	R5099168
Ammonia, Total (as N)	0.232		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	14.1		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.049		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	<0.020		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.698		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	<0.30		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	8.98	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0278	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.155	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.000545	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	206	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00081	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0151	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0084	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-2 BH 02-10 Sampled By: TXG on 21-MAY-20 @ 15:30 Matrix: WATER							
Total Metals							
Copper (Cu)-Total	0.142	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	31.6	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.0677	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.018	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	61.4	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	1.79	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.0168	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	0.72	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	2.78	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0109	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	14.5	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	8.66	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.213	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	<5.0	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	<0.00020	DLUI	0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	0.0022	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.116	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00059	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0229	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.299	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00090		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0779		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.012		0.010	mg/L	25-MAY-20	26-MAY-20	R5096027
Cadmium (Cd)-Dissolved	0.0000095		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	95.4		0.050	mg/L	25-MAY-20	26-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	0.00052		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00679		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-2 BH 02-10 Sampled By: TXG on 21-MAY-20 @ 15:30 Matrix: WATER							
Dissolved Metals							
Iron (Fe)-Dissolved	0.012		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	27.3		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	0.698		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.000336		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	0.00071		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	1.18		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000073		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	3.20		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	8.05		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.106		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.000160		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.0092		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	0.00085		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-3 BH 04-10 Sampled By: TXG on 21-MAY-20 @ 10:40 Matrix: WATER							
Physical Tests							
Colour, Apparent	10.3		2.0	CU		22-MAY-20	R5095342
Conductivity	646		3.0	umhos/cm		25-MAY-20	R5098363
Hardness (as CaCO3)	363		0.50	mg/L		27-MAY-20	
pH	7.49		0.10	pH units		25-MAY-20	R5098363
Total Dissolved Solids	392	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	76.4		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	284		10	mg/L		25-MAY-20	R5098363
Ammonia, Total (as N)	0.012		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	12.4		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.054		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	9.61		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	0.067		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	0.0089		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.122		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	11.7		0.30	mg/L		26-MAY-20	R5099513
Total Metals							

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-3 BH 04-10 Sampled By: TXG on 21-MAY-20 @ 10:40 Matrix: WATER							
Total Metals							
Aluminum (Al)-Total	1.18		0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	0.00032		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.00115		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.0745		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	0.012		0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.0000937		0.0000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	92.4		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.000108		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.00167		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.00229		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.00972		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	1.97		0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.00510		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.0027		0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	28.7		0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	1.05		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	0.000169		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.00254		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	0.122		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	2.86		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.00183		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	0.000627		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	4.42		0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.000050		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	2.55		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.0975		0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	4.58		0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.000043		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	0.00011		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.0228		0.00030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.000973		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.00247		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.0197		0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	0.00026		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-3 BH 04-10 Sampled By: TXG on 21-MAY-20 @ 10:40 Matrix: WATER							
Dissolved Metals							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	0.00019		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00032		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0576		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.012		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	0.0000331		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	99.4		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00129		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	28.0		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	0.144		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.000171		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	0.00140		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	2.52		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000665		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	3.03		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	2.53		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.0953		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	0.000019		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	0.00015		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.000986		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.0089		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-4 BH 05-10 Sampled By: TXG on 21-MAY-20 @ 09:15 Matrix: WATER							
Physical Tests							
Colour, Apparent	45.9		2.0	CU		22-MAY-20	R5095342
Conductivity	665		3.0	umhos/cm		25-MAY-20	R5098363
Hardness (as CaCO3)	1810		1.3	mg/L		27-MAY-20	
pH	7.69		0.10	pH units		25-MAY-20	R5098363
Total Dissolved Solids	440	DLDS	20	mg/L		25-MAY-20	R5098148

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-4 BH 05-10 Sampled By: TXG on 21-MAY-20 @ 09:15 Matrix: WATER							
Physical Tests							
Turbidity	>4000		0.10	NTU		23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	511		10	mg/L		25-MAY-20	R5098363
Ammonia, Total (as N)	0.016		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	16.5		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.055		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	18.3		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.889		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	16.0		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	64.7	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0556	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	1.20	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	0.0032	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	0.00077	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.00458	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	1680	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00373	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0881	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0743	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.247	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	115	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.250	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.098	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	415	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	19.8	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	0.00064	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.123	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	6.57	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	11.5	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0705	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	0.00076	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	81.1	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	6.44	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	1.87	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	6.9	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-4 BH 05-10 Sampled By: TXG on 21-MAY-20 @ 09:15 Matrix: WATER							
Total Metals							
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.00137	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	0.0290	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	1.11	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00418	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.112	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	1.56	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.413	DLHC	0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	<0.10	DLHC	0.10	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	0.00192	DLHC	0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	659	DLHC	0.50	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	0.0021	DLHC	0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	<0.0020	DLHC	0.0020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	<0.10	DLHC	0.10	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	38.9	DLHC	0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	1.31	DLHC	0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	2.50	DLHC	0.50	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.00060	DLHC	0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	5.38	DLHC	0.50	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	3.96	DLHC	0.50	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.814	DLHC	0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.00010	DLHC	0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-4 BH 05-10 Sampled By: TXG on 21-MAY-20 @ 09:15 Matrix: WATER							
Dissolved Metals							
Uranium (U)-Dissolved	0.00092	DLHC	0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.066	DLHC	0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-5 BH 06-10 Sampled By: TXG on 21-MAY-20 @ 09:55 Matrix: WATER							
Physical Tests							
Colour, Apparent	10.8		2.0	CU		22-MAY-20	R5095342
Conductivity	579		3.0	umhos/cm		25-MAY-20	R5098363
Hardness (as CaCO3)	322		0.50	mg/L		27-MAY-20	
pH	7.60		0.10	pH units		25-MAY-20	R5098363
Total Dissolved Solids	378	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	846		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	259		10	mg/L		25-MAY-20	R5098363
Ammonia, Total (as N)	0.012		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	12.7		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.050		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	13.0		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	1.19	DLHC	0.0060	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	7.30		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	23.7	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0199	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.266	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	0.0011	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	0.00074	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.00150	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	598	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00217	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0305	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0240	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.218	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	50.5	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.0559	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.050	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	117	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-5 BH 06-10 Sampled By: TXG on 21-MAY-20 @ 09:55 Matrix: WATER							
Total Metals							
Manganese (Mn)-Total	3.85	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.0486	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	2.11	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	4.48	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0248	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	0.00072	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	32.7	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	4.12	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.658	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	<5.0	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.00041	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	0.0062	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.274	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00133	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0458	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.598	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0583		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	90.3		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00077		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	23.4		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.000130		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-5 BH 06-10 Sampled By: TXG on 21-MAY-20 @ 09:55 Matrix: WATER							
Dissolved Metals							
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	0.911		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000644		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	3.36		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	3.41		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.0927		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.000246		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-6 BH 11-10 Sampled By: TXG on 22-MAY-20 @ 11:05 Matrix: WATER							
Physical Tests							
Colour, Apparent	14.3		2.0	CU		22-MAY-20	R5095342
Conductivity	630		3.0	umhos/cm		26-MAY-20	R5099175
Hardness (as CaCO3)	356		0.50	mg/L		27-MAY-20	
pH	7.66		0.10	pH units		26-MAY-20	R5099175
Total Dissolved Solids	356	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	276		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	343		10	mg/L		26-MAY-20	R5099175
Ammonia, Total (as N)	<0.010		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	5.99		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.067		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	2.32		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.244		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	6.61		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	5.18	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0083	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.147	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-6 BH 11-10 Sampled By: TXG on 22-MAY-20 @ 11:05 Matrix: WATER							
Total Metals							
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.000555	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	128	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00057	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0053	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0064	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.0642	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	12.1	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.0215	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.010	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	42.1	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	4.25	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.0123	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	1.95	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0075	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	10.0	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	2.95	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.131	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	<5.0	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.00019	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.0785	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00039	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0100	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.163	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0320		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-6 BH 11-10 Sampled By: TXG on 22-MAY-20 @ 11:05 Matrix: WATER							
Dissolved Metals							
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.012		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	89.5		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00034		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	32.2		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	0.537		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	3.45		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	2.75		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.0842		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.000219		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-7 BH 13-10 Sampled By: TXG on 22-MAY-20 @ 11:25 Matrix: WATER							
Physical Tests							
Colour, Apparent	18.9		2.0	CU		22-MAY-20	R5095342
Conductivity	663		3.0	umhos/cm		26-MAY-20	R5099175
Hardness (as CaCO3)	354		0.50	mg/L		27-MAY-20	
pH	7.86		0.10	pH units		26-MAY-20	R5099175
Total Dissolved Solids	446	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	>4000		0.10	NTU		23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	257		10	mg/L		26-MAY-20	R5099175
Ammonia, Total (as N)	0.022		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	14.5		0.50	mg/L		26-MAY-20	R5099513

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-7 BH 13-10 Sampled By: TXG on 22-MAY-20 @ 11:25 Matrix: WATER							
Anions and Nutrients							
Fluoride (F)	0.087		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	2.76		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	0.016		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	1.73	DLHC	0.0060	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	94.4		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	40.6	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0324	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.440	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	0.0019	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.00109	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	853	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00305	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0590	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0330	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.0953	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	73.9	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.0769	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.076	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	212	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	3.92	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	0.00448	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.0677	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	3.79	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	8.36	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0445	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	0.00053	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	59.2	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	9.97	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	1.19	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	36.1	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.00048	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	0.0145	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.714	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-7 BH 13-10 Sampled By: TXG on 22-MAY-20 @ 11:25 Matrix: WATER							
Total Metals							
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00374	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0718	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.486	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00036		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0771		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.012		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	0.0000065		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	84.2		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00037		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	35.0		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	0.0104		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.00467		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	1.77		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000267		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	5.43		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	7.70		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.161		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.00148		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.0016		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-8 BH 14-10							

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-8 BH 14-10 Sampled By: TXG on 21-MAY-20 @ 16:10 Matrix: WATER							
Physical Tests							
Colour, Apparent	43.7		2.0	CU		22-MAY-20	R5095342
Conductivity	707		3.0	umhos/cm		26-MAY-20	R5099168
Hardness (as CaCO3)	404		0.50	mg/L		27-MAY-20	
pH	7.70	PEHT	0.10	pH units		26-MAY-20	R5099168
Total Dissolved Solids	404	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	41.1		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	351		10	mg/L		26-MAY-20	R5099168
Ammonia, Total (as N)	0.206		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	13.4		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.054		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	<0.020		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.0102		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	16.0		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	0.267		0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.00158		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.0545		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	0.012		0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.0000176		0.0000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	111		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.000034		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.00076		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.00543		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	5.47		0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.00185		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.0013		0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	28.4		0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	0.888		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.00110		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	<0.050		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	0.944		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.00065		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	0.000050		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-8 BH 14-10 Sampled By: TXG on 21-MAY-20 @ 16:10 Matrix: WATER							
Total Metals							
Silicon (Si)-Total	3.69		0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.000050		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	7.21		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.119		0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	6.22		0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.000012		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.00762		0.00030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.000747		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.00137		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.0084		0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	0.00138		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00044		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0458		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Boron (B)-Dissolved	0.013		0.010	mg/L	25-MAY-20	26-MAY-20	R5096027
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Calcium (Ca)-Dissolved	116		0.050	mg/L	25-MAY-20	26-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	0.00051		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00132		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Magnesium (Mg)-Dissolved	27.9		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	0.821		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Nickel (Ni)-Dissolved	0.00065		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	0.819		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	3.10		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Sodium (Na)-Dissolved	7.03		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-8 BH 14-10 Sampled By: TXG on 21-MAY-20 @ 16:10 Matrix: WATER							
Dissolved Metals							
Strontium (Sr)-Dissolved	0.112		0.0010	mg/L	25-MAY-20	26-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	26-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Uranium (U)-Dissolved	0.000770		0.000010	mg/L	25-MAY-20	26-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	0.00059		0.00030	mg/L	25-MAY-20	26-MAY-20	R5096027
L2450847-9 BH 16-10 Sampled By: TXG on 21-MAY-20 @ 11:20 Matrix: WATER							
Physical Tests							
Colour, Apparent	29.6		2.0	CU		22-MAY-20	R5095342
Conductivity	634		3.0	umhos/cm		25-MAY-20	R5098363
Hardness (as CaCO3)	350		0.50	mg/L		27-MAY-20	
pH	7.54		0.10	pH units		25-MAY-20	R5098363
Total Dissolved Solids	385	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	177		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	272		10	mg/L		25-MAY-20	R5098363
Ammonia, Total (as N)	0.021		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	14.2		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.059		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	9.66		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	0.055		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.0941		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	13.8		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	1.74		0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	0.00012		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.00155		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.0854		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	0.000066		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	0.011		0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.0000678		0.0000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	108		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.000201		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.00251		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.00168		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-9 BH 16-10 Sampled By: TXG on 21-MAY-20 @ 11:20 Matrix: WATER							
Total Metals							
Copper (Cu)-Total	0.0290		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	6.36		0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.00545		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.0039		0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	29.4		0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	0.896		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	0.000134		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.00335		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	0.101		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	2.40		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.00323		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	0.000305		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	5.73		0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.000050		0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	2.79		0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.111		0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	4.95		0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.000026		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	0.00029		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.0307		0.00030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.00010		0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.000566		0.000010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.00450		0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.0770		0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	0.00037		0.00020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00026		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0533		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	0.0000163		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	99.2		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00421		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-9 BH 16-10 Sampled By: TXG on 21-MAY-20 @ 11:20 Matrix: WATER							
Dissolved Metals							
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	24.8		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	0.356		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.000115		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	0.00053		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	1.68		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000282		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	3.17		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	2.62		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.0946		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.000473		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.0028		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-10 BH 18A-10 Sampled By: TXG on 21-MAY-20 @ 13:55 Matrix: WATER							
Physical Tests							
Colour, Apparent	2.8		2.0	CU		22-MAY-20	R5095342
Conductivity	1040		3.0	umhos/cm		25-MAY-20	R5098436
Hardness (as CaCO3)	398		0.50	mg/L		27-MAY-20	
pH	7.63		0.10	pH units		25-MAY-20	R5098436
Total Dissolved Solids	595	DLDS	20	mg/L		25-MAY-20	R5098148
Turbidity	335		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	290		10	mg/L		25-MAY-20	R5098436
Ammonia, Total (as N)	<0.010		0.010	mg/L		27-MAY-20	R5099727
Chloride (Cl)	130		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.062		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	14.6		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.288		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	20.2		0.30	mg/L		26-MAY-20	R5099513
Total Metals							

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-10 BH 18A-10 Sampled By: TXG on 21-MAY-20 @ 13:55 Matrix: WATER							
Total Metals							
Aluminum (Al)-Total	6.02	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0079	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.137	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.000768	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	157	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00056	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0082	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0084	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.110	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	14.9	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.0513	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.013	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	46.3	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	1.22	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.0152	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	5.38	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0070	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	11.5	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	61.3	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.157	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	6.4	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.00028	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	0.0014	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.117	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00051	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0164	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.327	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-10 BH 18A-10 Sampled By: TXG on 21-MAY-20 @ 13:55 Matrix: WATER							
Dissolved Metals							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0754		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.013		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	0.0000165		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	106		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00096		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	32.5		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.000073		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	4.31		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000299		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	3.48		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	59.8		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.109		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.000284		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-11 BH 19-10 Sampled By: TXG on 21-MAY-20 @ 12:15 Matrix: WATER							
Physical Tests							
Colour, Apparent	71.5		2.0	CU		22-MAY-20	R5095342
Conductivity	662		3.0	umhos/cm		25-MAY-20	R5098436
Hardness (as CaCO3)	189		0.50	mg/L		27-MAY-20	
pH	7.90		0.10	pH units		25-MAY-20	R5098436
Total Dissolved Solids	409	DLDS	20	mg/L		25-MAY-20	R5098148

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-11 BH 19-10 Sampled By: TXG on 21-MAY-20 @ 12:15 Matrix: WATER							
Physical Tests							
Turbidity	>4000		0.10	NTU		23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	395		10	mg/L		25-MAY-20	R5098436
Ammonia, Total (as N)	0.709	DLHC	0.020	mg/L		28-MAY-20	R5099727
Chloride (Cl)	10.3		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.083		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	0.072		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	0.022		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.879		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	0.79		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	13.5	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0064	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.189	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.000182	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	203	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00134	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0200	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0099	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.0312	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	23.6	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.0341	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.030	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	58.7	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	0.873	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	0.00563	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.0230	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	0.87	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	4.09	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0187	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	26.0	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	94.6	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.321	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	<5.0	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-11 BH 19-10 Sampled By: TXG on 21-MAY-20 @ 12:15 Matrix: WATER							
Total Metals							
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	0.00016	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	0.0026	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.279	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00092	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0264	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.118	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	0.00017		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00088		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0756		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.026		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	40.8		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	0.00021		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00184		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	0.013		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	0.000127		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	21.2		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	0.0182		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.00716		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Nickel (Ni)-Dissolved	0.00145		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	1.39		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000109		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	5.97		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	88.3		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.0902		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-11 BH 19-10 Sampled By: TXG on 21-MAY-20 @ 12:15 Matrix: WATER							
Dissolved Metals							
Uranium (U)-Dissolved	0.000226		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	0.00091		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.0016		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	0.00117		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-12 BH 23-10 Sampled By: TXG on 21-MAY-20 @ 15:00 Matrix: WATER							
Physical Tests							
Colour, Apparent	5.8		2.0	CU		22-MAY-20	R5095342
Conductivity	601		3.0	umhos/cm		26-MAY-20	R5099168
Hardness (as CaCO3)	339		0.50	mg/L		27-MAY-20	
pH	7.74	PEHT	0.10	pH units		26-MAY-20	R5099168
Total Dissolved Solids	384	DLDS	20	mg/L		28-MAY-20	R5102840
Turbidity	>4000		0.10	NTU		23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	273		10	mg/L		26-MAY-20	R5099168
Ammonia, Total (as N)	0.025		0.010	mg/L		28-MAY-20	R5099727
Chloride (Cl)	15.2		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.045		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	14.7		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	<0.0030		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	1.86	DLHC	0.0060	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	3.12		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	47.8	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0263	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.542	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	0.0024	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Bismuth (Bi)-Total	0.00071	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.00301	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	459	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00234	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	0.0531	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0407	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.218	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	91.3	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.269	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	0.099	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	112	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-12 BH 23-10 Sampled By: TXG on 21-MAY-20 @ 15:00 Matrix: WATER							
Total Metals							
Manganese (Mn)-Total	3.19	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	0.00106	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	0.0819	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	2.26	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	5.66	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0373	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	0.00054	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	51.0	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	11.5	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.580	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	<5.0	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	<0.00060	DLUI	0.00060	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	0.0171	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.202	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00185	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0680	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	1.43	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Barium (Ba)-Dissolved	0.102		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Boron (B)-Dissolved	0.012		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Calcium (Ca)-Dissolved	92.3		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	25-MAY-20	25-MAY-20	R5096027
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-MAY-20	25-MAY-20	R5096027
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Magnesium (Mg)-Dissolved	26.3		0.0050	mg/L	25-MAY-20	25-MAY-20	R5096027
Manganese (Mn)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.000078		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-12 BH 23-10 Sampled By: TXG on 21-MAY-20 @ 15:00 Matrix: WATER							
Dissolved Metals							
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Potassium (K)-Dissolved	0.836		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000538		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silicon (Si)-Dissolved	4.39		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	25-MAY-20	R5096027
Sodium (Na)-Dissolved	2.18		0.050	mg/L	25-MAY-20	25-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.117		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	25-MAY-20	R5096027
Uranium (U)-Dissolved	0.000224		0.000010	mg/L	25-MAY-20	25-MAY-20	R5096027
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-MAY-20	25-MAY-20	R5096027
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-MAY-20	25-MAY-20	R5096027
Zirconium (Zr)-Dissolved	<0.00030		0.00030	mg/L	25-MAY-20	25-MAY-20	R5096027
L2450847-13 BH 112-10 Sampled By: TXG on 22-MAY-20 @ 10:25 Matrix: WATER							
Physical Tests							
Colour, Apparent	218		2.0	CU		22-MAY-20	R5095342
Conductivity	831		3.0	umhos/cm		26-MAY-20	R5099168
Hardness (as CaCO3)	486		0.50	mg/L		27-MAY-20	
pH	7.05		0.10	pH units		26-MAY-20	R5099168
Total Dissolved Solids	506	DLDS	20	mg/L		28-MAY-20	R5102840
Turbidity	65.1		0.10	NTU	23-MAY-20	23-MAY-20	R5099982
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	470		10	mg/L		26-MAY-20	R5099168
Ammonia, Total (as N)	1.93	DLHC	0.10	mg/L		28-MAY-20	R5099727
Chloride (Cl)	5.38		0.50	mg/L		26-MAY-20	R5099513
Fluoride (F)	0.044		0.020	mg/L		26-MAY-20	R5099513
Nitrate (as N)	<0.020		0.020	mg/L		26-MAY-20	R5099513
Nitrite (as N)	<0.010		0.010	mg/L		26-MAY-20	R5099513
Orthophosphate-Dissolved (as P)	0.0058		0.0030	mg/L		27-MAY-20	R5099228
Phosphorus, Total	0.128		0.0030	mg/L	27-MAY-20	28-MAY-20	R5100030
Sulfate (SO4)	7.77		0.30	mg/L		26-MAY-20	R5099513
Total Metals							
Aluminum (Al)-Total	1.65	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Arsenic (As)-Total	0.0108	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Barium (Ba)-Total	0.0967	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-13 BH 112-10 Sampled By: TXG on 22-MAY-20 @ 10:25 Matrix: WATER							
Total Metals							
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Cadmium (Cd)-Total	0.000128	DLHC	0.000050	mg/L	27-MAY-20	27-MAY-20	R5099102
Calcium (Ca)-Total	151	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Cesium (Cs)-Total	0.00014	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Cobalt (Co)-Total	0.0021	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Copper (Cu)-Total	0.0253	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Iron (Fe)-Total	7.61	DLHC	0.10	mg/L	27-MAY-20	27-MAY-20	R5099102
Lead (Pb)-Total	0.0138	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Lithium (Li)-Total	<0.010	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Magnesium (Mg)-Total	38.5	DLHC	0.050	mg/L	27-MAY-20	27-MAY-20	R5099102
Manganese (Mn)-Total	0.848	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Molybdenum (Mo)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Nickel (Ni)-Total	<0.0050	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Potassium (K)-Total	2.19	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Rubidium (Rb)-Total	0.0027	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Silicon (Si)-Total	6.2	DLHC	1.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	27-MAY-20	27-MAY-20	R5099102
Sodium (Na)-Total	2.93	DLHC	0.50	mg/L	27-MAY-20	27-MAY-20	R5099102
Strontium (Sr)-Total	0.167	DLHC	0.010	mg/L	27-MAY-20	27-MAY-20	R5099102
Sulfur (S)-Total	<5.0	DLHC	5.0	mg/L	27-MAY-20	27-MAY-20	R5099102
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Thallium (Tl)-Total	<0.00010	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Titanium (Ti)-Total	0.0350	DLHC	0.0030	mg/L	27-MAY-20	27-MAY-20	R5099102
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	27-MAY-20	27-MAY-20	R5099102
Uranium (U)-Total	0.00228	DLHC	0.00010	mg/L	27-MAY-20	27-MAY-20	R5099102
Vanadium (V)-Total	0.0091	DLHC	0.0050	mg/L	27-MAY-20	27-MAY-20	R5099102
Zinc (Zn)-Total	0.224	DLHC	0.030	mg/L	27-MAY-20	27-MAY-20	R5099102
Zirconium (Zr)-Total	0.0021	DLHC	0.0020	mg/L	27-MAY-20	27-MAY-20	R5099102
Dissolved Metals							
Dissolved Metals Filtration Location	LAB					25-MAY-20	R5095644
Aluminum (Al)-Dissolved	0.0355		0.0050	mg/L	25-MAY-20	26-MAY-20	R5096027
Antimony (Sb)-Dissolved	0.00040		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Arsenic (As)-Dissolved	0.00341		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Barium (Ba)-Dissolved	0.0819		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2450847-13 BH 112-10 Sampled By: TXG on 22-MAY-20 @ 10:25 Matrix: WATER							
Dissolved Metals							
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Boron (B)-Dissolved	0.014		0.010	mg/L	25-MAY-20	26-MAY-20	R5096027
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Calcium (Ca)-Dissolved	137		0.050	mg/L	25-MAY-20	26-MAY-20	R5096027
Chromium (Cr)-Dissolved	0.00066		0.00050	mg/L	25-MAY-20	26-MAY-20	R5096027
Cobalt (Co)-Dissolved	0.00055		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Copper (Cu)-Dissolved	0.00144		0.00020	mg/L	25-MAY-20	26-MAY-20	R5096027
Iron (Fe)-Dissolved	0.885		0.010	mg/L	25-MAY-20	26-MAY-20	R5096027
Lead (Pb)-Dissolved	0.000508		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Magnesium (Mg)-Dissolved	35.0		0.0050	mg/L	25-MAY-20	26-MAY-20	R5096027
Manganese (Mn)-Dissolved	0.774		0.00050	mg/L	25-MAY-20	26-MAY-20	R5096027
Molybdenum (Mo)-Dissolved	0.000154		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Nickel (Ni)-Dissolved	0.00086		0.00050	mg/L	25-MAY-20	26-MAY-20	R5096027
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	25-MAY-20	26-MAY-20	R5096027
Potassium (K)-Dissolved	1.92		0.050	mg/L	25-MAY-20	26-MAY-20	R5096027
Selenium (Se)-Dissolved	0.000216		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Silicon (Si)-Dissolved	4.18		0.050	mg/L	25-MAY-20	26-MAY-20	R5096027
Silver (Ag)-Dissolved	<0.000050		0.000050	mg/L	25-MAY-20	26-MAY-20	R5096027
Sodium (Na)-Dissolved	2.88		0.050	mg/L	25-MAY-20	26-MAY-20	R5096027
Strontium (Sr)-Dissolved	0.138		0.0010	mg/L	25-MAY-20	26-MAY-20	R5096027
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-MAY-20	26-MAY-20	R5096027
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Titanium (Ti)-Dissolved	0.00094		0.00030	mg/L	25-MAY-20	26-MAY-20	R5096027
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	25-MAY-20	26-MAY-20	R5096027
Uranium (U)-Dissolved	0.00198		0.000010	mg/L	25-MAY-20	26-MAY-20	R5096027
Vanadium (V)-Dissolved	0.00195		0.00050	mg/L	25-MAY-20	26-MAY-20	R5096027
Zinc (Zn)-Dissolved	0.0486		0.0010	mg/L	25-MAY-20	26-MAY-20	R5096027
Zirconium (Zr)-Dissolved	0.00194		0.00030	mg/L	25-MAY-20	26-MAY-20	R5096027

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Magnesium (Mg)-Dissolved	B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Total	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Total	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Ammonia, Total (as N)	MS-B	L2450847-10, -11, -12, -13
Matrix Spike	Nitrate (as N)	MS-B	L2450847-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9

Sample Parameter Qualifier key listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

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

COLOUR-APPARENT-WT	Water	Colour	APHA 2120

Apparent Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method after sample decanting. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-D-CCMS-WT	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

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

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

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

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

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PO4-DO-COL-WT	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TURBIDITY-WT	Water	Turbidity	APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

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

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

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

Reference Information

Chain of Custody Numbers:

17-801229

GLOSSARY OF REPORT TERMS

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

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

Quality Control Report

Client: MTE CONSULTANTS INC. (Kitchener)
520 BINGEMANS CENTRE DRIVE
KITCHENER ON N2B 3X9
Contact: ELYSHA BREARS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT	**Water**							
Batch R5098363								
WG3328802-2 LCS								
Alkalinity, Total (as CaCO3)			98.0		%		85-115	25-MAY-20
WG3328802-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	25-MAY-20
Batch R5098436								
WG3328803-2 LCS								
Alkalinity, Total (as CaCO3)			99.4		%		85-115	25-MAY-20
WG3328803-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	25-MAY-20
Batch R5099168								
WG3328950-2 LCS								
Alkalinity, Total (as CaCO3)			96.5		%		85-115	26-MAY-20
WG3328950-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	26-MAY-20
Batch R5099175								
WG3328953-2 LCS								
Alkalinity, Total (as CaCO3)			98.4		%		85-115	26-MAY-20
WG3328953-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	26-MAY-20
CL-IC-N-WT	**Water**							
Batch R5099513								
WG3329527-10 DUP		**L2450847-7**						
Chloride (Cl)		14.5	14.6		mg/L	0.0	20	26-MAY-20
WG3329527-2 LCS								
Chloride (Cl)			99.4		%		90-110	26-MAY-20
WG3329527-7 LCS								
Chloride (Cl)			99.1		%		90-110	26-MAY-20
WG3329527-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	26-MAY-20
WG3329527-6 MB								
Chloride (Cl)			<0.50		mg/L		0.5	26-MAY-20
WG3329527-9 MS		**L2450847-7**						
Chloride (Cl)			98.2		%		75-125	26-MAY-20
COLOUR-APPARENT-WT	**Water**							
Batch R5095342								
WG3327776-2 LCS								
Colour, Apparent			95.9		%		85-115	22-MAY-20
WG3327776-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
COLOUR-APPARENT-WT	**Water**							
Batch R5095342								
WG3327776-1 MB								
Colour, Apparent			<2.0		CU		2	22-MAY-20
EC-WT	**Water**							
Batch R5098363								
WG3328802-2 LCS								
Conductivity			99.4		%		90-110	25-MAY-20
WG3328802-1 MB								
Conductivity			<3.0		umhos/cm		3	25-MAY-20
Batch R5098436								
WG3328803-2 LCS								
Conductivity			98.9		%		90-110	25-MAY-20
WG3328803-1 MB								
Conductivity			<3.0		umhos/cm		3	25-MAY-20
Batch R5099168								
WG3328950-2 LCS								
Conductivity			101.6		%		90-110	26-MAY-20
WG3328950-1 MB								
Conductivity			<3.0		umhos/cm		3	26-MAY-20
Batch R5099175								
WG3328953-2 LCS								
Conductivity			100.9		%		90-110	26-MAY-20
WG3328953-1 MB								
Conductivity			<3.0		umhos/cm		3	26-MAY-20
F-IC-N-WT	**Water**							
Batch R5099513								
WG3329527-10 DUP		**L2450847-7**						
Fluoride (F)		0.087	0.090		mg/L	3.6	20	26-MAY-20
WG3329527-2 LCS								
Fluoride (F)			100.7		%		90-110	26-MAY-20
WG3329527-7 LCS								
Fluoride (F)			100.5		%		90-110	26-MAY-20
WG3329527-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	26-MAY-20
WG3329527-6 MB								
Fluoride (F)			<0.020		mg/L		0.02	26-MAY-20
WG3329527-9 MS		**L2450847-7**						
Fluoride (F)			98.8		%		75-125	26-MAY-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5096027								
WG3328147-2 LCS								
Aluminum (Al)-Dissolved			105.2		%		80-120	25-MAY-20
Antimony (Sb)-Dissolved			98.8		%		80-120	25-MAY-20
Arsenic (As)-Dissolved			99.7		%		80-120	25-MAY-20
Barium (Ba)-Dissolved			99.2		%		80-120	25-MAY-20
Beryllium (Be)-Dissolved			112.1		%		80-120	25-MAY-20
Bismuth (Bi)-Dissolved			98.9		%		80-120	25-MAY-20
Boron (B)-Dissolved			108.7		%		80-120	25-MAY-20
Cadmium (Cd)-Dissolved			99.8		%		80-120	25-MAY-20
Calcium (Ca)-Dissolved			106.0		%		80-120	25-MAY-20
Chromium (Cr)-Dissolved			100.6		%		80-120	25-MAY-20
Cobalt (Co)-Dissolved			97.2		%		80-120	25-MAY-20
Copper (Cu)-Dissolved			98.8		%		80-120	25-MAY-20
Iron (Fe)-Dissolved			102.4		%		80-120	25-MAY-20
Lead (Pb)-Dissolved			98.7		%		80-120	25-MAY-20
Magnesium (Mg)-Dissolved			105.8		%		80-120	25-MAY-20
Manganese (Mn)-Dissolved			102.6		%		80-120	25-MAY-20
Molybdenum (Mo)-Dissolved			101.9		%		80-120	25-MAY-20
Nickel (Ni)-Dissolved			98.9		%		80-120	25-MAY-20
Phosphorus (P)-Dissolved			108.2		%		80-120	25-MAY-20
Potassium (K)-Dissolved			103.0		%		80-120	25-MAY-20
Selenium (Se)-Dissolved			97.7		%		80-120	25-MAY-20
Silicon (Si)-Dissolved			95.5		%		60-140	25-MAY-20
Silver (Ag)-Dissolved			98.7		%		80-120	25-MAY-20
Sodium (Na)-Dissolved			103.0		%		80-120	25-MAY-20
Strontium (Sr)-Dissolved			104.9		%		80-120	25-MAY-20
Thallium (Tl)-Dissolved			101.1		%		80-120	25-MAY-20
Tin (Sn)-Dissolved			98.2		%		80-120	25-MAY-20
Titanium (Ti)-Dissolved			96.0		%		80-120	25-MAY-20
Tungsten (W)-Dissolved			99.2		%		80-120	25-MAY-20
Uranium (U)-Dissolved			100.4		%		80-120	25-MAY-20
Vanadium (V)-Dissolved			101.8		%		80-120	25-MAY-20
Zinc (Zn)-Dissolved			101.6		%		80-120	25-MAY-20
Zirconium (Zr)-Dissolved			94.1		%		80-120	25-MAY-20
WG3328147-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	**Water**							
Batch R5096027								
WG3328147-1 MB								
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	25-MAY-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-MAY-20
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	25-MAY-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Chromium (Cr)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-MAY-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-MAY-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Magnesium (Mg)-Dissolved			0.0050	B	mg/L		0.005	25-MAY-20
Manganese (Mn)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Silver (Ag)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-MAY-20
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	25-MAY-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-MAY-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-MAY-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	25-MAY-20
MET-T-CCMS-WT	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5099102								
WG3329601-2 LCS								
Aluminum (Al)-Total			105.5		%		80-120	27-MAY-20
Antimony (Sb)-Total			102.6		%		80-120	27-MAY-20
Arsenic (As)-Total			99.8		%		80-120	27-MAY-20
Barium (Ba)-Total			102.6		%		80-120	27-MAY-20
Beryllium (Be)-Total			101.9		%		80-120	27-MAY-20
Bismuth (Bi)-Total			100.6		%		80-120	27-MAY-20
Boron (B)-Total			97.1		%		80-120	27-MAY-20
Cadmium (Cd)-Total			100.1		%		80-120	27-MAY-20
Calcium (Ca)-Total			99.1		%		80-120	27-MAY-20
Chromium (Cr)-Total			99.0		%		80-120	27-MAY-20
Cesium (Cs)-Total			94.0		%		80-120	27-MAY-20
Cobalt (Co)-Total			95.1		%		80-120	27-MAY-20
Copper (Cu)-Total			94.9		%		80-120	27-MAY-20
Iron (Fe)-Total			96.1		%		80-120	27-MAY-20
Lead (Pb)-Total			101.9		%		80-120	27-MAY-20
Lithium (Li)-Total			109.0		%		80-120	27-MAY-20
Magnesium (Mg)-Total			102.4		%		80-120	27-MAY-20
Manganese (Mn)-Total			100.5		%		80-120	27-MAY-20
Molybdenum (Mo)-Total			95.7		%		80-120	27-MAY-20
Nickel (Ni)-Total			95.4		%		80-120	27-MAY-20
Phosphorus (P)-Total			104.2		%		70-130	27-MAY-20
Potassium (K)-Total			105.9		%		80-120	27-MAY-20
Rubidium (Rb)-Total			101.6		%		80-120	27-MAY-20
Selenium (Se)-Total			97.9		%		80-120	27-MAY-20
Silicon (Si)-Total			103.0		%		60-140	27-MAY-20
Silver (Ag)-Total			98.1		%		80-120	27-MAY-20
Sodium (Na)-Total			103.8		%		80-120	27-MAY-20
Strontium (Sr)-Total			103.0		%		80-120	27-MAY-20
Sulfur (S)-Total			105.4		%		80-120	27-MAY-20
Thallium (Tl)-Total			102.3		%		80-120	27-MAY-20
Tellurium (Te)-Total			95.8		%		80-120	27-MAY-20
Thorium (Th)-Total			93.6		%		70-130	27-MAY-20
Tin (Sn)-Total			100.5		%		80-120	27-MAY-20
Titanium (Ti)-Total			97.0		%		80-120	27-MAY-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5099102								
WG3329601-2 LCS								
Tungsten (W)-Total			96.1		%		80-120	27-MAY-20
Uranium (U)-Total			96.4		%		80-120	27-MAY-20
Vanadium (V)-Total			101.9		%		80-120	27-MAY-20
Zinc (Zn)-Total			97.3		%		80-120	27-MAY-20
Zirconium (Zr)-Total			96.9		%		80-120	27-MAY-20
WG3329601-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	27-MAY-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-MAY-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-MAY-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-MAY-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	27-MAY-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-MAY-20
Boron (B)-Total			<0.010		mg/L		0.01	27-MAY-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-MAY-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-MAY-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	27-MAY-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	27-MAY-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-MAY-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-MAY-20
Iron (Fe)-Total			<0.010		mg/L		0.01	27-MAY-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-MAY-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-MAY-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-MAY-20
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	27-MAY-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-MAY-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-MAY-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	27-MAY-20
Potassium (K)-Total			<0.050		mg/L		0.05	27-MAY-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	27-MAY-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-MAY-20
Silicon (Si)-Total			<0.10		mg/L		0.1	27-MAY-20
Silver (Ag)-Total			<0.000050		mg/L		0.00005	27-MAY-20
Sodium (Na)-Total			<0.050		mg/L		0.05	27-MAY-20
Strontium (Sr)-Total			<0.0010		mg/L		0.001	27-MAY-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5099102								
WG3329601-1 MB								
Sulfur (S)-Total			<0.50		mg/L		0.5	27-MAY-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-MAY-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	27-MAY-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	27-MAY-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-MAY-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-MAY-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	27-MAY-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-MAY-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-MAY-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-MAY-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	27-MAY-20
NH3-F-WT	**Water**							
Batch R5099727								
WG3330004-3 DUP		**L2450847-13**						
Ammonia, Total (as N)		1.93	1.95		mg/L	1.2	20	28-MAY-20
WG3329858-2 LCS								
Ammonia, Total (as N)			92.4		%		85-115	27-MAY-20
WG3330004-2 LCS								
Ammonia, Total (as N)			92.4		%		85-115	27-MAY-20
WG3329858-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	27-MAY-20
WG3330004-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	27-MAY-20
WG3330004-4 MS		**L2450847-13**						
Ammonia, Total (as N)			N/A	MS-B	%		-	28-MAY-20
NO2-IC-WT	**Water**							
Batch R5099513								
WG3329527-10 DUP		**L2450847-7**						
Nitrite (as N)		0.016	0.016		mg/L	0.7	20	26-MAY-20
WG3329527-2 LCS								
Nitrite (as N)			99.3		%		90-110	26-MAY-20
WG3329527-7 LCS								
Nitrite (as N)			98.3		%		90-110	26-MAY-20
WG3329527-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	26-MAY-20
WG3329527-6 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-WT	**Water**							
Batch R5099513								
WG3329527-6 MB								
Nitrite (as N)			<0.010		mg/L		0.01	26-MAY-20
WG3329527-9 MS		**L2450847-7**						
Nitrite (as N)			98.2		%		75-125	26-MAY-20
NO3-IC-WT	**Water**							
Batch R5099513								
WG3329527-10 DUP		**L2450847-7**						
Nitrate (as N)		2.76	2.76		mg/L	0.0	20	26-MAY-20
WG3329527-2 LCS								
Nitrate (as N)			98.4		%		90-110	26-MAY-20
WG3329527-7 LCS								
Nitrate (as N)			98.0		%		90-110	26-MAY-20
WG3329527-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	26-MAY-20
WG3329527-6 MB								
Nitrate (as N)			<0.020		mg/L		0.02	26-MAY-20
WG3329527-9 MS		**L2450847-7**						
Nitrate (as N)			N/A	MS-B	%		-	26-MAY-20
P-T-COL-WT	**Water**							
Batch R5100030								
WG3329943-3 DUP		**L2450847-8**						
Phosphorus, Total		0.0102	0.0116		mg/L	13	20	28-MAY-20
WG3329943-2 LCS								
Phosphorus, Total			101.1		%		80-120	28-MAY-20
WG3329943-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	28-MAY-20
WG3329943-4 MS		**L2450847-8**						
Phosphorus, Total			94.1		%		70-130	28-MAY-20
PH-WT	**Water**							
Batch R5098363								
WG3328802-2 LCS								
pH			6.99		pH units		6.9-7.1	25-MAY-20
Batch R5098436								
WG3328803-2 LCS								
pH			6.99		pH units		6.9-7.1	25-MAY-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WT	**Water**							
Batch R5099168								
WG3328950-2 LCS								
pH			6.99		pH units		6.9-7.1	26-MAY-20
Batch R5099175								
WG3328953-2 LCS								
pH			6.99		pH units		6.9-7.1	26-MAY-20
PO4-DO-COL-WT	**Water**							
Batch R5099228								
WG3329637-11 DUP		**L2450847-6**						
Orthophosphate-Dissolved (as P)		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-MAY-20
WG3329637-7 DUP		**L2450847-1**						
Orthophosphate-Dissolved (as P)		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-MAY-20
WG3329637-10 LCS								
Orthophosphate-Dissolved (as P)			102.7		%		80-120	27-MAY-20
WG3329637-6 LCS								
Orthophosphate-Dissolved (as P)			107.5		%		80-120	27-MAY-20
WG3329637-5 MB								
Orthophosphate-Dissolved (as P)			<0.0030		mg/L		0.003	27-MAY-20
WG3329637-9 MB								
Orthophosphate-Dissolved (as P)			<0.0030		mg/L		0.003	27-MAY-20
WG3329637-12 MS		**L2450847-6**						
Orthophosphate-Dissolved (as P)			101.4		%		70-130	27-MAY-20
WG3329637-8 MS		**L2450847-1**						
Orthophosphate-Dissolved (as P)			100.3		%		70-130	27-MAY-20
SO4-IC-N-WT	**Water**							
Batch R5099513								
WG3329527-10 DUP		**L2450847-7**						
Sulfate (SO4)		94.4	94.4		mg/L	0.1	20	26-MAY-20
WG3329527-2 LCS								
Sulfate (SO4)			99.8		%		90-110	26-MAY-20
WG3329527-7 LCS								
Sulfate (SO4)			99.8		%		90-110	26-MAY-20
WG3329527-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	26-MAY-20
WG3329527-6 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	26-MAY-20
WG3329527-9 MS		**L2450847-7**						

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT	**Water**							
Batch R5099513								
WG3329527-9 MS		**L2450847-7**						
Sulfate (SO4)			95.1		%		75-125	26-MAY-20
SOLIDS-TDS-WT	**Water**							
Batch R5098148								
WG3328312-8 LCS								
Total Dissolved Solids			103.6		%		85-115	25-MAY-20
WG3328312-7 MB								
Total Dissolved Solids			<10		mg/L		10	25-MAY-20
Batch R5102840								
WG3330490-2 LCS								
Total Dissolved Solids			91.8		%		85-115	28-MAY-20
WG3330490-1 MB								
Total Dissolved Solids			<10		mg/L		10	28-MAY-20
TURBIDITY-WT	**Water**							
Batch R5099982								
WG3327820-12 DUP		**L2450847-13**						
Turbidity		65.1	66.0		NTU	1.4	15	23-MAY-20
WG3327820-11 LCS								
Turbidity			104.0		%		85-115	23-MAY-20
WG3327820-10 MB								
Turbidity			<0.10		NTU		0.1	23-MAY-20

Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	2	21-MAY-20 15:30	26-MAY-20 08:00	4	5	days	EHT
	8	21-MAY-20 16:10	26-MAY-20 08:00	4	5	days	EHT
	12	21-MAY-20 15:00	26-MAY-20 08:00	4	5	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2450847 were received on 22-MAY-20 16:30.

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

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

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

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Anal Request Form

Canada Toll Free: 1 800 668 98

L2450847-COFC

COC Number: 17 - 801229

Page 1 of 2

Report To	Contact and company name below will appear on the final report
Company:	MTE
Contact:	Elysha Brears
Phone:	519-843-6500
	Company address below will appear on the final report
Street:	520 Bingemans Centre Dr
City/Province:	Kitchener
Postal Code:	

Report Format / Distribution	
Select Report Format:	[x] PDF [x] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report	[x] YES [ ] NO
	[x] Compare Results to Criteria on Report - provide details below if box checked
Select Distribution:	[x] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	ebrears@mte85.com
Email 2	
Email 3	

Invoice To		
	Same as Report To	[x] YES [ ] NO
	Copy of Invoice with Report	[ ] YES [ ] NO
Company:		
Contact:		

Invoice Distribution	
Select Invoice Distribution:	[x] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	44720-114
PO / AFE:	
LSD:	

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

ALS Lab Work Order # (lab use only): L2450847 MC

ALS Contact: Emily

Sampler: TXG

Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

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

PRIORITY (Business Days): [ ] 4 day [P4-20%] [ ] 3 day [P3-25%] [ ] 2 day [P2-50%]

EMERGENCY: [ ] 1 Business day [E - 100%] [ ] Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]

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

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Gen Chem 1	Diss. Metals	Total Phosphorus	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	BH 01-10	21-May-20	1310	GW	5	X	X	X		
	BH 02-10		1530							
	BH 04-10		1040							
	BH 05-10		0915							
	BH 06-10		0955							
	BH 11-10	22-	1105							
	BH 13-10	22-	1125							
	BH 14-10	21-	1610							
	BH 16-10		1120							
	BH 18A-10		1355							
	BH 19-10		1215							
	BH 23-10		1500							

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

Are samples taken from a Regulated DW System? [ ] YES [x] NO

Are samples for human consumption/ use? [ ] YES [x] NO

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

Please lab filter metals with out Preservative For Diss Metals

Total Phos - using colourimetry

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [x] SIF Observations Yes [ ] No [ ]

Ice Packs [x] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				14.4			

SHIPMENT RELEASE (client use)		
Released by:	Date:	Time:
T. Green	May 22/20	1440

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

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:
MC	May 22/20	1630

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

Chain of Custody (COC) / Analyti Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2450847-COFC

COC Number: 17 - 622577

Page 2 of 2

Report To	Contact and company name below will appear on the final report
Company:	MTE
Contact:	Elysha Brears
Phone:	
	Company address below will appear on the final report
Street:	520 Bingemans Centre
City/Province:	
Postal Code:	
Invoice To	Same as Report To [x] YES [ ] NO
	Copy of Invoice with Report [ ] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: [x] PDF [x] EXCEL | | EDD (DIGITAL)
Quality Control (QC) Report with Report [x] YES [ ] NO
[x] Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: [x] EMAIL | | MAIL [ ] FAX
Email 1 or Fax: ebrears@mte85.com
Email 2:
Email 3:

Invoice Distribution

Select Invoice Distribution: [x] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax:
Email 2:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

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

PRIORITY (Business Days):
- 4 day [P4-20%] [ ]
- 3 day [P3-25%] [ ]
- 2 day [P2-50%] [ ]

EMERGENCY:
- 1 Business day [E-100%] [ ]
- Same Day, Weekend or Statutory holiday [E2-200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs:

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

Project Information

ALS Account # / Quote #:
Job #: 44720-114
PO / AFE:
LSD:

For Laboratory Use Only (Field Use)

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only): L2450847
ALS Contact: Emily
Sampler: TKG

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Gen Chem	D.S. Metals	Total Phosphorus	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	BH12-10	22-May-20	1025	GW	x	x	x			5

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

Are samples taken from a Regulated DW System?
[ ] YES [x] NO

Are samples for human consumption/ use?
[ ] YES [x] NO

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

Lab filter metals w/at preservative
T. Phosphorus using colourimetry

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]
Ice Packs [x] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]
Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				4.4			

SHIPMENT RELEASE (client use)

Released by: T. Brears Date: May 22/20 Time: 1440

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date: Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by: Date: May 22/20 Time: 1630

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JULY 2017 FRONT

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

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

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Certificate of Analysis

LVM-NAYLOR

ATTN: CHRIS HELMER

NAYLOR ENGINEERING
353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5

Report Date: 08-MAR-10 14:18 (MT)
Version: FINAL

Lab Work Order #: **L864494** **Date Received:** **24-FEB-10**

Project P.O. #: 178264
Job Reference: 160 P031655 0300
Legal Site Desc:
CofC Numbers: 83725

Other Information:

Comments:

Nancy Graham
Account Manager

ALS Canada Ltd.
Part of the **ALS Laboratory Group**
60 Northland Road, Unit 1, Waterloo, ON N2V 2B8
Phone: +1 519 886 6910 Fax: +1 519 886 9047 www.alsglobal.com
A Campbell Brothers Limited Company

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L864494-1 BH 02 Sampled By: DAN SOUTER on 24-FEB-10 @ 09:00 Matrix: WATER									
General Water Quality Package									
Anion Scan (IC)									
Chloride	65.1		2.0	mg/L			250	26-FEB-10	R1178623
Bromide	0.14		0.10	mg/L				26-FEB-10	R1178623
Fluoride	<0.10		0.10	mg/L	1.5			26-FEB-10	R1178623
Nitrite-N	<0.10		0.10	mg/L	1			26-FEB-10	R1178623
Nitrate-N	<0.10		0.10	mg/L	10			26-FEB-10	R1178623
Sulphate	14.4		2.0	mg/L			500	26-FEB-10	R1178623
Silica	10.8		2.1	mg/L				03-MAR-10	
Conductivity	937		0.40	umhos/cm				25-FEB-10	R1175924
Detailed Ion Balance Calculation									
Ion Balance	91.2			%				05-MAR-10	
Cation - Anion Balance	-4.6			%				05-MAR-10	
Computed Conductivity	903			uS/cm				05-MAR-10	
Conductivity % Difference	-3.7			%				05-MAR-10	
TDS (Calculated)	595			mg/L				05-MAR-10	
Anion Sum	11.3			me/L				05-MAR-10	
Cation Sum	10.3			me/L				05-MAR-10	
Saturation pH	6.70			pH				05-MAR-10	
Langelier Index	1.3			No Unit				05-MAR-10	
Hardness (as CaCO3)	451			mg/L		**	80-100	05-MAR-10	
E. Coli	0		0	CFU/100mL	0			26-FEB-10	R1178247
Total Coliform Background	>200		0	CFU/100mL				26-FEB-10	R1178245
Redox Potential	315		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	0.55		0.030	No Unit				08-MAR-10	
Total Coliforms	0		0	CFU/100mL	0			26-FEB-10	R1178245
Total Dissolved Solids	544		20	mg/L		**	500	26-FEB-10	R1178206
Turbidity	9.70		0.10	NTU		**	5	25-FEB-10	R1176383
pH	7.97		0.10	pH units			6.5-8.5	25-FEB-10	R1176123
Individual Analytes									
Alkalinity, Total (as CaCO3)	553		5.0	mg/L		**	30-500	03-MAR-10	R1183563
Ammonia-N, Total	0.302		0.020	mg/L				05-MAR-10	R1192003
Bicarbonate (HCO3)	670		5.0	mg/L				03-MAR-10	R1183563
Carbonate (CO3)	<5.0		5.0	mg/L				03-MAR-10	R1183563
Color, Apparent	4930	PEHT	0.40	C.U.		**	5	02-MAR-10	R1181016
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	0.0023	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.115	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	112	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0024	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L				01-MAR-10	R1179510

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits				Analyzed	Batch
					STANDARDS		GUIDELINES			
L864494-1 BH 02										
Sampled By: DAN SOUTER on 24-FEB-10 @ 09:00										
Matrix: WATER										
Individual Analytes										
Metal Scan-Dissolved										
Copper (Cu)-Dissolved	0.0024	SFPL	0.0010	mg/L				1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L				0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L		0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	41.7	SFPL	0.50	mg/L					01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.248	SFPL	0.0010	mg/L			**	0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	0.0056	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L					01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L					01-MAR-10	R1179510
Potassium (K)-Dissolved	2.8	SFPL	1.0	mg/L					01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L		0.01			01-MAR-10	R1179510
Silicon (Si)-Dissolved	5.0	SFPL	1.0	mg/L					02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L					01-MAR-10	R1179510
Sodium (Na)-Dissolved	27.0	DLM	5.0	mg/L	**	20		200	02-MAR-10	R1180907
Strontium (Sr)-Dissolved	0.190	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L					01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L					02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L					01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L		0.02			01-MAR-10	R1179510
Vanadium (V)-Dissolved	0.0036	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Zinc (Zn)-Dissolved	0.0146	SFPL	0.0030	mg/L				5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L					02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L					04-MAR-10	R1188703
L864494-2 BH 01										
Sampled By: DAN SOUTER on 24-FEB-10 @ 09:30										
Matrix: WATER										
					STANDARDS		GUIDELINES			
General Water Quality Package										
Anion Scan (IC)										
Chloride	19.7		2.0	mg/L				250	26-FEB-10	R1178623
Bromide	<0.10		0.10	mg/L					26-FEB-10	R1178623
Fluoride	<0.10		0.10	mg/L		1.5			26-FEB-10	R1178623
Nitrite-N	<0.10		0.10	mg/L		1			26-FEB-10	R1178623
Nitrate-N	<0.10		0.10	mg/L		10			26-FEB-10	R1178623
Sulphate	6.4		2.0	mg/L				500	26-FEB-10	R1178623
Silica	8.6		2.1	mg/L					03-MAR-10	
Conductivity	662		0.40	umhos/cm					25-FEB-10	R1175924
Detailed Ion Balance Calculation										
Ion Balance	51.2			%					08-MAR-10	
Cation - Anion Balance	-32.2			%					08-MAR-10	
Computed Conductivity	856			uS/cm					08-MAR-10	
Conductivity % Difference	25.5			%					08-MAR-10	
TDS (Calculated)	655			mg/L					08-MAR-10	
Anion Sum	14.4			me/L					08-MAR-10	
Cation Sum	7.37			me/L					08-MAR-10	
Saturation pH	6.58			pH					08-MAR-10	
Langelier Index	1.1			No Unit					08-MAR-10	

** analytical results for this parameter exceed criteria limits listed on this report

Ontario DW Std O.Reg 169/03 JUNE 2007

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L864494-2 BH 01									
Sampled By: DAN SOUTER on 24-FEB-10 @ 09:30									
Matrix: WATER									
General Water Quality Package									
Detailed Ion Balance Calculation									
Hardness (as CaCO3)	350			mg/L		**	80-100	08-MAR-10	
E. Coli	0		0	CFU/100mL	0			26-FEB-10	R1178247
Total Coliform Background	>200		0	CFU/100mL				26-FEB-10	R1178245
Redox Potential	335		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	0.17		0.030	No Unit				08-MAR-10	
Total Coliforms	0		0	CFU/100mL	0			26-FEB-10	R1178245
Total Dissolved Solids	412		20	mg/L			500	26-FEB-10	R1178206
Turbidity	56.0		0.10	NTU		**	5	25-FEB-10	R1176383
pH	7.72		0.10	pH units			6.5-8.5	25-FEB-10	R1176123
Individual Analytes									
Alkalinity, Total (as CaCO3)	831		5.0	mg/L		**	30-500	03-MAR-10	R1183563
Ammonia-N, Total	0.722		0.020	mg/L				05-MAR-10	R1192003
Bicarbonate (HCO3)	1010		5.0	mg/L				03-MAR-10	R1183563
Carbonate (CO3)	<5.0		5.0	mg/L				03-MAR-10	R1183563
Color, Apparent	18300	PEHT	0.40	C.U.		**	5	02-MAR-10	R1181016
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	0.0112	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.108	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	96.0	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0019	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	0.00205	SFPL	0.00050	mg/L				01-MAR-10	R1179510
Copper (Cu)-Dissolved	0.0083	SFPL	0.0010	mg/L			1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L			0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	26.8	SFPL	0.50	mg/L				01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.631	SFPL	0.0010	mg/L		**	0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	0.0020	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Nickel (Ni)-Dissolved	0.0049	SFPL	0.0020	mg/L				01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L				01-MAR-10	R1179510
Potassium (K)-Dissolved	<1.0	SFPL	1.0	mg/L				01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01			01-MAR-10	R1179510
Silicon (Si)-Dissolved	4.0	SFPL	1.0	mg/L				02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L				01-MAR-10	R1179510
Sodium (Na)-Dissolved	7.36	SFPL	0.50	mg/L	20		200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.0945	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L				01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L				02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L				01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02			01-MAR-10	R1179510

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS	GUIDELINES			
L864494-2 BH 01									
Sampled By: DAN SOUTER on 24-FEB-10 @ 09:30									
Matrix: WATER									
Individual Analytes									
Metal Scan-Dissolved									
Vanadium (V)-Dissolved	0.0045	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Zinc (Zn)-Dissolved	0.0815	SFPL	0.0030	mg/L			5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L				02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L				04-MAR-10	R1188703
L864494-3 BH 04									
Sampled By: DAN SOUTER on 24-FEB-10 @ 10:00									
Matrix: WATER									
					STANDARDS	GUIDELINES			
General Water Quality Package									
Anion Scan (IC)									
Chloride	8.8		2.0	mg/L			250	26-FEB-10	R1178623
Bromide	<0.10		0.10	mg/L				26-FEB-10	R1178623
Fluoride	<0.10		0.10	mg/L	1.5			26-FEB-10	R1178623
Nitrite-N	<0.10		0.10	mg/L	1			26-FEB-10	R1178623
Nitrate-N	3.54		0.10	mg/L	10			26-FEB-10	R1178623
Sulphate	6.6		2.0	mg/L			500	26-FEB-10	R1178623
Silica	7.2		2.1	mg/L				03-MAR-10	
Conductivity	573		0.40	umhos/cm				25-FEB-10	R1175924
Detailed Ion Balance Calculation									
Ion Balance	33.7			%				08-MAR-10	
Cation - Anion Balance	-49.5			%				08-MAR-10	
Computed Conductivity	906			uS/cm				08-MAR-10	
Conductivity % Difference	45.0			%				08-MAR-10	
TDS (Calculated)	756			mg/L				08-MAR-10	
Anion Sum	17.6			me/L				08-MAR-10	
Cation Sum	5.96			me/L				08-MAR-10	
Saturation pH	6.58			pH				08-MAR-10	
Langelier Index	1.3			No Unit				08-MAR-10	
Hardness (as CaCO3)	289			mg/L		**	80-100	08-MAR-10	
E. Coli	0		0	CFU/100mL	0			26-FEB-10	R1178247
Total Coliform Background	>200		0	CFU/100mL				26-FEB-10	R1178245
Redox Potential	340		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	0.06		0.030	No Unit				08-MAR-10	
Total Coliforms	51		0	CFU/100mL	** 0			26-FEB-10	R1178245
Total Dissolved Solids	342		20	mg/L			500	26-FEB-10	R1178206
Turbidity	20.0		0.10	NTU		**	5	25-FEB-10	R1176383
pH	7.89		0.10	pH units			6.5-8.5	25-FEB-10	R1176123
Individual Analytes									
Alkalinity, Total (as CaCO3)	1030		5.0	mg/L		**	30-500	03-MAR-10	R1183563
Ammonia-N, Total	0.065		0.020	mg/L				05-MAR-10	R1192003
Bicarbonate (HCO3)	1240		5.0	mg/L				03-MAR-10	R1183563
Carbonate (CO3)	<5.0		5.0	mg/L				03-MAR-10	R1183563
Color, Apparent	44500	PEHT	0.40	C.U.		**	5	02-MAR-10	R1181016
Metal Scan-Dissolved									

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
L864494-3 BH 04									
Sampled By: DAN SOUTER on 24-FEB-10 @ 10:00									
Matrix: WATER					STANDARDS		GUIDELINES		
Individual Analytes									
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.056	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	79.3	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0013	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L				01-MAR-10	R1179510
Copper (Cu)-Dissolved	0.0023	SFPL	0.0010	mg/L			1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L			0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	22.2	SFPL	0.50	mg/L				01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.0675	SFPL	0.0010	mg/L		**	0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L				01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L				01-MAR-10	R1179510
Potassium (K)-Dissolved	2.8	SFPL	1.0	mg/L				01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01			01-MAR-10	R1179510
Silicon (Si)-Dissolved	3.4	SFPL	1.0	mg/L				02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L				01-MAR-10	R1179510
Sodium (Na)-Dissolved	2.18	SFPL	0.50	mg/L	20		200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.0736	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L				01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L				02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L				01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02			01-MAR-10	R1179510
Vanadium (V)-Dissolved	0.0029	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Zinc (Zn)-Dissolved	<0.0030	SFPL	0.0030	mg/L			5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L				02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L				04-MAR-10	R1188703
L864494-4 BH 14									
Sampled By: DAN SOUTER on 24-FEB-10 @ 10:30									
Matrix: WATER					STANDARDS		GUIDELINES		
General Water Quality Package									
Anion Scan (IC)									
Chloride	7.8		2.0	mg/L			250	26-FEB-10	R1178623
Bromide	<0.10		0.10	mg/L				26-FEB-10	R1178623
Fluoride	<0.10		0.10	mg/L	1.5			26-FEB-10	R1178623
Nitrite-N	<0.10		0.10	mg/L	1			26-FEB-10	R1178623
Nitrate-N	<0.10		0.10	mg/L	10			26-FEB-10	R1178623
Sulphate	2.4		2.0	mg/L			500	26-FEB-10	R1178623
Silica	6.8		2.1	mg/L				03-MAR-10	

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS	GUIDELINES			
L864494-4 BH 14									
Sampled By: DAN SOUTER on 24-FEB-10 @ 10:30									
Matrix: WATER									
General Water Quality Package									
Conductivity	680		0.40	umhos/cm				25-FEB-10	R1175924
Detailed Ion Balance Calculation									
Ion Balance	77.5			%				08-MAR-10	
Cation - Anion Balance	-12.7			%				08-MAR-10	
Computed Conductivity	711			uS/cm				08-MAR-10	
Conductivity % Difference	4.5			%				08-MAR-10	
TDS (Calculated)	498			mg/L				08-MAR-10	
Anion Sum	9.84			me/L				08-MAR-10	
Cation Sum	7.63			me/L				08-MAR-10	
Saturation pH	6.65			pH				08-MAR-10	
Langelier Index	1.1			No Unit				08-MAR-10	
Hardness (as CaCO3)	377			mg/L		**	80-100	08-MAR-10	
E. Coli	0		0	CFU/100mL	0			26-FEB-10	R1178247
Total Coliform Background	>200		0	CFU/100mL				26-FEB-10	R1178245
Redox Potential	350		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	0.04		0.030	No Unit				08-MAR-10	
Total Coliforms	105		0	CFU/100mL	** 0			26-FEB-10	R1178245
Total Dissolved Solids	408		20	mg/L			500	26-FEB-10	R1178206
Turbidity	15.0		0.10	NTU		**	5	25-FEB-10	R1176383
pH	7.75		0.10	pH units			6.5-8.5	25-FEB-10	R1176123
Individual Analytes									
Alkalinity, Total (as CaCO3)	581		5.0	mg/L		**	30-500	02-MAR-10	R1181383
Ammonia-N, Total	0.117		0.020	mg/L				05-MAR-10	R1192003
Bicarbonate (HCO3)	705		5.0	mg/L				03-MAR-10	R1183563
Carbonate (CO3)	<5.0		5.0	mg/L				03-MAR-10	R1183563
Color, Apparent	7320	PEHT	0.40	C.U.		**	5	02-MAR-10	R1181016
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.046	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	115	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0018	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L				01-MAR-10	R1179510
Copper (Cu)-Dissolved	0.0068	SFPL	0.0010	mg/L			1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L			0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	21.9	SFPL	0.50	mg/L				01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.671	SFPL	0.0010	mg/L		**	0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L				01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L				01-MAR-10	R1179510

** analytical results for this parameter exceed criteria limits listed on this report

Ontario DW Std O.Reg 169/03 JUNE 2007

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits		Analyzed	Batch
L864494-4 BH 14								
Sampled By: DAN SOUTER on 24-FEB-10 @ 10:30								
Matrix: WATER					STANDARDS	GUIDELINES		
Individual Analytes								
Metal Scan-Dissolved								
Potassium (K)-Dissolved	<1.0	SFPL	1.0	mg/L			01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01		01-MAR-10	R1179510
Silicon (Si)-Dissolved	3.2	SFPL	1.0	mg/L			02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L			01-MAR-10	R1179510
Sodium (Na)-Dissolved	1.90	SFPL	0.50	mg/L	20	200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.100	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L			01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L			02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L			01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02		01-MAR-10	R1179510
Vanadium (V)-Dissolved	0.0044	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Zinc (Zn)-Dissolved	0.0079	SFPL	0.0030	mg/L		5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L			02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L			04-MAR-10	R1188703
L864494-5 BH 11								
Sampled By: DAN SOUTER on 24-FEB-10 @ 13:00								
Matrix: WATER					STANDARDS	GUIDELINES		
General Water Quality Package								
Anion Scan (IC)								
Chloride	5.5		2.0	mg/L		250	26-FEB-10	R1178623
Bromide	<0.10		0.10	mg/L			26-FEB-10	R1178623
Fluoride	<0.10		0.10	mg/L	1.5		26-FEB-10	R1178623
Nitrite-N	<0.10		0.10	mg/L	1		26-FEB-10	R1178623
Nitrate-N	1.21		0.10	mg/L	10		26-FEB-10	R1178623
Sulphate	12.6		2.0	mg/L		500	26-FEB-10	R1178623
Silica	10.2		2.1	mg/L			03-MAR-10	
Conductivity	667		0.40	umhos/cm			25-FEB-10	R1175924
Detailed Ion Balance Calculation								
Ion Balance	29.9			%			08-MAR-10	
Cation - Anion Balance	-54.0			%			08-MAR-10	
Computed Conductivity	1170			uS/cm			08-MAR-10	
Conductivity % Difference	54.4			%			08-MAR-10	
TDS (Calculated)	1020			mg/L			08-MAR-10	
Anion Sum	24.5			me/L			08-MAR-10	
Cation Sum	7.31			me/L			08-MAR-10	
Saturation pH	6.39			pH			08-MAR-10	
Langelier Index	1.5			No Unit			08-MAR-10	
Hardness (as CaCO3)	360			mg/L		** 80-100	08-MAR-10	
E. Coli	0		0	CFU/100mL	0		26-FEB-10	R1178247
Total Coliform Background	6		0	CFU/100mL			26-FEB-10	R1178245
Redox Potential	355		-1000	mV			26-FEB-10	R1179468
Sodium Adsorption Ratio	0.06		0.030	No Unit			08-MAR-10	
Total Coliforms	0		0	CFU/100mL	0		26-FEB-10	R1178245
Total Dissolved Solids	384		20	mg/L		500	26-FEB-10	R1178206

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
L864494-5 BH 11									
Sampled By: DAN SOUTER on 24-FEB-10 @ 13:00									
Matrix: WATER					STANDARDS		GUIDELINES		
General Water Quality Package									
Turbidity	9.60		0.10	NTU		**	5	25-FEB-10	R1176383
pH	7.91		0.10	pH units			6.5-8.5	25-FEB-10	R1176123
Individual Analytes									
Alkalinity, Total (as CaCO3)	1450		5.0	mg/L		**	30-500	02-MAR-10	R1181383
Ammonia-N, Total	0.069		0.020	mg/L				05-MAR-10	R1192003
Bicarbonate (HCO3)	1760		5.0	mg/L				03-MAR-10	R1183563
Carbonate (CO3)	<5.0		5.0	mg/L				03-MAR-10	R1183563
Color, Apparent	49000	PEHT	0.40	C.U.		**	5	02-MAR-10	R1181016
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.027	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	93.2	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0027	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L				01-MAR-10	R1179510
Copper (Cu)-Dissolved	<0.0010	SFPL	0.0010	mg/L			1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L			0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	30.9	SFPL	0.50	mg/L				01-MAR-10	R1179510
Manganese (Mn)-Dissolved	<0.0010	SFPL	0.0010	mg/L			0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L				01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L				01-MAR-10	R1179510
Potassium (K)-Dissolved	<1.0	SFPL	1.0	mg/L				01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01			01-MAR-10	R1179510
Silicon (Si)-Dissolved	4.8	SFPL	1.0	mg/L				02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L				01-MAR-10	R1179510
Sodium (Na)-Dissolved	2.62	SFPL	0.50	mg/L	20		200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.0862	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L				01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L				02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L				01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02			01-MAR-10	R1179510
Vanadium (V)-Dissolved	0.0039	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Zinc (Zn)-Dissolved	<0.0030	SFPL	0.0030	mg/L			5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L				02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L				04-MAR-10	R1188703
L864494-6 BH 10									
Sampled By: DAN SOUTER on 24-FEB-10 @ 13:30									
Matrix: WATER					STANDARDS		GUIDELINES		
General Water Quality Package									

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L864494-6 BH 10									
Sampled By: DAN SOUTER on 24-FEB-10 @ 13:30									
Matrix: WATER									
General Water Quality Package									
Anion Scan (IC)									
Chloride	21.1		2.0	mg/L			250	26-FEB-10	R1178623
Bromide	<0.10		0.10	mg/L				26-FEB-10	R1178623
Fluoride	0.11		0.10	mg/L	1.5			26-FEB-10	R1178623
Nitrite-N	<0.10		0.10	mg/L	1			26-FEB-10	R1178623
Nitrate-N	0.13		0.10	mg/L	10			26-FEB-10	R1178623
Sulphate	71.1		2.0	mg/L			500	26-FEB-10	R1178623
Silica	14.1		2.1	mg/L				03-MAR-10	
Conductivity	590		0.40	umhos/cm				25-FEB-10	R1175924
Detailed Ion Balance Calculation									
Ion Balance	22.4			%				08-MAR-10	
Cation - Anion Balance	-63.4			%				08-MAR-10	
Computed Conductivity	1350			uS/cm				08-MAR-10	
Conductivity % Difference	78.5			%				08-MAR-10	
TDS (Calculated)	1220			mg/L				08-MAR-10	
Anion Sum	30.0			me/L				08-MAR-10	
Cation Sum	6.71			me/L				08-MAR-10	
Saturation pH	6.45			pH				08-MAR-10	
Langelier Index	1.7			No Unit				08-MAR-10	
Hardness (as CaCO3)	314			mg/L		**	80-100	08-MAR-10	
E. Coli	0		0	CFU/100mL	0			26-FEB-10	R1178247
Total Coliform Background	>200		0	CFU/100mL				26-FEB-10	R1178245
Redox Potential	335		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	0.21		0.030	No Unit				08-MAR-10	
Total Coliforms	4		0	CFU/100mL	** 0			26-FEB-10	R1178245
Total Dissolved Solids	370		20	mg/L			500	26-FEB-10	R1178206
Turbidity	17.5		0.10	NTU		**	5	25-FEB-10	R1176383
pH	8.12		0.10	pH units			6.5-8.5	25-FEB-10	R1176123
Individual Analytes									
Alkalinity, Total (as CaCO3)	1680		5.0	mg/L		**	30-500	02-MAR-10	R1181383
Ammonia-N, Total	0.128		0.020	mg/L				05-MAR-10	R1192003
Bicarbonate (HCO3)	2030		5.0	mg/L				03-MAR-10	R1183563
Carbonate (CO3)	6.0		5.0	mg/L				03-MAR-10	R1183563
Color, Apparent	41700	PEHT	0.40	C.U.		**	5	02-MAR-10	R1181016
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.127	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	73.2	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0014	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L				01-MAR-10	R1179510

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L864494-6 BH 10									
Sampled By: DAN SOUTER on 24-FEB-10 @ 13:30									
Matrix: WATER									
Individual Analytes									
Metal Scan-Dissolved									
Copper (Cu)-Dissolved	<0.0010	SFPL	0.0010	mg/L			1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L			0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	31.8	SFPL	0.50	mg/L				01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.158	SFPL	0.0010	mg/L		**	0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	0.0085	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L				01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L				01-MAR-10	R1179510
Potassium (K)-Dissolved	2.5	SFPL	1.0	mg/L				01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01			01-MAR-10	R1179510
Silicon (Si)-Dissolved	6.6	SFPL	1.0	mg/L				02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L				01-MAR-10	R1179510
Sodium (Na)-Dissolved	8.43	SFPL	0.50	mg/L	20		200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.141	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L				01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L				02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L				01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02			01-MAR-10	R1179510
Vanadium (V)-Dissolved	0.0032	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Zinc (Zn)-Dissolved	0.0134	SFPL	0.0030	mg/L			5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L				02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L				04-MAR-10	R1188703
L864494-7 BH 13									
Sampled By: DAN SOUTER on 24-FEB-10 @ 14:00									
Matrix: WATER									
					STANDARDS		GUIDELINES		
General Water Quality Package									
Anion Scan (IC)									
Chloride	21.0		2.0	mg/L			250	26-FEB-10	R1178623
Bromide	<0.10		0.10	mg/L				26-FEB-10	R1178623
Fluoride	<0.10		0.10	mg/L	1.5			26-FEB-10	R1178623
Nitrite-N	<0.10		0.10	mg/L	1			26-FEB-10	R1178623
Nitrate-N	11.5		0.10	mg/L	** 10			26-FEB-10	R1178623
Sulphate	80.0		2.0	mg/L			500	26-FEB-10	R1178623
Silica	13.2		2.1	mg/L				03-MAR-10	
Conductivity	729		0.40	umhos/cm				25-FEB-10	R1175924
Detailed Ion Balance Calculation									
Ion Balance	107			%				05-MAR-10	
Cation - Anion Balance	3.2			%				05-MAR-10	
Computed Conductivity	724			uS/cm				05-MAR-10	
Conductivity % Difference	-0.7			%				05-MAR-10	
TDS (Calculated)	459			mg/L				05-MAR-10	
Anion Sum	7.66			me/L				05-MAR-10	
Cation Sum	8.17			me/L				05-MAR-10	
Saturation pH	7.06			pH				05-MAR-10	
Langelier Index	1.0			No Unit				05-MAR-10	

** analytical results for this parameter exceed criteria limits listed on this report

Ontario DW Std O.Reg 169/03 JUNE 2007

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L864494-7 BH 13 Sampled By: DAN SOUTER on 24-FEB-10 @ 14:00 Matrix: WATER									
General Water Quality Package									
Detailed Ion Balance Calculation									
Hardness (as CaCO3)	388			mg/L		**	80-100	05-MAR-10	
E. Coli	0		0	CFU/100mL	0			26-FEB-10	R1178247
Total Coliform Background	>200		0	CFU/100mL				26-FEB-10	R1178245
Redox Potential	330		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	0.18		0.030	No Unit				08-MAR-10	
Total Coliforms	14		0	CFU/100mL	** 0			26-FEB-10	R1178245
Total Dissolved Solids	460		20	mg/L			500	26-FEB-10	R1178206
Turbidity	4.20		0.10	NTU			5	25-FEB-10	R1176383
pH	8.08		0.10	pH units			6.5-8.5	25-FEB-10	R1176123
Individual Analytes									
Alkalinity, Total (as CaCO3)	276		5.0	mg/L			30-500	03-MAR-10	R1183563
Ammonia-N, Total	<0.020		0.020	mg/L				05-MAR-10	R1192003
Bicarbonate (HCO3)	332		5.0	mg/L				03-MAR-10	R1183563
Carbonate (CO3)	<5.0		5.0	mg/L				03-MAR-10	R1183563
Color, Apparent	221	PEHT	0.40	C.U.		**	5	02-MAR-10	R1181016
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.099	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	94.2	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0014	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L				01-MAR-10	R1179510
Copper (Cu)-Dissolved	0.0017	SFPL	0.0010	mg/L			1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L			0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	37.0	SFPL	0.50	mg/L				01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.232	SFPL	0.0010	mg/L		**	0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	0.0066	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L				01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L				01-MAR-10	R1179510
Potassium (K)-Dissolved	2.5	SFPL	1.0	mg/L				01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01			01-MAR-10	R1179510
Silicon (Si)-Dissolved	6.2	SFPL	1.0	mg/L				02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L				01-MAR-10	R1179510
Sodium (Na)-Dissolved	8.20	SFPL	0.50	mg/L	20		200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.166	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L				01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L				02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L				01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02			01-MAR-10	R1179510

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units		Criteria Specific Limits			Analyzed	Batch
						STANDARDS		GUIDELINES		
L864494-7 BH 13										
Sampled By: DAN SOUTER on 24-FEB-10 @ 14:00										
Matrix: WATER										
Individual Analytes										
Metal Scan-Dissolved										
Vanadium (V)-Dissolved	0.0028	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Zinc (Zn)-Dissolved	0.661	SFPL	0.0030	mg/L				5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L					02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L					04-MAR-10	R1188703
L864494-8 BH 06										
Sampled By: DAN SOUTER on 24-FEB-10 @ 14:30										
Matrix: WATER										
						STANDARDS		GUIDELINES		
General Water Quality Package										
Anion Scan (IC)										
Chloride	16.4		2.0	mg/L				250	26-FEB-10	R1178623
Bromide	<0.10		0.10	mg/L					26-FEB-10	R1178623
Fluoride	<0.10		0.10	mg/L		1.5			26-FEB-10	R1178623
Nitrite-N	<0.10		0.10	mg/L		1			26-FEB-10	R1178623
Nitrate-N	16.0		0.10	mg/L	**	10			26-FEB-10	R1178623
Sulphate	22.4		2.0	mg/L				500	26-FEB-10	R1178623
Silica	9.4		2.1	mg/L					03-MAR-10	
Conductivity	719		0.40	umhos/cm					25-FEB-10	R1175924
Detailed Ion Balance Calculation										
Ion Balance	46.2			%					05-MAR-10	
Cation - Anion Balance	-36.8			%					05-MAR-10	
Computed Conductivity	984			uS/cm					05-MAR-10	
Conductivity % Difference	31.2			%					05-MAR-10	
TDS (Calculated)	786			mg/L					05-MAR-10	
Anion Sum	16.9			me/L					05-MAR-10	
Cation Sum	7.80			me/L					05-MAR-10	
Saturation pH	6.54			pH					05-MAR-10	
Langelier Index	1.5			No Unit					05-MAR-10	
Hardness (as CaCO3)	367			mg/L			**	80-100	05-MAR-10	
E. Coli	0		0	CFU/100mL		0			26-FEB-10	R1178247
Total Coliform Background	>200		0	CFU/100mL					26-FEB-10	R1178245
Redox Potential	320		-1000	mV					26-FEB-10	R1179468
Sodium Adsorption Ratio	0.22		0.030	No Unit					08-MAR-10	
Total Coliforms	2		0	CFU/100mL	**	0			26-FEB-10	R1178245
Total Dissolved Solids	426		20	mg/L				500	26-FEB-10	R1178206
Turbidity	5.90		0.10	NTU			**	5	25-FEB-10	R1176383
pH	8.04		0.10	pH units				6.5-8.5	25-FEB-10	R1176123
Individual Analytes										
Alkalinity, Total (as CaCO3)	893		5.0	mg/L			**	30-500	03-MAR-10	R1183563
Ammonia-N, Total	0.022		0.020	mg/L					05-MAR-10	R1192003
Bicarbonate (HCO3)	1080		5.0	mg/L					03-MAR-10	R1183563
Carbonate (CO3)	<5.0		5.0	mg/L					03-MAR-10	R1183563
Color, Apparent	17500	PEHT	0.40	C.U.			**	5	02-MAR-10	R1181016
Metal Scan-Dissolved										

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits		Analyzed	Batch
					STANDARDS	GUIDELINES		
L864494-8 BH 06								
Sampled By: DAN SOUTER on 24-FEB-10 @ 14:30								
Matrix: WATER								
Individual Analytes								
Metal Scan-Dissolved								
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L		0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006		01-MAR-10	R1179510
Arsenic (As)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.025		01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.073	SFPL	0.010	mg/L	1		01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5		01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005		01-MAR-10	R1179510
Calcium (Ca)-Dissolved	103	SFPL	0.50	mg/L			01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0017	SFPL	0.0010	mg/L	0.05		01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L			01-MAR-10	R1179510
Copper (Cu)-Dissolved	0.0016	SFPL	0.0010	mg/L		1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L		0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01		01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	26.7	SFPL	0.50	mg/L			01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.0010	SFPL	0.0010	mg/L		0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	0.0034	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L			01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L			01-MAR-10	R1179510
Potassium (K)-Dissolved	1.7	SFPL	1.0	mg/L			01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01		01-MAR-10	R1179510
Silicon (Si)-Dissolved	4.4	SFPL	1.0	mg/L			02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L			01-MAR-10	R1179510
Sodium (Na)-Dissolved	9.55	SFPL	0.50	mg/L	20	200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.132	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L			01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L			02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L			01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02		01-MAR-10	R1179510
Vanadium (V)-Dissolved	0.0031	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Zinc (Zn)-Dissolved	0.123	SFPL	0.0030	mg/L		5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L			02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L			04-MAR-10	R1188703

** analytical results for this parameter exceed criteria limits listed on this report

Ontario DW Std O.Reg 169/03 JUNE 2007

Sample Parameter Qualifier key listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
DLM	Detection Limit Adjusted For Sample Matrix Effects

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Preparation Method Reference(Based On)	Analytical Method Reference(Based On)
ALK-TOT-CAP-TB	Water	Alkalinity, Total (as CaCO3)		APHA 2320 B-Auto-Pot. Titration
ANIONS-WT	Water	Anion Scan (IC)		EPA 300.0 (IC)
BIC-TB	Water	Bicarbonate (HCO3)		APHA 2320 B-Pot. Titration
CO3-TB	Water	Carbonate (CO3)		APHA 2320 B-Potentiometric Titration
COLOUR-APP-TB	Water	Colour, Apparent		CPPA H.5P Spectrophotometry
EC-MF-WT	Water	E. Coli		SM 9222D
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at @44.5–0.2°C for 24–2h.			
EC-WT	Water	Conductivity		APHA 2510 B
ETL-SAR-CALC-WT	Water	Sodium Adsorption Ratio		Calculation
ETL-SILICA-CALC-WT	Water	Calculate from SI-TOT-WT		EPA 200.8
IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation		APHA 1030E, 2330B, 2510A
MET-DIS-WT	Water	Metal Scan-Dissolved		EPA 200.8
NH4-TB	Water	Ammonia-N, Total		APHA 4500-NH3 G - Colourimetry
PH-WT	Water	pH		APHA 4500 H-Electrode
	Water samples are analyzed directly by a calibrated pH meter.			
PO4-LOW-ED	Water	Orthophosphate (PO4-P)		APHA 4500 P B,E-Auto-Colorimetry
REDOX-POTENTIAL-WT	Water	Redox Potential		APHA 2580
SOLIDS-TDS-WT	Water	Total Dissolved Solids		APHA 2540C
	A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5oC overnight and then 180–10°C for 1hr.			
TC-MF-WT	Water	Total Coliforms		SM 9222B
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5°C for 24–2h.			
TCB-MF-WT	Water	REG		SM 9222B
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5°C for 24–2h.			
TURBIDITY-WT	Water	Turbidity		APHA 2130 B
	Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.			

Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

Chain of Custody numbers:

83725

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

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS LABORATORY GROUP - WATERLOO, ONTARIO, CANADA	TB	ALS LABORATORY GROUP - THUNDER BAY, ONTARIO, CANADA
ED	ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA		

Reference Information

160 P031655 0300

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds. The reported surrogate recovery value provides a measure of method efficiency. The Laboratory control limits are determined under column heading D.L.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
< - Less than
D.L. - Detection Limit
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

ALS provides criteria information as a service to you, our customer. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. ALS recommends review of the most current version of the regulation, and assumes no responsibility for the accuracy of the criteria levels indicated.

ALS Laboratory Group Quality Control Report

Workorder: L864494 Report Date: 08-MAR-10

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5

Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TOT-CAP-TB	**Water**							
Batch R1181383								
WG1074321-6 DUP		**WG1074321-5**						
Alkalinity, Total (as CaCO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	02-MAR-10
WG1074321-2 LCS								
Alkalinity, Total (as CaCO3)			96		%		85-115	02-MAR-10
WG1074321-1 MB								
Alkalinity, Total (as CaCO3)			<5.0		mg/L		5	02-MAR-10
Batch R1183563								
WG1074452-6 DUP		**WG1074452-5**						
Alkalinity, Total (as CaCO3)		276	272		mg/L	1.2	20	03-MAR-10
WG1074452-8 DUP		**WG1074452-7**						
Alkalinity, Total (as CaCO3)		43.6	43.8	J	mg/L	0.2	20	03-MAR-10
WG1074452-2 LCS								
Alkalinity, Total (as CaCO3)			96		%		85-115	03-MAR-10
WG1074452-1 MB								
Alkalinity, Total (as CaCO3)			<5.0		mg/L		5	03-MAR-10
ANIONS-WT	**Water**							
Batch R1178623								
WG1072393-3 LCS								
Chloride			101		%		75-125	26-FEB-10
Bromide			95		%		75-125	26-FEB-10
Fluoride			101		%		75-125	26-FEB-10
Nitrite-N			100		%		75-125	26-FEB-10
Nitrate-N			98		%		75-125	26-FEB-10
Sulphate			101		%		75-125	26-FEB-10
WG1072393-4 LCSD		**WG1072393-3**						
Chloride		101	100		%	1.4	30	26-FEB-10
Bromide		95	94		%	0.43	30	26-FEB-10
Fluoride		101	99		%	1.6	30	26-FEB-10
Nitrite-N		100	99		%	1.8	30	26-FEB-10
Nitrate-N		98	97		%	1.4	30	26-FEB-10
Sulphate		101	99		%	1.4	30	26-FEB-10
WG1072393-1 MB								
Chloride			<2.0		mg/L		2	26-FEB-10
Bromide			<0.10		mg/L		0.1	26-FEB-10
Fluoride			<0.10		mg/L		0.1	26-FEB-10
Nitrite-N			<0.10		mg/L		0.1	26-FEB-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ANIONS-WT	**Water**							
Batch R1178623								
WG1072393-1 MB								
Nitrate-N			<0.10		mg/L		0.1	26-FEB-10
Sulphate			<2.0		mg/L		2	26-FEB-10
COLOUR-APP-TB	**Water**							
Batch R1181016								
WG1074103-2 DUP		**L863672-1**						
Color, Apparent		114	123		C.U.	7.8	26	02-MAR-10
WG1074103-4 LCS								
Color, Apparent			106		%		63-138	02-MAR-10
EC-MF-WT	**Water**							
Batch R1178247								
WG1072646-3 DUP		**L864836-1**						
E. Coli		0	0		CFU/100mL	0.0	82	26-FEB-10
WG1072646-1 MB								
E. Coli			0		CFU/100mL		1	26-FEB-10
WG1072646-2 MB								
E. Coli			0		CFU/100mL		1	26-FEB-10
EC-WT	**Water**							
Batch R1175924								
WG1072333-1 CVS								
Conductivity			100		%		90-110	25-FEB-10
WG1072333-2 DUP		**L864494-8**						
Conductivity		719	720		umhos/cm	0.14	10	25-FEB-10
MET-DIS-WT	**Water**							
Batch R1179510								
WG1073425-1 CVS								
Aluminum (Al)-Dissolved			97		%		80-120	01-MAR-10
Antimony (Sb)-Dissolved			90		%		80-120	01-MAR-10
Arsenic (As)-Dissolved			104		%		80-120	01-MAR-10
Barium (Ba)-Dissolved			105		%		80-120	01-MAR-10
Beryllium (Be)-Dissolved			108		%		80-120	01-MAR-10
Bismuth (Bi)-Dissolved			109		%		80-120	01-MAR-10
Boron (B)-Dissolved			105		%		70-130	01-MAR-10
Cadmium (Cd)-Dissolved			106		%		80-120	01-MAR-10
Calcium (Ca)-Dissolved			103		%		80-120	01-MAR-10
Chromium (Cr)-Dissolved			97		%		80-120	01-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1179510								
WG1073425-1 CVS								
Cobalt (Co)-Dissolved			99		%		80-120	01-MAR-10
Copper (Cu)-Dissolved			98		%		80-120	01-MAR-10
Iron (Fe)-Dissolved			93		%		80-120	01-MAR-10
Lead (Pb)-Dissolved			101		%		80-120	01-MAR-10
Magnesium (Mg)-Dissolved			100		%		80-120	01-MAR-10
Manganese (Mn)-Dissolved			100		%		80-120	01-MAR-10
Molybdenum (Mo)-Dissolved			108		%		80-120	01-MAR-10
Nickel (Ni)-Dissolved			108		%		80-120	01-MAR-10
Phosphorus (P)-Dissolved			94		%		70-130	01-MAR-10
Potassium (K)-Dissolved			105		%		80-120	01-MAR-10
Selenium (Se)-Dissolved			104		%		80-120	01-MAR-10
Silver (Ag)-Dissolved			89		%		80-120	01-MAR-10
Sodium (Na)-Dissolved			102		%		80-120	01-MAR-10
Strontium (Sr)-Dissolved			106		%		80-120	01-MAR-10
Thallium (Tl)-Dissolved			109		%		80-120	01-MAR-10
Uranium (U)-Dissolved			108		%		80-120	01-MAR-10
Vanadium (V)-Dissolved			93		%		80-120	01-MAR-10
Zinc (Zn)-Dissolved			109		%		80-120	01-MAR-10
WG1073425-2 CVS								
Tin (Sn)-Dissolved			107		%		80-120	01-MAR-10
Tungsten (W)-Dissolved			96		%		70-130	01-MAR-10
WG1073425-5 DUP		**WG1073425-4**						
Aluminum (Al)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-MAR-10
Antimony (Sb)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-MAR-10
Arsenic (As)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Barium (Ba)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-MAR-10
Beryllium (Be)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Bismuth (Bi)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Boron (B)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-MAR-10
Cadmium (Cd)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-MAR-10
Calcium (Ca)-Dissolved		0.66	0.65	J	mg/L	0.01	2	01-MAR-10
Chromium (Cr)-Dissolved		0.0100	0.0101	J	mg/L	0.0001	0.004	01-MAR-10
Cobalt (Co)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-MAR-10
Copper (Cu)-Dissolved		0.143	0.147		mg/L			

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1179510								
WG1073425-5 DUP		**WG1073425-4**						
Copper (Cu)-Dissolved		0.143	0.147		mg/L	2.4	20	01-MAR-10
Iron (Fe)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-MAR-10
Lead (Pb)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Magnesium (Mg)-Dissolved		1.02	1.06	J	mg/L	0.04	2	01-MAR-10
Manganese (Mn)-Dissolved		0.0025	0.0025	J	mg/L	0.0000	0.004	01-MAR-10
Molybdenum (Mo)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Nickel (Ni)-Dissolved		0.0045	0.0045	J	mg/L	0.0000	0.008	01-MAR-10
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-MAR-10
Potassium (K)-Dissolved		<1.0	<1.0	RPD-NA	mg/L	N/A	20	01-MAR-10
Selenium (Se)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-MAR-10
Silver (Ag)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-MAR-10
Sodium (Na)-Dissolved		316	316	J	mg/L	0	200	01-MAR-10
Strontium (Sr)-Dissolved		0.0037	0.0037	J	mg/L	0.0001	0.004	01-MAR-10
Thallium (Tl)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	01-MAR-10
Tin (Sn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Tungsten (W)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-MAR-10
Uranium (U)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-MAR-10
Vanadium (V)-Dissolved		0.0035	0.0035	J	mg/L	0.0000	0.004	01-MAR-10
Zinc (Zn)-Dissolved		0.0499	0.0496		mg/L	0.54	20	01-MAR-10
WG1073425-3 MB								
Aluminum (Al)-Dissolved			<0.010		mg/L		0.01	01-MAR-10
Antimony (Sb)-Dissolved			<0.0050		mg/L		0.005	01-MAR-10
Arsenic (As)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Barium (Ba)-Dissolved			<0.010		mg/L		0.01	01-MAR-10
Beryllium (Be)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Bismuth (Bi)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Boron (B)-Dissolved			<0.050		mg/L		0.05	01-MAR-10
Cadmium (Cd)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-10
Calcium (Ca)-Dissolved			<0.50		mg/L		0.5	01-MAR-10
Chromium (Cr)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Cobalt (Co)-Dissolved			<0.00050		mg/L		0.0005	01-MAR-10
Copper (Cu)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Iron (Fe)-Dissolved			<0.050		mg/L		0.05	01-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1179510								
WG1073425-3 MB								
Lead (Pb)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Magnesium (Mg)-Dissolved			<0.50		mg/L		0.5	01-MAR-10
Manganese (Mn)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Molybdenum (Mo)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Nickel (Ni)-Dissolved			<0.0020		mg/L		0.002	01-MAR-10
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-MAR-10
Potassium (K)-Dissolved			<1.0		mg/L		1	01-MAR-10
Selenium (Se)-Dissolved			<0.0050		mg/L		0.005	01-MAR-10
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-10
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	01-MAR-10
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Thallium (Tl)-Dissolved			<0.00030		mg/L		0.0003	01-MAR-10
Tin (Sn)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Tungsten (W)-Dissolved			<0.010		mg/L		0.01	01-MAR-10
Uranium (U)-Dissolved			<0.0050		mg/L		0.005	01-MAR-10
Vanadium (V)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Zinc (Zn)-Dissolved			<0.0030		mg/L		0.003	01-MAR-10
Batch R1180907								
WG1073912-1 CVS								
Sodium (Na)-Dissolved			102		%		80-120	02-MAR-10
WG1073912-2 CVS								
Silicon (Si)-Dissolved			112		%		70-130	02-MAR-10
Titanium (Ti)-Dissolved			109		%		80-120	02-MAR-10
Zirconium (Zr)-Dissolved			112		%		80-120	02-MAR-10
WG1073912-5 DUP		**WG1073912-4**						
Silicon (Si)-Dissolved		26	26	J	mg/L	1	40	02-MAR-10
Sodium (Na)-Dissolved		15.8	15.5	J	mg/L	0.3	20	02-MAR-10
Titanium (Ti)-Dissolved		<0.020	<0.020		mg/L	N/A	20	02-MAR-10
Zirconium (Zr)-Dissolved		<0.040	<0.040		mg/L	N/A	26	02-MAR-10
WG1073912-3 MB								
Silicon (Si)-Dissolved			<1.0		mg/L		1	02-MAR-10
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	02-MAR-10
Titanium (Ti)-Dissolved			<0.0020		mg/L		0.002	02-MAR-10
Zirconium (Zr)-Dissolved			<0.0040		mg/L		0.004	02-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH4-TB	**Water**							
Batch R1192003								
WG1075325-4 DUP		**L866286-2**						
Ammonia-N, Total		0.050	0.045	J	mg/L	0.005	0.08	05-MAR-10
WG1075325-5 MS		**L866286-2**						
Ammonia-N, Total			94		%		75-125	05-MAR-10
PH-WT	**Water**							
Batch R1176123								
WG1072329-1 CVS								
pH			100		%		90-110	25-FEB-10
WG1072329-2 DUP		**L864111-5**						
pH		8.06	8.07		pH units	0.12	20	25-FEB-10
WG1072329-3 DUP		**L864516-1**						
pH		7.83	7.85		pH units	0.26	20	25-FEB-10
PO4-LOW-ED	**Water**							
Batch R1188703								
WG1075229-4 DUP		**L864111-1**						
WG1075229-6 DUP		**L864494-2**						
Orthophosphate (PO4-P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	11	04-MAR-10
WG1075229-3 LCS								
Orthophosphate (PO4-P)			94		%		80-120	04-MAR-10
WG1075229-2 MB								
Orthophosphate (PO4-P)			<0.0010		mg/L		0.001	04-MAR-10
WG1075229-5 MS		**L864111-1**						
Orthophosphate (PO4-P)			82		%		82-116	04-MAR-10
REDOX-POTENTIAL-WT	**Water**							
Batch R1179468								
WG1073526-1 DUP		**L864494-1**						
Redox Potential		315	320		mV	1.6	26	26-FEB-10
SOLIDS-TDS-WT	**Water**							
Batch R1178206								
WG1072424-3 DUP		**L864111-1**						
Total Dissolved Solids		202	184	J	mg/L	18	80	26-FEB-10
WG1072424-2 LCS								
Total Dissolved Solids			103		%		70-130	26-FEB-10
WG1072424-1 MB								
Total Dissolved Solids			<20		mg/L		20	26-FEB-10
TC-MF-WT	**Water**							

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC-MF-WT	**Water**							
Batch R1178245								
WG1072645-3 DUP		**L864539-4**						
Total Coliforms		0	0		CFU/100mL	0.0	39	26-FEB-10
WG1072645-1 MB								
Total Coliforms			0		CFU/100mL		1	26-FEB-10
WG1072645-2 MB								
Total Coliforms			0		CFU/100mL		1	26-FEB-10
TCB-MF-WT	**Water**							
Batch R1178245								
WG1072645-3 DUP		**L864539-4**						
Total Coliform Background		0	0		CFU/100mL	0.0	75	26-FEB-10
WG1072645-1 MB								
Total Coliform Background			0		CFU/100mL		1	26-FEB-10
WG1072645-2 MB								
Total Coliform Background			0		CFU/100mL		1	26-FEB-10
TURBIDITY-WT	**Water**							
Batch R1176383								
WG1072475-1 CVS								
Turbidity			101		%		85-115	25-FEB-10
WG1072475-3 DUP		**L864466-10**						
Turbidity		32.0	32.0		NTU	0.0	20	25-FEB-10
WG1072475-4 DUP		**L864494-8**						
Turbidity		5.90	6.00		NTU	1.7	20	25-FEB-10
WG1072475-2 MB								
Turbidity			<0.10		NTU		0.1	25-FEB-10

ALS Laboratory Group Quality Control Report

Legend:

Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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

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

60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910
Fax: (519) 886-9047
CANADA TOLL FREE: 1-800-668-9878

ALS Environmental

CHAIN OF CUSTODY / ANALYTICAL SERVICES REQUEST FORM

C of C # 83725
PAGE ___ OF ___

Note: all TAT Quoted material is in business days which exclude statutory holidays and weekends. TAT samples received past 3:00pm or Saturday/Sunday begin the next day.

Date requested	Service requested			
	5 day (Regular)	✓	2 day TAT (50%)	
	3-4 day TAT (25%)		Next day TAT (100%)	
			Same day TAT (200%)	

COMPANY NAME: LVM Naylor
ALS ACCOUNT#:
PROJECT MANAGER: Chris Helmer
PROJECT #: 160 P031655 0300
PHONE: 519 741 1313
FAX: 519 741 5422
QUOTATION #:
PO#: 178264

CRITERIA: Criteria on report (y/n) Y
Reg 153/04
Table (1) 2 3
TCLP ___ MISA ___ PWQO ___
OTHER: ODWS
REPORT DISTRIBUTION: ALL FINAL RESULTS WILL BE MAILED
EMAIL___ FAX___ BOTH___
EMAIL1___
EMAIL2___
SELECT: pdf___ digital___ both___

ANALYSIS REQUEST: Potability Package

INDICATE BOTTLES FIELD FILTERED/PRESERVED (F/P)
SUBMISSION #: L864494
ENTERED BY: NG
DATE/TIME ENTERED: 24-Feb-10 15:50
BIN #: B335

SAMPLING INFORMATION

Date (yy/mm/dd)	Time (24 hr)	COMP	GRAB	WATER	SOIL	OTHER	SAMPLE DESCRIPTION TO APPEAR ON REPORT	NUMBER OF CONTAINERS	Potability Package	COMMENTS	LAB ID
10/02/24	900		✓	✓			BH 02	5	✓		-1
↓	930		✓	✓			BH 01	5	✓		-2
	1000		✓	✓			BH 04	5	✓		-3
	1030		✓	✓			BH 14	5	✓		-4
	1306		✓	✓			BH 11	5	✓		-5
	1330		✓	✓			BH 10	5	✓		-6
	1400		✓	✓			BH 13	5	✓		-7
↓	1430		✓	✓			BH 06	5	✓		-8

SPECIAL INSTRUCTIONS/COMMENTS

SAMPLE CONDITION: FROZEN / (COLD) / AMBIENT — MEAN TEMP: 3
CONDITION ACCEPTABLE UPON RECEIPT (Y/N): Y — INIT: NR

SAMPLED BY: Dan Souter — DATE & TIME: 10/02/24 900-1430 — RECEIVED BY: — DATE & TIME:
RELINQUISHED BY: Dan Souter — DATE & TIME: 10/02/24 1532 — RECEIVED AT LAB BY: NR — DATE & TIME: 24-2-10 15:38

NOTES AND CONDITIONS:
1. Quote number must be provided to ensure proper pricing.
2. TAT may vary dependent on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs.
3. Any known or suspected hazards relating to a sample must be noted on the chain of custody in comments section.

White - report copy   YELLOW - File copy   PINK - Customer Copy

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Certificate of Analysis

LVM-NAYLOR

ATTN: CHRIS HELMER

NAYLOR ENGINEERING
353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5

Report Date: 10-MAR-10 08:44 (MT)
Version: FINAL

Lab Work Order #: **L864905** **Date Received:** **25-FEB-10**

Project P.O. #: 178302
Job Reference: P031655 0300
Legal Site Desc:
CofC Numbers: 83726

Other Information:

Comments:

Nancy Graham
Account Manager

ALS Canada Ltd.
Part of the **ALS Laboratory Group**
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ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L864905-1 1058 ROSEVILLE RD.									
Sampled By: DS on 25-FEB-10 @ 11:00									
Matrix: WATER									
General Water Quality Package									
Anion Scan (IC)									
Chloride	<2.0		2.0	mg/L			250	02-MAR-10	R1182905
Bromide	<0.10		0.10	mg/L				02-MAR-10	R1182905
Fluoride	0.34		0.10	mg/L	1.5			02-MAR-10	R1182905
Nitrite-N	<0.10		0.10	mg/L	1			02-MAR-10	R1182905
Nitrate-N	<0.10		0.10	mg/L	10			02-MAR-10	R1182905
Sulphate	6.7		2.0	mg/L			500	02-MAR-10	R1182905
Silica	16.6		2.1	mg/L				03-MAR-10	
Conductivity	391		0.40	umhos/cm				26-FEB-10	R1178162
Detailed Ion Balance Calculation									
Ion Balance	119			%				09-MAR-10	
Cation - Anion Balance	8.8			%				09-MAR-10	
Computed Conductivity	353			uS/cm				09-MAR-10	
Conductivity % Difference	-10.3			%				09-MAR-10	
TDS (Calculated)	211			mg/L				09-MAR-10	
Anion Sum	3.68			me/L				09-MAR-10	
Cation Sum	4.39			me/L				09-MAR-10	
Saturation pH	7.47			pH				09-MAR-10	
Langelier Index	0.5			No Unit				09-MAR-10	
Hardness (as CaCO3)	188			mg/L		**	80-100	09-MAR-10	
E. Coli	0		0	CFU/100mL	0			27-FEB-10	R1178737
Total Coliform Background	>200		0	CFU/100mL				27-FEB-10	R1178736
Redox Potential	330		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	0.45		0.030	No Unit				08-MAR-10	
Total Coliforms	0		0	CFU/100mL	0			27-FEB-10	R1178736
Total Dissolved Solids	208		20	mg/L			500	28-FEB-10	R1179531
Turbidity	2.70		0.10	NTU			5	26-FEB-10	R1178231
pH	7.99		0.10	pH units			6.5-8.5	26-FEB-10	R1178157
Individual Analytes									
Alkalinity, Total (as CaCO3)	214		5.0	mg/L			30-500	08-MAR-10	R1195663
Ammonia-N, Total	0.182		0.020	mg/L				08-MAR-10	R1200763
Bicarbonate (HCO3)	258		5.0	mg/L				08-MAR-10	R1195663
Carbonate (CO3)	<5.0		5.0	mg/L				08-MAR-10	R1195663
Color, Apparent	48.3		1.0	C.U.		**	5	08-MAR-10	R1195463
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	0.0018	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.042	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	0.068	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	40.5	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L				01-MAR-10	R1179510

** analytical results for this parameter exceed criteria limits listed on this report

Ontario DW Std O.Reg 169/03 JUNE 2007

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits		Analyzed	Batch
					STANDARDS	GUIDELINES		
L864905-1 1058 ROSEVILLE RD.								
Sampled By: DS on 25-FEB-10 @ 11:00								
Matrix: WATER								
Individual Analytes								
Metal Scan-Dissolved								
Copper (Cu)-Dissolved	<0.0010	SFPL	0.0010	mg/L		1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L		0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01		01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	21.2	SFPL	0.50	mg/L			01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.0266	SFPL	0.0010	mg/L		0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	0.0039	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L			01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L			01-MAR-10	R1179510
Potassium (K)-Dissolved	<1.0	SFPL	1.0	mg/L			01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01		01-MAR-10	R1179510
Silicon (Si)-Dissolved	7.8	SFPL	1.0	mg/L			02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L			01-MAR-10	R1179510
Sodium (Na)-Dissolved	14.1	SFPL	0.50	mg/L	20	200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.366	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L			01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L			02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L			01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02		01-MAR-10	R1179510
Vanadium (V)-Dissolved	0.0019	SFPL	0.0010	mg/L			01-MAR-10	R1179510
Zinc (Zn)-Dissolved	0.0521	SFPL	0.0030	mg/L		5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L			02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L			05-MAR-10	R1192223
L864905-2 1145 ROSEVILLE RD.								
Sampled By: DS on 25-FEB-10 @ 11:30								
Matrix: WATER								
					STANDARDS	GUIDELINES		
General Water Quality Package								
Anion Scan (IC)								
Chloride	<2.0		2.0	mg/L		250	02-MAR-10	R1182905
Bromide	<0.10		0.10	mg/L			02-MAR-10	R1182905
Fluoride	0.12		0.10	mg/L	1.5		02-MAR-10	R1182905
Nitrite-N	<0.10		0.10	mg/L	1		02-MAR-10	R1182905
Nitrate-N	<0.10		0.10	mg/L	10		02-MAR-10	R1182905
Sulphate	20.5		2.0	mg/L		500	02-MAR-10	R1182905
Silica	17.8		2.1	mg/L			03-MAR-10	
Conductivity	455		0.40	umhos/cm			26-FEB-10	R1178162
Detailed Ion Balance Calculation								
Ion Balance	124			%			09-MAR-10	
Cation - Anion Balance	10.8			%			09-MAR-10	
Computed Conductivity	431			uS/cm			09-MAR-10	
Conductivity % Difference	-5.5			%			09-MAR-10	
TDS (Calculated)	253			mg/L			09-MAR-10	
Anion Sum	4.35			me/L			09-MAR-10	
Cation Sum	5.41			me/L			09-MAR-10	
Saturation pH	7.27			pH			09-MAR-10	
Langelier Index	0.8			No Unit			09-MAR-10	

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L864905-2 1145 ROSEVILLE RD.									
Sampled By: DS on 25-FEB-10 @ 11:30									
Matrix: WATER									
General Water Quality Package									
Detailed Ion Balance Calculation									
Hardness (as CaCO3)	265			mg/L		**	80-100	09-MAR-10	
E. Coli	0		0	CFU/100mL	0			27-FEB-10	R1178737
Total Coliform Background	1		0	CFU/100mL				27-FEB-10	R1178736
Redox Potential	350		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	0.07		0.030	No Unit				08-MAR-10	
Total Coliforms	0		0	CFU/100mL	0			27-FEB-10	R1178736
Total Dissolved Solids	256		20	mg/L			500	28-FEB-10	R1179531
Turbidity	0.23		0.10	NTU			5	26-FEB-10	R1178231
pH	8.03		0.10	pH units			6.5-8.5	26-FEB-10	R1178157
Individual Analytes									
Alkalinity, Total (as CaCO3)	237		5.0	mg/L			30-500	08-MAR-10	R1195663
Ammonia-N, Total	<0.020		0.020	mg/L				08-MAR-10	R1200763
Bicarbonate (HCO3)	287		5.0	mg/L				08-MAR-10	R1195663
Carbonate (CO3)	<5.0		5.0	mg/L				08-MAR-10	R1195663
Color, Apparent	6.2		1.0	C.U.		**	5	08-MAR-10	R1195463
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.070	SFPL	0.010	mg/L	1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	60.2	SFPL	0.50	mg/L				01-MAR-10	R1179510
Chromium (Cr)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L				01-MAR-10	R1179510
Copper (Cu)-Dissolved	<0.0010	SFPL	0.0010	mg/L			1	01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L			0.3	01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	27.8	SFPL	0.50	mg/L				01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.0718	SFPL	0.0010	mg/L		**	0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L				01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L				01-MAR-10	R1179510
Potassium (K)-Dissolved	<1.0	SFPL	1.0	mg/L				01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01			01-MAR-10	R1179510
Silicon (Si)-Dissolved	8.3	SFPL	1.0	mg/L				02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L				01-MAR-10	R1179510
Sodium (Na)-Dissolved	2.70	SFPL	0.50	mg/L	20		200	01-MAR-10	R1179510
Strontium (Sr)-Dissolved	0.111	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L				01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L				02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L				01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02			01-MAR-10	R1179510

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
L864905-2 1145 ROSEVILLE RD.									
Sampled By: DS on 25-FEB-10 @ 11:30									
Matrix: WATER					STANDARDS	GUIDELINES			
Individual Analytes									
Metal Scan-Dissolved									
Vanadium (V)-Dissolved	0.0018	SFPL	0.0010	mg/L				01-MAR-10	R1179510
Zinc (Zn)-Dissolved	<0.0030	SFPL	0.0030	mg/L			5	01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L				02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L				05-MAR-10	R1192223
L864905-3 1227 ROSEVILLE RD.									
Sampled By: DS on 25-FEB-10 @ 12:30									
Matrix: WATER					STANDARDS	GUIDELINES			
General Water Quality Package									
Anion Scan (IC)									
Chloride	110		2.0	mg/L			250	02-MAR-10	R1182905
Bromide	<0.10		0.10	mg/L				02-MAR-10	R1182905
Fluoride	<0.10		0.10	mg/L	1.5			02-MAR-10	R1182905
Nitrite-N	<0.10		0.10	mg/L	1			02-MAR-10	R1182905
Nitrate-N	<0.10		0.10	mg/L	10			02-MAR-10	R1182905
Sulphate	2.8		2.0	mg/L			500	02-MAR-10	R1182905
Silica	8.9		2.1	mg/L				03-MAR-10	
Conductivity	911		0.40	umhos/cm				26-FEB-10	R1178162
Detailed Ion Balance Calculation									
Ion Balance	120			%				09-MAR-10	
Cation - Anion Balance	9.2			%				09-MAR-10	
Computed Conductivity	839			uS/cm				09-MAR-10	
Conductivity % Difference	-8.2			%				09-MAR-10	
TDS (Calculated)	508			mg/L				09-MAR-10	
Anion Sum	8.58			me/L				09-MAR-10	
Cation Sum	10.3			me/L				09-MAR-10	
Saturation pH	6.95			pH				09-MAR-10	
Langelier Index	0.8			No Unit				09-MAR-10	
Hardness (as CaCO3)	367			mg/L		**	80-100	09-MAR-10	
E. Coli	0		0	CFU/100mL	0			27-FEB-10	R1178737
Total Coliform Background	1		0	CFU/100mL				27-FEB-10	R1178736
Redox Potential	340		-1000	mV				26-FEB-10	R1179468
Sodium Adsorption Ratio	1.56		0.030	No Unit				08-MAR-10	
Total Coliforms	0		0	CFU/100mL	0			27-FEB-10	R1178736
Total Dissolved Solids	510		20	mg/L		**	500	28-FEB-10	R1179531
Turbidity	8.90		0.10	NTU		**	5	26-FEB-10	R1178231
pH	7.73		0.10	pH units			6.5-8.5	26-FEB-10	R1178157
Individual Analytes									
Alkalinity, Total (as CaCO3)	329		5.0	mg/L			30-500	08-MAR-10	R1195663
Ammonia-N, Total	0.236		0.020	mg/L				08-MAR-10	R1200763
Bicarbonate (HCO3)	398		5.0	mg/L				08-MAR-10	R1195663
Carbonate (CO3)	<5.0		5.0	mg/L				08-MAR-10	R1195663
Color, Apparent	161		1.0	C.U.		**	5	08-MAR-10	R1195463
Metal Scan-Dissolved									

** analytical results for this parameter exceed criteria limits listed on this report

Ontario DW Std O.Reg 169/03 JUNE 2007

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits				Analyzed	Batch
					STANDARDS		GUIDELINES			
L864905-3 1227 ROSEVILLE RD.										
Sampled By: DS on 25-FEB-10 @ 12:30										
Matrix: WATER										
Individual Analytes										
Metal Scan-Dissolved										
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1		01-MAR-10	R1179510
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L		0.006			01-MAR-10	R1179510
Arsenic (As)-Dissolved	<0.0010	SFPL	0.0010	mg/L		0.025			01-MAR-10	R1179510
Barium (Ba)-Dissolved	0.050	SFPL	0.010	mg/L		1			01-MAR-10	R1179510
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L		5			01-MAR-10	R1179510
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L		0.005			01-MAR-10	R1179510
Calcium (Ca)-Dissolved	103	SFPL	0.50	mg/L					01-MAR-10	R1179510
Chromium (Cr)-Dissolved	0.0031	SFPL	0.0010	mg/L		0.05			01-MAR-10	R1179510
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L					01-MAR-10	R1179510
Copper (Cu)-Dissolved	<0.0010	SFPL	0.0010	mg/L			1		01-MAR-10	R1179510
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L			0.3		01-MAR-10	R1179510
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L		0.01			01-MAR-10	R1179510
Magnesium (Mg)-Dissolved	26.6	SFPL	0.50	mg/L					01-MAR-10	R1179510
Manganese (Mn)-Dissolved	0.255	SFPL	0.0010	mg/L			**	0.05	01-MAR-10	R1179510
Molybdenum (Mo)-Dissolved	<0.0010	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L					01-MAR-10	R1179510
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L					01-MAR-10	R1179510
Potassium (K)-Dissolved	<1.0	SFPL	1.0	mg/L					01-MAR-10	R1179510
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L		0.01			01-MAR-10	R1179510
Silicon (Si)-Dissolved	4.2	SFPL	1.0	mg/L					02-MAR-10	R1180907
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L					01-MAR-10	R1179510
Sodium (Na)-Dissolved	68.6	DLM	5.0	mg/L	**	20		200	02-MAR-10	R1180907
Strontium (Sr)-Dissolved	0.0941	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L					01-MAR-10	R1179510
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L					02-MAR-10	R1180907
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L					01-MAR-10	R1179510
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L		0.02			01-MAR-10	R1179510
Vanadium (V)-Dissolved	0.0033	SFPL	0.0010	mg/L					01-MAR-10	R1179510
Zinc (Zn)-Dissolved	<0.0030	SFPL	0.0030	mg/L			5		01-MAR-10	R1179510
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L					02-MAR-10	R1180907
Orthophosphate (PO4-P)	<0.0010		0.0010	mg/L					05-MAR-10	R1192223

** analytical results for this parameter exceed criteria limits listed on this report

Ontario DW Std O.Reg 169/03 JUNE 2007

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
EHT	for PO4 - Exceeded Recommended Holding Time Prior To Analysis

Sample Parameter Qualifier key listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory
DLM	Detection Limit Adjusted For Sample Matrix Effects

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Preparation Method Reference(Based On)	Analytical Method Reference(Based On)
ALK-TOT-CAP-TB	Water	Alkalinity, Total (as CaCO3)		APHA 2320 B-Auto-Pot. Titration
ANIONS-WT	Water	Anion Scan (IC)		EPA 300.0 (IC)
BIC-TB	Water	Bicarbonate (HCO3)		APHA 2320 B-Pot. Titration
CO3-TB	Water	Carbonate (CO3)		APHA 2320 B-Potentiometric Titration
COLOUR-APP-TB	Water	Colour, Apparent		CPPA H.5P Spectrophotometry
EC-MF-WT	Water	E. Coli		SM 9222D
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at @44.5–0.2°C for 24–2h.			
EC-WT	Water	Conductivity		APHA 2510 B
ETL-SAR-CALC-WT	Water	Sodium Adsorption Ratio		Calculation
ETL-SILICA-CALC-WT	Water	Calculate from SI-TOT-WT		EPA 200.8
IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation		APHA 1030E, 2330B, 2510A
MET-DIS-WT	Water	Metal Scan-Dissolved		EPA 200.8
NH4-TB	Water	Ammonia-N, Total		APHA 4500-NH3 G - Colourimetry
PH-WT	Water	pH		APHA 4500 H-Electrode
	Water samples are analyzed directly by a calibrated pH meter.			
PO4-LOW-ED	Water	Orthophosphate (PO4-P)		APHA 4500 P B,E-Auto-Colorimetry
REDOX-POTENTIAL-WT	Water	Redox Potential		APHA 2580
SOLIDS-TDS-WT	Water	Total Dissolved Solids		APHA 2540C
	A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5oC overnight and then 180–10°C for 1hr.			
TC-MF-WT	Water	Total Coliforms		SM 9222B
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5°C for 24–2h.			
TCB-MF-WT	Water	REG		SM 9222B
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5°C for 24–2h.			
TURBIDITY-WT	Water	Turbidity		APHA 2130 B
	Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.			

Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

Chain of Custody numbers:

83726

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

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS LABORATORY GROUP - WATERLOO, ONTARIO, CANADA	TB	ALS LABORATORY GROUP - THUNDER BAY, ONTARIO, CANADA
ED	ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA		

Reference Information

P031655 0300

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds. The reported surrogate recovery value provides a measure of method efficiency. The Laboratory control limits are determined under column heading D.L.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
< - Less than
D.L. - Detection Limit
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

ALS provides criteria information as a service to you, our customer. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. ALS recommends review of the most current version of the regulation, and assumes no responsibility for the accuracy of the criteria levels indicated.

ALS Laboratory Group Quality Control Report

Workorder: L864905 Report Date: 10-MAR-10

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5

Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TOT-CAP-TB	**Water**							
Batch R1195663								
WG1076247-6 DUP		**WG1076247-5**						
Alkalinity, Total (as CaCO3)		47.7	47.9	J	mg/L	0.2	20	08-MAR-10
WG1076247-2 LCS								
Alkalinity, Total (as CaCO3)			99		%		85-115	08-MAR-10
WG1076247-1 MB								
Alkalinity, Total (as CaCO3)			<5.0		mg/L		5	08-MAR-10
ANIONS-WT	**Water**							
Batch R1182905								
WG1073962-6 DUP		**L864905-2**						
Chloride		<2.0	<2.0	RPD-NA	mg/L	N/A	20	02-MAR-10
Bromide		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-MAR-10
Fluoride		0.12	0.12	J	mg/L	0.00	0.4	02-MAR-10
Nitrite-N		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-MAR-10
Nitrate-N		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-MAR-10
Sulphate		20.5	20.6		mg/L	0.28	20	02-MAR-10
WG1073962-7 DUP		**L865362-1**						
Chloride		44.3	44.4		mg/L	0.17	20	02-MAR-10
Bromide		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-MAR-10
Fluoride		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-MAR-10
Nitrite-N		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-MAR-10
Nitrate-N		3.91	3.92		mg/L	0.18	20	02-MAR-10
Sulphate		19.3	19.3	J	mg/L	0.1	8	02-MAR-10
WG1073962-3 LCS								
Chloride			98		%		75-125	02-MAR-10
Bromide			84		%		75-125	02-MAR-10
Fluoride			93		%		75-125	02-MAR-10
Nitrite-N			91		%		75-125	02-MAR-10
Nitrate-N			91		%		75-125	02-MAR-10
Sulphate			96		%		75-125	02-MAR-10
WG1073962-4 LCSD		**WG1073962-3**						
Chloride		98	98		%	0.12	30	02-MAR-10
Bromide		84	84		%	0.24	30	02-MAR-10
Fluoride		93	93		%	0.11	30	02-MAR-10
Nitrite-N		91	91		%	0.11	30	02-MAR-10
Nitrate-N		91	91		%	0.11	30	02-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ANIONS-WT	**Water**							
Batch R1182905								
WG1073962-4 LCSD		**WG1073962-3**						
Sulphate		96	97		%	0.24	30	02-MAR-10
WG1073962-1 MB								
Chloride			<2.0		mg/L		2	02-MAR-10
Bromide			<0.10		mg/L		0.1	02-MAR-10
Fluoride			<0.10		mg/L		0.1	02-MAR-10
Nitrite-N			<0.10		mg/L		0.1	02-MAR-10
Nitrate-N			<0.10		mg/L		0.1	02-MAR-10
Sulphate			<2.0		mg/L		2	02-MAR-10
COLOUR-APP-TB	**Water**							
Batch R1195463								
WG1076239-2 DUP		**L867103-1**						
Color, Apparent		132	133		C.U.	0.30	26	08-MAR-10
WG1076239-4 LCS								
Color, Apparent			103		%		63-138	08-MAR-10
WG1076239-1 MB								
Color, Apparent			<1.0		C.U.		1	08-MAR-10
EC-MF-WT	**Water**							
Batch R1178737								
WG1073146-3 DUP		**L865103-1**						
E. Coli		0	0		CFU/100mL	0.0	82	27-FEB-10
WG1073146-1 MB								
E. Coli			0		CFU/100mL		1	27-FEB-10
WG1073146-2 MB								
E. Coli			0		CFU/100mL		1	27-FEB-10
EC-WT	**Water**							
Batch R1178162								
WG1072899-1 CVS								
Conductivity			101		%		90-110	26-FEB-10
WG1072899-2 DUP		**L864905-1**						
Conductivity		391	389		umhos/cm	0.51	10	26-FEB-10
MET-DIS-WT	**Water**							
Batch R1179510								
WG1073425-1 CVS								
Aluminum (Al)-Dissolved			97		%		80-120	01-MAR-10
Antimony (Sb)-Dissolved			90		%		80-120	01-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1179510								
WG1073425-1 CVS								
Arsenic (As)-Dissolved			104		%		80-120	01-MAR-10
Barium (Ba)-Dissolved			105		%		80-120	01-MAR-10
Beryllium (Be)-Dissolved			108		%		80-120	01-MAR-10
Bismuth (Bi)-Dissolved			109		%		80-120	01-MAR-10
Boron (B)-Dissolved			105		%		70-130	01-MAR-10
Cadmium (Cd)-Dissolved			106		%		80-120	01-MAR-10
Calcium (Ca)-Dissolved			103		%		80-120	01-MAR-10
Chromium (Cr)-Dissolved			97		%		80-120	01-MAR-10
Cobalt (Co)-Dissolved			99		%		80-120	01-MAR-10
Copper (Cu)-Dissolved			98		%		80-120	01-MAR-10
Iron (Fe)-Dissolved			93		%		80-120	01-MAR-10
Lead (Pb)-Dissolved			101		%		80-120	01-MAR-10
Magnesium (Mg)-Dissolved			100		%		80-120	01-MAR-10
Manganese (Mn)-Dissolved			100		%		80-120	01-MAR-10
Molybdenum (Mo)-Dissolved			108		%		80-120	01-MAR-10
Nickel (Ni)-Dissolved			108		%		80-120	01-MAR-10
Phosphorus (P)-Dissolved			94		%		70-130	01-MAR-10
Potassium (K)-Dissolved			105		%		80-120	01-MAR-10
Selenium (Se)-Dissolved			104		%		80-120	01-MAR-10
Silver (Ag)-Dissolved			89		%		80-120	01-MAR-10
Sodium (Na)-Dissolved			102		%		80-120	01-MAR-10
Strontium (Sr)-Dissolved			106		%		80-120	01-MAR-10
Thallium (Tl)-Dissolved			109		%		80-120	01-MAR-10
Uranium (U)-Dissolved			108		%		80-120	01-MAR-10
Vanadium (V)-Dissolved			93		%		80-120	01-MAR-10
Zinc (Zn)-Dissolved			109		%		80-120	01-MAR-10
WG1073425-2 CVS								
Tin (Sn)-Dissolved			107		%		80-120	01-MAR-10
Tungsten (W)-Dissolved			96		%		70-130	01-MAR-10
WG1073425-5 DUP		**WG1073425-4**						
Aluminum (Al)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-MAR-10
Antimony (Sb)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-MAR-10
Arsenic (As)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Barium (Ba)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1179510								
WG1073425-5 DUP		**WG1073425-4**						
Beryllium (Be)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Bismuth (Bi)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Boron (B)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-MAR-10
Cadmium (Cd)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-MAR-10
Calcium (Ca)-Dissolved		0.66	0.65	J	mg/L	0.01	2	01-MAR-10
Chromium (Cr)-Dissolved		0.0100	0.0101	J	mg/L	0.0001	0.004	01-MAR-10
Cobalt (Co)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-MAR-10
Copper (Cu)-Dissolved		0.143	0.147		mg/L	2.4	20	01-MAR-10
Iron (Fe)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-MAR-10
Lead (Pb)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Magnesium (Mg)-Dissolved		1.02	1.06	J	mg/L	0.04	2	01-MAR-10
Manganese (Mn)-Dissolved		0.0025	0.0025	J	mg/L	0.0000	0.004	01-MAR-10
Molybdenum (Mo)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Nickel (Ni)-Dissolved		0.0045	0.0045	J	mg/L	0.0000	0.008	01-MAR-10
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-MAR-10
Potassium (K)-Dissolved		<1.0	<1.0	RPD-NA	mg/L	N/A	20	01-MAR-10
Selenium (Se)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-MAR-10
Silver (Ag)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-MAR-10
Sodium (Na)-Dissolved		316	316	J	mg/L	0	200	01-MAR-10
Strontium (Sr)-Dissolved		0.0037	0.0037	J	mg/L	0.0001	0.004	01-MAR-10
Thallium (Tl)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	01-MAR-10
Tin (Sn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-10
Tungsten (W)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-MAR-10
Uranium (U)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-MAR-10
Vanadium (V)-Dissolved		0.0035	0.0035	J	mg/L	0.0000	0.004	01-MAR-10
Zinc (Zn)-Dissolved		0.0499	0.0496		mg/L	0.54	20	01-MAR-10
WG1073425-3 MB								
Aluminum (Al)-Dissolved			<0.010		mg/L		0.01	01-MAR-10
Antimony (Sb)-Dissolved			<0.0050		mg/L		0.005	01-MAR-10
Arsenic (As)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Barium (Ba)-Dissolved			<0.010		mg/L		0.01	01-MAR-10
Beryllium (Be)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Bismuth (Bi)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1179510								
WG1073425-3 MB								
Boron (B)-Dissolved			<0.050		mg/L		0.05	01-MAR-10
Cadmium (Cd)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-10
Calcium (Ca)-Dissolved			<0.50		mg/L		0.5	01-MAR-10
Chromium (Cr)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Cobalt (Co)-Dissolved			<0.00050		mg/L		0.0005	01-MAR-10
Copper (Cu)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Iron (Fe)-Dissolved			<0.050		mg/L		0.05	01-MAR-10
Lead (Pb)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Magnesium (Mg)-Dissolved			<0.50		mg/L		0.5	01-MAR-10
Manganese (Mn)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Molybdenum (Mo)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Nickel (Ni)-Dissolved			<0.0020		mg/L		0.002	01-MAR-10
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	01-MAR-10
Potassium (K)-Dissolved			<1.0		mg/L		1	01-MAR-10
Selenium (Se)-Dissolved			<0.0050		mg/L		0.005	01-MAR-10
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-10
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	01-MAR-10
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Thallium (Tl)-Dissolved			<0.00030		mg/L		0.0003	01-MAR-10
Tin (Sn)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Tungsten (W)-Dissolved			<0.010		mg/L		0.01	01-MAR-10
Uranium (U)-Dissolved			<0.0050		mg/L		0.005	01-MAR-10
Vanadium (V)-Dissolved			<0.0010		mg/L		0.001	01-MAR-10
Zinc (Zn)-Dissolved			<0.0030		mg/L		0.003	01-MAR-10
Batch R1180907								
WG1073912-1 CVS								
Sodium (Na)-Dissolved			102		%		80-120	02-MAR-10
WG1073912-2 CVS								
Silicon (Si)-Dissolved			112		%		70-130	02-MAR-10
Titanium (Ti)-Dissolved			109		%		80-120	02-MAR-10
Zirconium (Zr)-Dissolved			112		%		80-120	02-MAR-10
WG1073912-5 DUP		**WG1073912-4**						
Silicon (Si)-Dissolved		26	26	J	mg/L	1	40	02-MAR-10
Sodium (Na)-Dissolved		15.8	15.5	J	mg/L	0.3	20	02-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1180907								
WG1073912-5 DUP		**WG1073912-4**						
Titanium (Ti)-Dissolved		<0.020	<0.020		mg/L	N/A	20	02-MAR-10
Zirconium (Zr)-Dissolved		<0.040	<0.040		mg/L	N/A	26	02-MAR-10
WG1073912-3 MB								
Silicon (Si)-Dissolved			<1.0		mg/L		1	02-MAR-10
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	02-MAR-10
Titanium (Ti)-Dissolved			<0.0020		mg/L		0.002	02-MAR-10
Zirconium (Zr)-Dissolved			<0.0040		mg/L		0.004	02-MAR-10
NH4-TB	**Water**							
Batch R1200763								
WG1076233-4 DUP		**L865677-2**						
Ammonia-N, Total		<0.020	<0.020	RPD-NA	mg/L	N/A	20	08-MAR-10
WG1076233-2 LCS								
Ammonia-N, Total			96		%		85-115	08-MAR-10
WG1076233-1 MB								
Ammonia-N, Total			<0.020		mg/L		0.02	08-MAR-10
WG1076233-5 MS		**L865677-2**						
Ammonia-N, Total			96		%		75-125	08-MAR-10
PH-WT	**Water**							
Batch R1178157								
WG1072750-1 CVS								
pH			100		%		90-110	26-FEB-10
WG1072750-2 DUP		**L864756-2**						
pH		7.88	7.86		pH units	0.25	20	26-FEB-10
WG1072750-3 DUP		**L864914-1**						
pH		7.98	7.98		pH units	0.0	20	26-FEB-10
PO4-LOW-ED	**Water**							
Batch R1192223								
WG1075545-4 DUP		**L864848-1**						
Orthophosphate (PO4-P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	11	05-MAR-10
WG1075545-3 LCS								
Orthophosphate (PO4-P)			98		%		80-120	05-MAR-10
WG1075545-2 MB								
Orthophosphate (PO4-P)			<0.0010		mg/L		0.001	05-MAR-10
WG1075545-5 MS		**L864848-1**						
Orthophosphate (PO4-P)			98		%		82-116	05-MAR-10
REDOX-POTENTIAL-WT	**Water**							

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
REDOX-POTENTIAL-WT	**Water**							
Batch R1179468								
WG1073526-1 DUP		**L864494-1**						
Redox Potential		315	320		mV	1.6	26	26-FEB-10
SOLIDS-TDS-WT	**Water**							
Batch R1179531								
WG1073130-3 DUP		**L864914-1**						
Total Dissolved Solids		396	404		mg/L	2.0	20	28-FEB-10
WG1073130-2 LCS								
Total Dissolved Solids			95		%		70-130	28-FEB-10
WG1073130-1 MB								
Total Dissolved Solids			<20		mg/L		20	28-FEB-10
TC-MF-WT	**Water**							
Batch R1178736								
WG1073145-3 DUP		**L865105-1**						
Total Coliforms		0	0		CFU/100mL	0.0	39	27-FEB-10
WG1073145-1 MB								
Total Coliforms			0		CFU/100mL		1	27-FEB-10
WG1073145-2 MB								
Total Coliforms			0		CFU/100mL		1	27-FEB-10
TCB-MF-WT	**Water**							
Batch R1178736								
WG1073145-1 MB								
Total Coliform Background			0		CFU/100mL		1	27-FEB-10
WG1073145-2 MB								
Total Coliform Background			0		CFU/100mL		1	27-FEB-10
TURBIDITY-WT	**Water**							
Batch R1178231								
WG1072964-1 CVS								
Turbidity			100		%		85-115	26-FEB-10
WG1072964-3 DUP		**L864900-4**						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	20	26-FEB-10
WG1072964-2 MB								
Turbidity			<0.10		NTU		0.1	26-FEB-10

ALS Laboratory Group Quality Control Report

Legend:

Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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

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

60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910
Fax: (519) 886-9047
CANADA TOLL FREE: 1-800-668-9878

ALS Environmental

CHAIN OF CUSTODY / ANALYTICAL SERVICES REQUEST FORM

C of C # 83726
PAGE ___ OF ___

Note: all TAT Quoted material is in business days which exclude statutory holidays and weekends. TAT samples received past 3:00pm or Saturday/Sunday begin the next day.

Date requested	Service requested	
	5 day (Regular)	✓
	3-4 day TAT (25%)	
	2 day TAT (50%)	
	Next day TAT (100%)	
	Same day TAT (200%)	

COMPANY NAME: LVM Naylor
ALS ACCOUNT#:
PROJECT MANAGER: Chris Helmer
PROJECT #: P0516055 0300
PHONE: 519 741 1313
FAX: 519 741 5422
QUOTATION #:
PO# 178302

CRITERIA: Criteria on report (y/n) Y
Reg 153/04
Table (1) 2 3
TCLP ____ MISA ____ PWQO ____
OTHER ODWS

REPORT DISTRIBUTION: ALL FINAL RESULTS WILL BE MAILED
EMAIL____ FAX____ BOTH ____
EMAIL1
EMAIL2
SELECT: pdf____ digital____ both____

SUBMISSION #: L2604905
ENTERED BY: NB
DATE/TIME ENTERED: 25/2/10
BIN #: B347

INDICATE BOTTLES FIELD FILTERED/ PRESERVED (F/P)

SAMPLING INFORMATION

Sample Date/Time: Date (yy/mm/dd)	Time (24 hr)	TYPE: COMP	GRAB	MATRIX: WATER	SOIL	OTHER	SAMPLE DESCRIPTION TO APPEAR ON REPORT	NUMBER OF CONTAINERS	Potability Package	COMMENTS	LAB ID
10/02/25	1100		✓	✓			1058 Roseville Rd.	5	✓		-1
	1130		✓	✓			1145 "		✓		-2
	1230		✓	✓			1227 "		✓		-3

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS/COMMENTS

SAMPLE CONDITION

FROZEN / COLD / AMBIENT — MEAN TEMP: 3°C
CONDITION ACCEPTABLE UPON RECEIPT (Y/N): Y — INIT: NG

SAMPLED BY:	DATE & TIME	RECEIVED BY:	DATE & TIME
Dan Souter	10/02/25 1100		
RELINQUISHED BY: Dan Souter	DATE & TIME 10/02/25 1508	RECEIVED AT LAB BY: Nancy Lee	DATE & TIME 25-Feb-10 15:30

NOTES AND CONDITIONS:

1. Quote number must be provided to ensure proper pricing.
2. TAT may vary dependent on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs.
3. Any known or suspected hazards relating to a sample must be noted on the chain of custody in comments section.

White - report copy YELLOW - File copy PINK - Customer Copy

Certificate of Analysis

LVM-NAYLOR

ATTN: CHRIS HELMER

NAYLOR ENGINEERING
353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5

Report Date: 19-MAR-10 15:12 (MT)
Version: FINAL

Lab Work Order #: **L868842** **Date Received:** **12-MAR-10**

Project P.O. #: 178352
Job Reference: 160 PO31655 300
Legal Site Desc:
CofC Numbers: 90936

Other Information:

Comments:

Nancy Graham
Account Manager

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits STANDARDS		GUIDELINES	Analyzed	Batch
L868842-1 296 BISMARK Sampled By: DAN SOUTER on 12-MAR-10 @ 12:00 Matrix: WATER									
General Water Quality Package									
Ammonia as N	0.323		0.050	mg/L				15-MAR-10	R1209492
Anion Scan (IC)									
Chloride	11.6		2.0	mg/L			250	17-MAR-10	R1212638
Bromide	<0.10		0.10	mg/L				17-MAR-10	R1212638
Fluoride	0.48		0.10	mg/L	1.5			17-MAR-10	R1212638
Nitrite-N	<0.10		0.10	mg/L	1			17-MAR-10	R1212638
Nitrate-N	0.16		0.10	mg/L	10			17-MAR-10	R1212638
Sulphate	18.2		2.0	mg/L			500	17-MAR-10	R1212638
Silica	17.2		2.1	mg/L				16-MAR-10	
Color, Apparent	9.7		1.0	C.U.		**	5	12-MAR-10	R1209428
Conductivity	407		0.40	umhos/cm				15-MAR-10	R1209553
Detailed Ion Balance Calculation									
Ion Balance	108			%				18-MAR-10	
Cation - Anion Balance	3.6			%				18-MAR-10	
Computed Conductivity	369			uS/cm				18-MAR-10	
Conductivity % Difference	-9.9			%				18-MAR-10	
TDS (Calculated)	217			mg/L				18-MAR-10	
Anion Sum	3.92			me/L				18-MAR-10	
Cation Sum	4.21			me/L				18-MAR-10	
Saturation pH	7.53			pH				18-MAR-10	
Langelier Index	0.2			No Unit				18-MAR-10	
Hardness (as CaCO3)	191			mg/L		**	80-100	18-MAR-10	
E. Coli	0		0	CFU/100mL	0			13-MAR-10	R1208908
Phosphate-P (ortho)	0.0040		0.0030	mg/L				16-MAR-10	R1211091
Total Coliform Background	71		0	CFU/100mL				13-MAR-10	R1208907
Redox Potential	175		-1000	mV				15-MAR-10	R1209497
Sodium Adsorption Ratio	0.27		0.030	No Unit				19-MAR-10	
Speciated Alkalinity									
Alkalinity, Total (as CaCO3)	194		10	mg/L			30-500	15-MAR-10	R1210027
Alkalinity, Bicarbonate (as CaCO3)	193		10	mg/L				15-MAR-10	R1210027
Alkalinity, Carbonate (as CaCO3)	<10		10	mg/L				15-MAR-10	R1210027
Total Coliforms	56		0	CFU/100mL	** 0			13-MAR-10	R1208907
Total Dissolved Solids	216		20	mg/L			500	18-MAR-10	R1212516
Turbidity	1.20		0.10	NTU			5	13-MAR-10	R1208708
pH	7.77		0.10	pH units			6.5-8.5	15-MAR-10	R1209503
Individual Analytes									
Metal Scan-Dissolved									
Aluminum (Al)-Dissolved	<0.010	SFPL	0.010	mg/L			0.1	15-MAR-10	R1209528
Antimony (Sb)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.006			15-MAR-10	R1209528
Arsenic (As)-Dissolved	0.0039	SFPL	0.0010	mg/L	0.025			15-MAR-10	R1209528
Barium (Ba)-Dissolved	0.047	SFPL	0.010	mg/L	1			15-MAR-10	R1209528
Beryllium (Be)-Dissolved	<0.0010	SFPL	0.0010	mg/L				15-MAR-10	R1209528
Bismuth (Bi)-Dissolved	<0.0010	SFPL	0.0010	mg/L				15-MAR-10	R1209528
Boron (B)-Dissolved	<0.050	SFPL	0.050	mg/L	5			15-MAR-10	R1209528
Cadmium (Cd)-Dissolved	<0.00010	SFPL	0.00010	mg/L	0.005			15-MAR-10	R1209528

** analytical results for this parameter exceed criteria limits listed on this report

ALS LABORATORY GROUP CRITERIA REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits		Analyzed	Batch
L868842-1 296 BISMARK								
Sampled By: DAN SOUTER on 12-MAR-10 @ 12:00								
Matrix: WATER					STANDARDS	GUIDELINES		
Individual Analytes								
Metal Scan-Dissolved								
Calcium (Ca)-Dissolved	38.4	SFPL	0.50	mg/L			15-MAR-10	R1209528
Chromium (Cr)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.05		15-MAR-10	R1209528
Cobalt (Co)-Dissolved	<0.00050	SFPL	0.00050	mg/L			15-MAR-10	R1209528
Copper (Cu)-Dissolved	<0.0010	SFPL	0.0010	mg/L		1	15-MAR-10	R1209528
Iron (Fe)-Dissolved	<0.050	SFPL	0.050	mg/L		0.3	15-MAR-10	R1209528
Lead (Pb)-Dissolved	<0.0010	SFPL	0.0010	mg/L	0.01		15-MAR-10	R1209528
Magnesium (Mg)-Dissolved	23.0	SFPL	0.50	mg/L			16-MAR-10	R1209960
Manganese (Mn)-Dissolved	0.0145	SFPL	0.0010	mg/L		0.05	15-MAR-10	R1209528
Molybdenum (Mo)-Dissolved	0.0013	SFPL	0.0010	mg/L			15-MAR-10	R1209528
Nickel (Ni)-Dissolved	<0.0020	SFPL	0.0020	mg/L			15-MAR-10	R1209528
Phosphorus (P)-Dissolved	<0.050	SFPL	0.050	mg/L			15-MAR-10	R1209528
Potassium (K)-Dissolved	<1.0	SFPL	1.0	mg/L			15-MAR-10	R1209528
Selenium (Se)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.01		15-MAR-10	R1209528
Silicon (Si)-Dissolved	8.0	SFPL	1.0	mg/L			15-MAR-10	R1209528
Silver (Ag)-Dissolved	<0.00010	SFPL	0.00010	mg/L			15-MAR-10	R1209528
Sodium (Na)-Dissolved	8.72	SFPL	0.50	mg/L	20	200	15-MAR-10	R1209528
Strontium (Sr)-Dissolved	0.384	SFPL	0.0010	mg/L			15-MAR-10	R1209528
Thallium (Tl)-Dissolved	<0.00030	SFPL	0.00030	mg/L			15-MAR-10	R1209528
Tin (Sn)-Dissolved	<0.0010	SFPL	0.0010	mg/L			15-MAR-10	R1209528
Titanium (Ti)-Dissolved	<0.0020	SFPL	0.0020	mg/L			15-MAR-10	R1209528
Tungsten (W)-Dissolved	<0.010	SFPL	0.010	mg/L			15-MAR-10	R1209528
Uranium (U)-Dissolved	<0.0050	SFPL	0.0050	mg/L	0.02		15-MAR-10	R1209528
Vanadium (V)-Dissolved	0.0011	SFPL	0.0010	mg/L			15-MAR-10	R1209528
Zinc (Zn)-Dissolved	0.0344	SFPL	0.0030	mg/L		5	15-MAR-10	R1209528
Zirconium (Zr)-Dissolved	<0.0040	SFPL	0.0040	mg/L			15-MAR-10	R1209528

** analytical results for this parameter exceed criteria limits listed on this report

Ontario DW Std O.Reg 169/03 JUNE 2007

Sample Parameter Qualifier key listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Preparation Method Reference(Based On)	Analytical Method Reference(Based On)
ALK-SPEC-WT	Water	Speciated Alkalinity		APHA 2320B
ANIONS-WT	Water	Anion Scan (IC)		EPA 300.0 (IC)
COLOUR-WT	Water	Colour		APHA 2120
	Apparent colour is determined by analysis of the decanted sample using the platinum-cobalt colourimetric method.			
EC-MF-WT	Water	E. Coli		SM 9222D
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at @44.5–0.2°C for 24–2h.			
EC-WT	Water	Conductivity		APHA 2510 B
ETL-SAR-CALC-WT	Water	Sodium Adsorption Ratio		Calculation
ETL-SILICA-CALC-WT	Water	Calculate from SI-TOT-WT		EPA 200.8
IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation		APHA 1030E, 2330B, 2510A
MET-DIS-WT	Water	Metal Scan-Dissolved		EPA 200.8
NH3-WT	Water	Ammonia as N		EPA 350.1
	Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.			
P-ORTHO-LOW-WT	Water	Phosphorus-P (ortho)		APHA 4500-P B E
PH-WT	Water	pH		APHA 4500 H-Electrode
	Water samples are analyzed directly by a calibrated pH meter.			
REDOX-POTENTIAL-WT	Water	Redox Potential		APHA 2580
SOLIDS-TDS-WT	Water	Total Dissolved Solids		APHA 2540C
	A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5oC overnight and then 180–10°C for 1hr.			
TC-MF-WT	Water	Total Coliforms		SM 9222B
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5°C for 24–2h.			
TCB-MF-WT	Water	REG		SM 9222B
	A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5°C for 24–2h.			
TURBIDITY-WT	Water	Turbidity		APHA 2130 B
	Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.			

Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

Chain of Custody numbers:

90936

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

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS LABORATORY GROUP - WATERLOO, ONTARIO, CANADA		

Reference Information

160 PO31655 300

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds. The reported surrogate recovery value provides a measure of method efficiency. The Laboratory control limits are determined under column heading D.L.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
< - Less than
D.L. - Detection Limit
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

ALS provides criteria information as a service to you, our customer. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. ALS recommends review of the most current version of the regulation, and assumes no responsibility for the accuracy of the criteria levels indicated.

ALS Laboratory Group Quality Control Report

Workorder: L868842 Report Date: 19-MAR-10

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5

Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-SPEC-WT	**Water**							
Batch R1210027								
WG1078988-2 CVS								
Alkalinity, Total (as CaCO3)			100		%		85-115	15-MAR-10
WG1078988-3 DUP		**L868721-1**						
Alkalinity, Total (as CaCO3)		165	165		mg/L	0.49	20	15-MAR-10
Alkalinity, Bicarbonate (as CaCO3)		164	164		mg/L	0.49	25	15-MAR-10
Alkalinity, Carbonate (as CaCO3)		<10	<10	RPD-NA	mg/L	N/A	26	15-MAR-10
WG1078988-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	15-MAR-10
Alkalinity, Bicarbonate (as CaCO3)			<10		mg/L		10	15-MAR-10
Alkalinity, Carbonate (as CaCO3)			<10		mg/L		10	15-MAR-10
ANIONS-WT	**Water**							
Batch R1212638								
WG1080009-3 LCS								
Chloride			101		%		75-125	17-MAR-10
Bromide			99		%		75-125	17-MAR-10
Fluoride			108		%		75-125	17-MAR-10
Nitrite-N			99		%		75-125	17-MAR-10
Nitrate-N			100		%		75-125	17-MAR-10
Sulphate			101		%		75-125	17-MAR-10
WG1080009-4 LCSD		**WG1080009-3**						
Chloride		101	101		%	0.074	30	17-MAR-10
Bromide		99	99		%	0.30	30	17-MAR-10
Fluoride		108	106		%	1.7	30	17-MAR-10
Nitrite-N		99	100		%	0.30	30	17-MAR-10
Nitrate-N		100	100		%	0.10	30	17-MAR-10
Sulphate		101	101		%	0.015	30	17-MAR-10
WG1080009-1 MB								
Chloride			<2.0		mg/L		2	17-MAR-10
Bromide			<0.10		mg/L		0.1	17-MAR-10
Fluoride			<0.10		mg/L		0.1	17-MAR-10
Nitrite-N			<0.10		mg/L		0.1	17-MAR-10
Nitrate-N			<0.10		mg/L		0.1	17-MAR-10
Sulphate			<2.0		mg/L		2	17-MAR-10
COLOUR-WT	**Water**							

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
COLOUR-WT	**Water**							
Batch R1209428								
WG1078439-2 CVS								
Color, Apparent			104		%		80-120	12-MAR-10
WG1078439-3 DUP		**L868842-1**						
Color, Apparent		9.7	9.7	J	C.U.	0.0	4	12-MAR-10
WG1078439-1 MB								
Color, Apparent			<1.0		C.U.		1	12-MAR-10
EC-MF-WT	**Water**							
Batch R1208908								
WG1078643-2 DUP		**L868554-2**						
E. Coli		0	0		CFU/100mL	0.0	82	13-MAR-10
WG1078643-1 MB								
E. Coli			0		CFU/100mL		1	13-MAR-10
EC-WT	**Water**							
Batch R1209553								
WG1079209-1 CVS								
Conductivity			100		%		90-110	15-MAR-10
WG1079209-2 DUP		**L868721-1**						
Conductivity		312	324		umhos/cm	3.8	10	15-MAR-10
MET-DIS-WT	**Water**							
Batch R1209528								
WG1079011-1 CVS								
Aluminum (Al)-Dissolved			105		%		80-120	15-MAR-10
Antimony (Sb)-Dissolved			89		%		80-120	15-MAR-10
Arsenic (As)-Dissolved			101		%		80-120	15-MAR-10
Barium (Ba)-Dissolved			103		%		80-120	15-MAR-10
Beryllium (Be)-Dissolved			110		%		80-120	15-MAR-10
Bismuth (Bi)-Dissolved			108		%		80-120	15-MAR-10
Boron (B)-Dissolved			102		%		70-130	15-MAR-10
Cadmium (Cd)-Dissolved			110		%		80-120	15-MAR-10
Calcium (Ca)-Dissolved			99		%		80-120	15-MAR-10
Chromium (Cr)-Dissolved			104		%		80-120	15-MAR-10
Cobalt (Co)-Dissolved			104		%		80-120	15-MAR-10
Copper (Cu)-Dissolved			108		%		80-120	15-MAR-10
Iron (Fe)-Dissolved			107		%		80-120	15-MAR-10
Lead (Pb)-Dissolved			107		%		80-120	15-MAR-10
Manganese (Mn)-Dissolved			106		%		80-120	15-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1209528								
WG1079011-1 CVS								
Molybdenum (Mo)-Dissolved			102		%		80-120	15-MAR-10
Nickel (Ni)-Dissolved			109		%		80-120	15-MAR-10
Phosphorus (P)-Dissolved			107		%		70-130	15-MAR-10
Potassium (K)-Dissolved			102		%		80-120	15-MAR-10
Selenium (Se)-Dissolved			98		%		80-120	15-MAR-10
Silver (Ag)-Dissolved			102		%		80-120	15-MAR-10
Sodium (Na)-Dissolved			102		%		80-120	15-MAR-10
Strontium (Sr)-Dissolved			104		%		80-120	15-MAR-10
Thallium (Tl)-Dissolved			106		%		80-120	15-MAR-10
Uranium (U)-Dissolved			103		%		80-120	15-MAR-10
Vanadium (V)-Dissolved			101		%		80-120	15-MAR-10
Zinc (Zn)-Dissolved			106		%		80-120	15-MAR-10
WG1079011-2 CVS								
Silicon (Si)-Dissolved			113		%		70-130	15-MAR-10
Tin (Sn)-Dissolved			108		%		80-120	15-MAR-10
Titanium (Ti)-Dissolved			107		%		80-120	15-MAR-10
Tungsten (W)-Dissolved			99		%		70-130	15-MAR-10
Zirconium (Zr)-Dissolved			109		%		80-120	15-MAR-10
WG1079011-5 DUP		**WG1079011-4**						
Aluminum (Al)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-MAR-10
Antimony (Sb)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	15-MAR-10
Arsenic (As)-Dissolved		0.0156	0.0155		mg/L	0.51	20	15-MAR-10
Barium (Ba)-Dissolved		0.191	0.194		mg/L	1.5	20	15-MAR-10
Beryllium (Be)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-MAR-10
Bismuth (Bi)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-MAR-10
Boron (B)-Dissolved		0.185	0.185	J	mg/L	0.001	0.2	15-MAR-10
Cadmium (Cd)-Dissolved		0.00028	0.00028	J	mg/L	0.00000	0.0004	15-MAR-10
Calcium (Ca)-Dissolved		69.3	68.2		mg/L	1.6	20	15-MAR-10
Chromium (Cr)-Dissolved		0.0018	0.0016	J	mg/L	0.0001	0.004	15-MAR-10
Cobalt (Co)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-MAR-10
Copper (Cu)-Dissolved		0.0016	0.0015	J	mg/L	0.0001	0.004	15-MAR-10
Iron (Fe)-Dissolved		0.445	0.438	J	mg/L	0.006	0.2	15-MAR-10
Lead (Pb)-Dissolved		0.0013	0.0013	J	mg/L	0.0000	0.004	15-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1209528								
WG1079011-5 DUP		**WG1079011-4**						
Manganese (Mn)-Dissolved		0.0285	0.0281		mg/L	1.3	20	15-MAR-10
Molybdenum (Mo)-Dissolved		0.0156	0.0156		mg/L	0.077	20	15-MAR-10
Nickel (Ni)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	15-MAR-10
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	15-MAR-10
Potassium (K)-Dissolved		4.0	4.0	J	mg/L	0.0	4	15-MAR-10
Selenium (Se)-Dissolved		0.0074	0.0073	J	mg/L	0.0001	0.02	15-MAR-10
Silicon (Si)-Dissolved		7.1	6.7	J	mg/L	0.5	4	15-MAR-10
Silver (Ag)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-MAR-10
Sodium (Na)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	15-MAR-10
Strontium (Sr)-Dissolved		1.92	1.91		mg/L	0.16	20	15-MAR-10
Thallium (Tl)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	15-MAR-10
Tin (Sn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-MAR-10
Titanium (Ti)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	15-MAR-10
Tungsten (W)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-MAR-10
Uranium (U)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	15-MAR-10
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-MAR-10
Zinc (Zn)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	15-MAR-10
Zirconium (Zr)-Dissolved		<0.0040	<0.0040	RPD-NA	mg/L	N/A	26	15-MAR-10
WG1079011-3 MB								
Aluminum (Al)-Dissolved			<0.010		mg/L		0.01	15-MAR-10
Antimony (Sb)-Dissolved			<0.0050		mg/L		0.005	15-MAR-10
Arsenic (As)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Barium (Ba)-Dissolved			<0.010		mg/L		0.01	15-MAR-10
Beryllium (Be)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Bismuth (Bi)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Boron (B)-Dissolved			<0.050		mg/L		0.05	15-MAR-10
Cadmium (Cd)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-10
Calcium (Ca)-Dissolved			<0.50		mg/L		0.5	15-MAR-10
Chromium (Cr)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Cobalt (Co)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-10
Copper (Cu)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Iron (Fe)-Dissolved			<0.050		mg/L		0.05	15-MAR-10
Lead (Pb)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DIS-WT	**Water**							
Batch R1209528								
WG1079011-3 MB								
Manganese (Mn)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Molybdenum (Mo)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Nickel (Ni)-Dissolved			<0.0020		mg/L		0.002	15-MAR-10
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	15-MAR-10
Potassium (K)-Dissolved			<1.0		mg/L		1	15-MAR-10
Selenium (Se)-Dissolved			<0.0050		mg/L		0.005	15-MAR-10
Silicon (Si)-Dissolved			<1.0		mg/L		1	15-MAR-10
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-10
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	15-MAR-10
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Thallium (Tl)-Dissolved			<0.00030		mg/L		0.0003	15-MAR-10
Tin (Sn)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Titanium (Ti)-Dissolved			<0.0020		mg/L		0.002	15-MAR-10
Tungsten (W)-Dissolved			<0.010		mg/L		0.01	15-MAR-10
Uranium (U)-Dissolved			<0.0050		mg/L		0.005	15-MAR-10
Vanadium (V)-Dissolved			<0.0010		mg/L		0.001	15-MAR-10
Zinc (Zn)-Dissolved			<0.0030		mg/L		0.003	15-MAR-10
Zirconium (Zr)-Dissolved			<0.0040		mg/L		0.004	15-MAR-10
Batch R1209960								
WG1079406-1 CVS								
Magnesium (Mg)-Dissolved			99		%		80-120	16-MAR-10
WG1079406-5 DUP		**WG1079406-4**						
Magnesium (Mg)-Dissolved		7.89	8.12		mg/L	2.8	20	16-MAR-10
WG1079406-3 MB								
Magnesium (Mg)-Dissolved			<0.50		mg/L		0.5	16-MAR-10
NH3-WT	**Water**							
Batch R1209492								
WG1079068-2 CVS								
Ammonia as N			108		%		85-115	15-MAR-10
WG1079068-3 DUP		**L868721-1**						
Ammonia as N		0.178	0.166	J	mg/L	0.012	0.2	15-MAR-10
WG1079068-1 MB								
Ammonia as N			<0.050		mg/L		0.05	15-MAR-10
WG1079068-4 MS		**L868721-1**						
Ammonia as N			88		%		75-125	15-MAR-10

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-ORTHO-LOW-WT	**Water**							
Batch R1211091								
WG1079542-3 DUP		**L868561-1**						
Phosphate-P (ortho)		0.0573	0.0574		mg/L	0.19	26	16-MAR-10
WG1079542-2 LCS								
Phosphate-P (ortho)			99		%		80-120	16-MAR-10
WG1079542-1 MB								
Phosphate-P (ortho)			<0.0030		mg/L		0.003	16-MAR-10
WG1079542-4 MS		**L868561-1**						
Phosphate-P (ortho)			75		%		63-138	16-MAR-10
PH-WT	**Water**							
Batch R1209503								
WG1079160-1 CVS								
pH			100		%		90-110	15-MAR-10
WG1079160-2 DUP		**L868565-1**						
pH		7.59	7.61		pH units	0.26	20	15-MAR-10
REDOX-POTENTIAL-WT	**Water**							
Batch R1209497								
WG1079066-1 DUP		**L868842-1**						
Redox Potential		175	155		mV	12	26	15-MAR-10
SOLIDS-TDS-WT	**Water**							
Batch R1212516								
WG1079888-3 DUP		**L868653-1**						
Total Dissolved Solids		594	582		mg/L	2.0	20	18-MAR-10
WG1079888-4 DUP		**L869589-1**						
Total Dissolved Solids		444	456		mg/L	2.7	20	18-MAR-10
WG1079888-2 LCS								
Total Dissolved Solids			96		%		70-130	18-MAR-10
WG1079888-1 MB								
Total Dissolved Solids			<20		mg/L		20	18-MAR-10
TC-MF-WT	**Water**							
Batch R1208907								
WG1078642-2 DUP		**L868554-1**						
Total Coliforms		0	0		CFU/100mL	0.0	39	13-MAR-10
WG1078642-1 MB								
Total Coliforms			0		CFU/100mL		1	13-MAR-10
TCB-MF-WT	**Water**							

ALS Laboratory Group Quality Control Report

Client: LVM-NAYLOR
NAYLOR ENGINEERING 353 BRIDGE ST., E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TCB-MF-WT	**Water**							
Batch R1208907								
WG1078642-1 MB								
Total Coliform Background			0		CFU/100mL		1	13-MAR-10
TURBIDITY-WT	**Water**							
Batch R1208708								
WG1078621-1 CVS								
Turbidity			99		%		85-115	13-MAR-10
WG1078621-3 DUP		**L868721-1**						
Turbidity		0.34	0.34	J	NTU	0.00	0.4	13-MAR-10
WG1078621-2 MB								
Turbidity			<0.10		NTU		0.1	13-MAR-10

ALS Laboratory Group Quality Control Report

Legend:

Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

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

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

60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910
Fax: (519) 886-9047
CANADA TOLL FREE: 1-800-668-9878

ALS Environmental

CHAIN OF CUSTODY / ANALYTICAL SERVICES REQUEST FORM

C of C # 90936
PAGE 1 OF 1

Note: all TAT Quoted material is in business days which exclude statutory holidays and weekends. TAT samples received past 3:00pm or Saturday/Sunday begin the next day.

Date requested	Service requested	
	5 day (Regular)	✓
	3-4 day TAT (25%)	
	2 day TAT (50%)	
	Next day TAT (100%)	
	Same day TAT (200%)	

COMPANY NAME: LVM Naylor
ALS ACCOUNT#:
PROJECT MANAGER: Chris Helmer
PROJECT #: 160 P031655 300
PHONE: 519-741-1313
FAX: 519-741-5422
QUOTATION #:
PO#: 178352

CRITERIA: Criteria on report (y/n) Y
Reg 153/04
Table (1) 2 3
TCLP ____ MISA ____ PWQO ____
OTHER ODWS

REPORT DISTRIBUTION: ALL FINAL RESULTS WILL BE MAILED
EMAIL____ FAX____ BOTH ____
EMAIL1____
EMAIL2____
SELECT: pdf____ digital____ both____

SUBMISSION #: L868842
ENTERED BY: NB
DATE/TIME ENTERED: 12-3-10
BIN #: D490

SAMPLING INFORMATION

Sample Date/Time		TYPE		MATRIX			SAMPLE DESCRIPTION TO APPEAR ON REPORT	NUMBER OF CONTAINERS	ANALYSIS REQUEST: Potability Package	COMMENTS	LAB ID
Date (yy/mm/dd)	Time (24 hr)	COMP	GRAB	WATER	SOIL	OTHER					
10/03/12	1200		✓	X			296 Bismark	5	✓		-1

SPECIAL INSTRUCTIONS/COMMENTS

SAMPLE CONDITION

FROZEN	MEAN TEMP
(COLD)	8
AMBIENT	
CONDITION ACCEPTABLE UPON RECEIPT (Y/N) Y	INIT NB

SAMPLED BY	DATE & TIME	RECEIVED BY:	DATE & TIME
Dan Souter	10/03/12 1200		
RELINQUISHED BY: Dan Souter	DATE & TIME: 10/03/12 1450	RECEIVED AT LAB BY: NB	DATE & TIME: 12-3-10 14:50

NOTES AND CONDITIONS:

1. Quote number must be provided to ensure proper pricing.
2. TAT may vary dependent on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs.
3. Any known or suspected hazards relating to a sample must be noted on the chain of custody in comments section.

White - report copy YELLOW - File copy PINK - Customer Copy

LVM INC.
ATTN: CHRIS HELMER
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5

Date Received: 23-JUL-13
Report Date: 29-JUL-13 13:41 (MT)
Version: FINAL

Client Phone: 519-741-1313

Certificate of Analysis

Lab Work Order #: L1336559

Project P.O. #: 209225
Job Reference: P-0003455-0-05-305-01
C of C Numbers: 144397
Legal Site Desc:

Nancy Smith
Account Manager

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits				Analyzed	Batch
					STANDARDS		GUIDELINES			
L1336559-1 BH-18A-10 Sampled By: D. SOUTER on 23-JUL-13 @ 09:30 Matrix: WATER										
General Chemistry Package 1-Groundwater										
Alkalinity, Total (as CaCO3)	323		10	mg/L			30-500		25-JUL-13	R2656098
Ammonia, Total (as N)	<0.050		0.050	mg/L					24-JUL-13	R2655383
CL,F,NO2,NO3,SO4										
Chloride	152		2.0	mg/L			250		24-JUL-13	R2655968
Fluoride	<0.10		0.10	mg/L	1.5				24-JUL-13	R2655968
Nitrite-N	<0.10		0.10	mg/L	1				24-JUL-13	R2655968
Nitrate-N	7.15		0.10	mg/L	10				24-JUL-13	R2655968
Sulphate	15.1		2.0	mg/L			500		24-JUL-13	R2655968
Color, Apparent	90.9		1.0	C.U.		**	5		25-JUL-13	R2656077
Conductivity	1160		3.0	umhos/cm					24-JUL-13	R2655771
Dissolved Metals in Water by ICPMS										
Dissolved Metals Filtration Location	LAB			No Unit					24-JUL-13	R2654962
Aluminum (Al)-Dissolved	<0.010		0.010	mg/L			0.1		24-JUL-13	R2655890
Antimony (Sb)-Dissolved	<0.0050		0.0050	mg/L	0.006				24-JUL-13	R2655890
Arsenic (As)-Dissolved	<0.0010		0.0010	mg/L	0.025				24-JUL-13	R2655890
Barium (Ba)-Dissolved	0.087		0.010	mg/L	1				24-JUL-13	R2655890
Beryllium (Be)-Dissolved	<0.0010		0.0010	mg/L					24-JUL-13	R2655890
Bismuth (Bi)-Dissolved	<0.0010		0.0010	mg/L					24-JUL-13	R2655890
Boron (B)-Dissolved	<0.050		0.050	mg/L	5				24-JUL-13	R2655890
Cadmium (Cd)-Dissolved	<0.000090		0.000090	mg/L	0.005				24-JUL-13	R2655890
Calcium (Ca)-Dissolved	116		0.50	mg/L					24-JUL-13	R2655890
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	0.05				24-JUL-13	R2655890
Cobalt (Co)-Dissolved	<0.00050		0.00050	mg/L					24-JUL-13	R2655890
Copper (Cu)-Dissolved	0.0014		0.0010	mg/L			1		24-JUL-13	R2655890
Iron (Fe)-Dissolved	<0.050		0.050	mg/L			0.3		24-JUL-13	R2655890
Lead (Pb)-Dissolved	<0.0010		0.0010	mg/L	0.01				24-JUL-13	R2655890
Magnesium (Mg)-Dissolved	40.6		0.50	mg/L					24-JUL-13	R2655890
Manganese (Mn)-Dissolved	<0.0010		0.0010	mg/L			0.05		24-JUL-13	R2655890
Molybdenum (Mo)-Dissolved	<0.0010		0.0010	mg/L					24-JUL-13	R2655890
Nickel (Ni)-Dissolved	<0.0020		0.0020	mg/L					24-JUL-13	R2655890
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L					24-JUL-13	R2655890
Potassium (K)-Dissolved	4.7		1.0	mg/L					24-JUL-13	R2655890
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L	0.01				24-JUL-13	R2655890
Silicon (Si)-Dissolved	4.1		1.0	mg/L					24-JUL-13	R2655890
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L					24-JUL-13	R2655890
Sodium (Na)-Dissolved	73.4	DLM	5.0	mg/L	** 20		200		24-JUL-13	R2655890
Strontium (Sr)-Dissolved	0.110		0.0010	mg/L					24-JUL-13	R2655890
Thallium (Tl)-Dissolved	<0.00030		0.00030	mg/L					24-JUL-13	R2655890
Tin (Sn)-Dissolved	<0.0010		0.0010	mg/L					24-JUL-13	R2655890
Titanium (Ti)-Dissolved	<0.0020		0.0020	mg/L					24-JUL-13	R2655890
Tungsten (W)-Dissolved	<0.010		0.010	mg/L					24-JUL-13	R2655890
Uranium (U)-Dissolved	<0.0050		0.0050	mg/L	0.02				24-JUL-13	R2655890
Vanadium (V)-Dissolved	<0.0010		0.0010	mg/L					24-JUL-13	R2655890
Zinc (Zn)-Dissolved	0.0050		0.0030	mg/L			5		24-JUL-13	R2655890
Zirconium (Zr)-Dissolved	<0.0040		0.0040	mg/L					24-JUL-13	R2655890
Hardness (as CaCO3)	456		10	mg/L		**	80-100		25-JUL-13	

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

** Analytical result for this parameter exceeds Criteria Specific Limit listed on this report.

Ontario DW Std O.Reg 169/03 JUNE 2007

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
L1336559-1 BH-18A-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 09:30									
Matrix: WATER					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Phosphate-P (ortho)	0.0035		0.0030	mg/L				25-JUL-13	R2656091
Total Dissolved Solids	716		20	mg/L		**	500	29-JUL-13	R2658620
Turbidity	8.15		0.10	NTU		**	5	24-JUL-13	R2655140
pH	7.86		0.10	pH units			6.5-8.5	24-JUL-13	R2655776
L1336559-2 BH-11-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 11:30									
Matrix: WATER					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Alkalinity, Total (as CaCO3)	262		10	mg/L			30-500	25-JUL-13	R2656098
Ammonia, Total (as N)	<0.050		0.050	mg/L				24-JUL-13	R2655383
CL,F,NO2,NO3,SO4									
Chloride	4.6		2.0	mg/L			250	24-JUL-13	R2655968
Fluoride	<0.10		0.10	mg/L	1.5			24-JUL-13	R2655968
Nitrite-N	<0.10		0.10	mg/L	1			24-JUL-13	R2655968
Nitrate-N	1.35		0.10	mg/L	10			24-JUL-13	R2655968
Sulphate	19.8		2.0	mg/L			500	24-JUL-13	R2655968
Color, Apparent	50.3		1.0	C.U.		**	5	25-JUL-13	R2656077
Conductivity	491		3.0	umhos/cm				24-JUL-13	R2655771
Dissolved Metals in Water by ICPMS									
Dissolved Metals Filtration Location	LAB			No Unit				24-JUL-13	R2654962
Aluminum (Al)-Dissolved	<0.010		0.010	mg/L			0.1	24-JUL-13	R2655890
Antimony (Sb)-Dissolved	<0.0050		0.0050	mg/L	0.006			24-JUL-13	R2655890
Arsenic (As)-Dissolved	<0.0010		0.0010	mg/L	0.025			24-JUL-13	R2655890
Barium (Ba)-Dissolved	0.023		0.010	mg/L	1			24-JUL-13	R2655890
Beryllium (Be)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Bismuth (Bi)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Boron (B)-Dissolved	<0.050		0.050	mg/L	5			24-JUL-13	R2655890
Cadmium (Cd)-Dissolved	<0.000090		0.000090	mg/L	0.005			24-JUL-13	R2655890
Calcium (Ca)-Dissolved	82.1		0.50	mg/L				24-JUL-13	R2655890
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	0.05			24-JUL-13	R2655890
Cobalt (Co)-Dissolved	<0.00050		0.00050	mg/L				24-JUL-13	R2655890
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L			1	24-JUL-13	R2655890
Iron (Fe)-Dissolved	<0.050		0.050	mg/L			0.3	24-JUL-13	R2655890
Lead (Pb)-Dissolved	<0.0010		0.0010	mg/L	0.01			24-JUL-13	R2655890
Magnesium (Mg)-Dissolved	29.5		0.50	mg/L				24-JUL-13	R2655890
Manganese (Mn)-Dissolved	0.0812		0.0010	mg/L		**	0.05	24-JUL-13	R2655890
Molybdenum (Mo)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Nickel (Ni)-Dissolved	<0.0020		0.0020	mg/L				24-JUL-13	R2655890
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L				24-JUL-13	R2655890
Potassium (K)-Dissolved	<1.0		1.0	mg/L				24-JUL-13	R2655890
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L	0.01			24-JUL-13	R2655890
Silicon (Si)-Dissolved	3.1		1.0	mg/L				24-JUL-13	R2655890
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L				24-JUL-13	R2655890
Sodium (Na)-Dissolved	2.64		0.50	mg/L	20		200	24-JUL-13	R2655890

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

** Analytical result for this parameter exceeds Criteria Specific Limit listed on this report.

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Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
L1336559-2 BH-11-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 11:30									
Matrix: WATER					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Dissolved Metals in Water by ICPMS									
Strontium (Sr)-Dissolved	0.0760		0.0010	mg/L				24-JUL-13	R2655890
Thallium (Tl)-Dissolved	<0.00030		0.00030	mg/L				24-JUL-13	R2655890
Tin (Sn)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Titanium (Ti)-Dissolved	<0.0020		0.0020	mg/L				24-JUL-13	R2655890
Tungsten (W)-Dissolved	<0.010		0.010	mg/L				24-JUL-13	R2655890
Uranium (U)-Dissolved	<0.0050		0.0050	mg/L	0.02			24-JUL-13	R2655890
Vanadium (V)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Zinc (Zn)-Dissolved	0.0205		0.0030	mg/L			5	24-JUL-13	R2655890
Zirconium (Zr)-Dissolved	<0.0040		0.0040	mg/L				24-JUL-13	R2655890
Hardness (as CaCO3)	326		10	mg/L		**	80-100	25-JUL-13	
Phosphate-P (ortho)	0.0038		0.0030	mg/L				25-JUL-13	R2656091
Total Dissolved Solids	278		20	mg/L			500	29-JUL-13	R2658620
Turbidity	9.50		0.10	NTU		**	5	24-JUL-13	R2655140
pH	7.94		0.10	pH units			6.5-8.5	24-JUL-13	R2655776
L1336559-3 BH-112-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 13:30									
Matrix: WATER					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Alkalinity, Total (as CaCO3)	658		10	mg/L			30-500	25-JUL-13	R2656098
Ammonia, Total (as N)	1.47		0.050	mg/L				24-JUL-13	R2655383
CL,F,NO2,NO3,SO4									
Chloride	6.8		2.0	mg/L			250	24-JUL-13	R2655968
Fluoride	<0.10		0.10	mg/L	1.5			24-JUL-13	R2655968
Nitrite-N	<0.10		0.10	mg/L	1			24-JUL-13	R2655968
Nitrate-N	<0.10		0.10	mg/L	10			24-JUL-13	R2655968
Sulphate	138		2.0	mg/L			500	24-JUL-13	R2655968
Color, Apparent	143		1.0	C.U.		**	5	25-JUL-13	R2656077
Conductivity	1350		3.0	umhos/cm				24-JUL-13	R2655771
Dissolved Metals in Water by ICPMS									
Dissolved Metals Filtration Location	LAB			No Unit				24-JUL-13	R2654962
Aluminum (Al)-Dissolved	0.013		0.010	mg/L			0.1	25-JUL-13	R2655890
Antimony (Sb)-Dissolved	<0.0050		0.0050	mg/L	0.006			25-JUL-13	R2655890
Arsenic (As)-Dissolved	0.0056		0.0010	mg/L	0.025			25-JUL-13	R2655890
Barium (Ba)-Dissolved	0.172		0.010	mg/L	1			25-JUL-13	R2655890
Beryllium (Be)-Dissolved	<0.0010		0.0010	mg/L				25-JUL-13	R2655890
Bismuth (Bi)-Dissolved	<0.0010		0.0010	mg/L				25-JUL-13	R2655890
Boron (B)-Dissolved	<0.050		0.050	mg/L	5			25-JUL-13	R2655890
Cadmium (Cd)-Dissolved	<0.000090		0.000090	mg/L	0.005			25-JUL-13	R2655890
Calcium (Ca)-Dissolved	225		0.50	mg/L				25-JUL-13	R2655890
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	0.05			25-JUL-13	R2655890
Cobalt (Co)-Dissolved	0.00077		0.00050	mg/L				25-JUL-13	R2655890
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L			1	25-JUL-13	R2655890

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

** Analytical result for this parameter exceeds Criteria Specific Limit listed on this report.

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L1336559-3 BH-112-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 13:30									
Matrix: WATER									
General Chemistry Package 1-Groundwater									
Dissolved Metals in Water by ICPMS									
Iron (Fe)-Dissolved	0.080		0.050	mg/L			0.3	25-JUL-13	R2655890
Lead (Pb)-Dissolved	<0.0010		0.0010	mg/L	0.01			25-JUL-13	R2655890
Magnesium (Mg)-Dissolved	64.6	DLM	5.0	mg/L				25-JUL-13	R2655890
Manganese (Mn)-Dissolved	0.687		0.0010	mg/L		**	0.05	25-JUL-13	R2655890
Molybdenum (Mo)-Dissolved	0.0015		0.0010	mg/L				25-JUL-13	R2655890
Nickel (Ni)-Dissolved	<0.0020		0.0020	mg/L				25-JUL-13	R2655890
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L				25-JUL-13	R2655890
Potassium (K)-Dissolved	7.2		1.0	mg/L				25-JUL-13	R2655890
Selenium (Se)-Dissolved	0.00068		0.00040	mg/L	0.01			25-JUL-13	R2655890
Silicon (Si)-Dissolved	3.3		1.0	mg/L				25-JUL-13	R2655890
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L				25-JUL-13	R2655890
Sodium (Na)-Dissolved	4.34		0.50	mg/L	20		200	25-JUL-13	R2655890
Strontium (Sr)-Dissolved	0.289		0.0010	mg/L				25-JUL-13	R2655890
Thallium (Tl)-Dissolved	<0.00030		0.00030	mg/L				25-JUL-13	R2655890
Tin (Sn)-Dissolved	<0.0010		0.0010	mg/L				25-JUL-13	R2655890
Titanium (Ti)-Dissolved	<0.0020		0.0020	mg/L				25-JUL-13	R2655890
Tungsten (W)-Dissolved	<0.010		0.010	mg/L				25-JUL-13	R2655890
Uranium (U)-Dissolved	<0.0050		0.0050	mg/L	0.02			25-JUL-13	R2655890
Vanadium (V)-Dissolved	0.0011		0.0010	mg/L				25-JUL-13	R2655890
Zinc (Zn)-Dissolved	0.0423		0.0030	mg/L			5	25-JUL-13	R2655890
Zirconium (Zr)-Dissolved	<0.0040		0.0040	mg/L				25-JUL-13	R2655890
Hardness (as CaCO3)	827		21	mg/L		**	80-100	26-JUL-13	
Phosphate-P (ortho)	0.0033		0.0030	mg/L				25-JUL-13	R2656091
Total Dissolved Solids	928		20	mg/L		**	500	29-JUL-13	R2658620
Turbidity	18.8		0.10	NTU		**	5	24-JUL-13	R2655140
pH	7.43		0.10	pH units			6.5-8.5	24-JUL-13	R2655776
L1336559-4 BH-16-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 13:00									
Matrix: WATER									
					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Alkalinity, Total (as CaCO3)	290		10	mg/L			30-500	25-JUL-13	R2656098
Ammonia, Total (as N)	0.282		0.050	mg/L				24-JUL-13	R2655383
CL,F,NO2,NO3,SO4									
Chloride	17.9		2.0	mg/L			250	24-JUL-13	R2655968
Fluoride	<0.10		0.10	mg/L	1.5			24-JUL-13	R2655968
Nitrite-N	<0.10		0.10	mg/L	1			24-JUL-13	R2655968
Nitrate-N	16.4		0.10	mg/L	** 10			24-JUL-13	R2655968
Sulphate	32.0		2.0	mg/L			500	24-JUL-13	R2655968
Color, Apparent	88.6		1.0	C.U.		**	5	25-JUL-13	R2656077
Conductivity	728		3.0	umhos/cm				24-JUL-13	R2655771
Dissolved Metals in Water by ICPMS									
Dissolved Metals Filtration Location	LAB			No Unit				24-JUL-13	R2654962

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

** Analytical result for this parameter exceeds Criteria Specific Limit listed on this report.

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Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
L1336559-4 BH-16-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 13:00									
Matrix: WATER					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Dissolved Metals in Water by ICPMS									
Aluminum (Al)-Dissolved	<0.010		0.010	mg/L			0.1	24-JUL-13	R2655890
Antimony (Sb)-Dissolved	<0.0050		0.0050	mg/L	0.006			24-JUL-13	R2655890
Arsenic (As)-Dissolved	<0.0010		0.0010	mg/L	0.025			24-JUL-13	R2655890
Barium (Ba)-Dissolved	0.062		0.010	mg/L	1			24-JUL-13	R2655890
Beryllium (Be)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Bismuth (Bi)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Boron (B)-Dissolved	<0.050		0.050	mg/L	5			24-JUL-13	R2655890
Cadmium (Cd)-Dissolved	<0.000090		0.000090	mg/L	0.005			24-JUL-13	R2655890
Calcium (Ca)-Dissolved	117		0.50	mg/L				24-JUL-13	R2655890
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	0.05			24-JUL-13	R2655890
Cobalt (Co)-Dissolved	<0.00050		0.00050	mg/L				24-JUL-13	R2655890
Copper (Cu)-Dissolved	0.0037		0.0010	mg/L			1	24-JUL-13	R2655890
Iron (Fe)-Dissolved	<0.050		0.050	mg/L			0.3	24-JUL-13	R2655890
Lead (Pb)-Dissolved	<0.0010		0.0010	mg/L	0.01			24-JUL-13	R2655890
Magnesium (Mg)-Dissolved	33.1		0.50	mg/L				24-JUL-13	R2655890
Manganese (Mn)-Dissolved	0.715		0.0010	mg/L		**	0.05	24-JUL-13	R2655890
Molybdenum (Mo)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Nickel (Ni)-Dissolved	<0.0020		0.0020	mg/L				24-JUL-13	R2655890
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L				24-JUL-13	R2655890
Potassium (K)-Dissolved	3.2		1.0	mg/L				24-JUL-13	R2655890
Selenium (Se)-Dissolved	0.00055		0.00040	mg/L	0.01			24-JUL-13	R2655890
Silicon (Si)-Dissolved	3.3		1.0	mg/L				24-JUL-13	R2655890
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L				24-JUL-13	R2655890
Sodium (Na)-Dissolved	4.26		0.50	mg/L	20		200	24-JUL-13	R2655890
Strontium (Sr)-Dissolved	0.114		0.0010	mg/L				24-JUL-13	R2655890
Thallium (Tl)-Dissolved	<0.00030		0.00030	mg/L				24-JUL-13	R2655890
Tin (Sn)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Titanium (Ti)-Dissolved	<0.0020		0.0020	mg/L				24-JUL-13	R2655890
Tungsten (W)-Dissolved	<0.010		0.010	mg/L				24-JUL-13	R2655890
Uranium (U)-Dissolved	<0.0050		0.0050	mg/L	0.02			24-JUL-13	R2655890
Vanadium (V)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Zinc (Zn)-Dissolved	0.0317		0.0030	mg/L			5	24-JUL-13	R2655890
Zirconium (Zr)-Dissolved	<0.0040		0.0040	mg/L				24-JUL-13	R2655890
Hardness (as CaCO3)	430		10	mg/L		**	80-100	25-JUL-13	
Phosphate-P (ortho)	0.0033		0.0030	mg/L				25-JUL-13	R2656091
Total Dissolved Solids	438		20	mg/L			500	29-JUL-13	R2658620
Turbidity	22.0		0.10	NTU		**	5	24-JUL-13	R2655140
pH	7.84		0.10	pH units			6.5-8.5	24-JUL-13	R2655776
L1336559-5 BH-01-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 10:00									
Matrix: WATER					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Alkalinity, Total (as CaCO3)	315		10	mg/L			30-500	25-JUL-13	R2656098
Ammonia, Total (as N)	0.530		0.050	mg/L				24-JUL-13	R2655383

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

** Analytical result for this parameter exceeds Criteria Specific Limit listed on this report.

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Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L1336559-5 BH-01-10 Sampled By: D. SOUTER on 23-JUL-13 @ 10:00 Matrix: WATER									
General Chemistry Package 1-Groundwater									
CL,F,NO2,NO3,SO4									
Chloride	20.9		2.0	mg/L			250	24-JUL-13	R2655968
Fluoride	<0.10		0.10	mg/L	1.5			24-JUL-13	R2655968
Nitrite-N	<0.10		0.10	mg/L	1			24-JUL-13	R2655968
Nitrate-N	<0.10		0.10	mg/L	10			24-JUL-13	R2655968
Sulphate	15.5		2.0	mg/L			500	24-JUL-13	R2655968
Color, Apparent	114		1.0	C.U.		**	5	25-JUL-13	R2656077
Conductivity	667		3.0	umhos/cm				24-JUL-13	R2655771
Dissolved Metals in Water by ICPMS									
Dissolved Metals Filtration Location	LAB			No Unit				24-JUL-13	R2654962
Aluminum (Al)-Dissolved	<0.010		0.010	mg/L			0.1	24-JUL-13	R2655890
Antimony (Sb)-Dissolved	<0.0050		0.0050	mg/L	0.006			24-JUL-13	R2655890
Arsenic (As)-Dissolved	0.0075		0.0010	mg/L	0.025			24-JUL-13	R2655890
Barium (Ba)-Dissolved	0.165		0.010	mg/L	1			24-JUL-13	R2655890
Beryllium (Be)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Bismuth (Bi)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Boron (B)-Dissolved	<0.050		0.050	mg/L	5			24-JUL-13	R2655890
Cadmium (Cd)-Dissolved	<0.000090		0.000090	mg/L	0.005			24-JUL-13	R2655890
Calcium (Ca)-Dissolved	101		0.50	mg/L				24-JUL-13	R2655890
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	0.05			24-JUL-13	R2655890
Cobalt (Co)-Dissolved	<0.00050		0.00050	mg/L				24-JUL-13	R2655890
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L			1	24-JUL-13	R2655890
Iron (Fe)-Dissolved	<0.050		0.050	mg/L			0.3	24-JUL-13	R2655890
Lead (Pb)-Dissolved	<0.0010		0.0010	mg/L	0.01			24-JUL-13	R2655890
Magnesium (Mg)-Dissolved	30.7		0.50	mg/L				24-JUL-13	R2655890
Manganese (Mn)-Dissolved	0.804		0.0010	mg/L		**	0.05	24-JUL-13	R2655890
Molybdenum (Mo)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Nickel (Ni)-Dissolved	<0.0020		0.0020	mg/L				24-JUL-13	R2655890
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L				24-JUL-13	R2655890
Potassium (K)-Dissolved	1.1		1.0	mg/L				24-JUL-13	R2655890
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L	0.01			24-JUL-13	R2655890
Silicon (Si)-Dissolved	4.1		1.0	mg/L				24-JUL-13	R2655890
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L				24-JUL-13	R2655890
Sodium (Na)-Dissolved	10.9		0.50	mg/L	20		200	24-JUL-13	R2655890
Strontium (Sr)-Dissolved	0.0938		0.0010	mg/L				24-JUL-13	R2655890
Thallium (Tl)-Dissolved	<0.00030		0.00030	mg/L				24-JUL-13	R2655890
Tin (Sn)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Titanium (Ti)-Dissolved	<0.0020		0.0020	mg/L				24-JUL-13	R2655890
Tungsten (W)-Dissolved	<0.010		0.010	mg/L				24-JUL-13	R2655890
Uranium (U)-Dissolved	<0.0050		0.0050	mg/L	0.02			24-JUL-13	R2655890
Vanadium (V)-Dissolved	0.0010		0.0010	mg/L				24-JUL-13	R2655890
Zinc (Zn)-Dissolved	0.0276		0.0030	mg/L			5	24-JUL-13	R2655890
Zirconium (Zr)-Dissolved	<0.0040		0.0040	mg/L				24-JUL-13	R2655890
Hardness (as CaCO3)	380		10	mg/L		**	80-100	25-JUL-13	
Phosphate-P (ortho)	0.0045		0.0030	mg/L				25-JUL-13	R2656091
Total Dissolved Solids	410		20	mg/L			500	29-JUL-13	R2658620

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

** Analytical result for this parameter exceeds Criteria Specific Limit listed on this report.

Ontario DW Std O.Reg 169/03 JUNE 2007

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
L1336559-5 BH-01-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 10:00									
Matrix: WATER					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Turbidity	47.0		0.10	NTU		**	5	24-JUL-13	R2655140
pH	7.83		0.10	pH units			6.5-8.5	24-JUL-13	R2655776
L1336559-6 BH-19-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 14:30									
Matrix: WATER					STANDARDS		GUIDELINES		
General Chemistry Package 1-Groundwater									
Alkalinity, Total (as CaCO3)	399		10	mg/L			30-500	25-JUL-13	R2656098
Ammonia, Total (as N)	0.191		0.050	mg/L				24-JUL-13	R2655383
CL,F,NO2,NO3,SO4									
Chloride	10.5		2.0	mg/L			250	24-JUL-13	R2655968
Fluoride	0.17		0.10	mg/L	1.5			24-JUL-13	R2655968
Nitrite-N	<0.10		0.10	mg/L	1			24-JUL-13	R2655968
Nitrate-N	<0.10		0.10	mg/L	10			24-JUL-13	R2655968
Sulphate	12.9		2.0	mg/L			500	24-JUL-13	R2655968
Color, Apparent	134		1.0	C.U.		**	5	25-JUL-13	R2656077
Conductivity	746		3.0	umhos/cm				24-JUL-13	R2655771
Dissolved Metals in Water by ICPMS									
Dissolved Metals Filtration Location	LAB			No Unit				24-JUL-13	R2654962
Aluminum (Al)-Dissolved	<0.010		0.010	mg/L			0.1	24-JUL-13	R2655890
Antimony (Sb)-Dissolved	<0.0050		0.0050	mg/L	0.006			24-JUL-13	R2655890
Arsenic (As)-Dissolved	0.0030		0.0010	mg/L	0.025			24-JUL-13	R2655890
Barium (Ba)-Dissolved	0.107		0.010	mg/L	1			24-JUL-13	R2655890
Beryllium (Be)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Bismuth (Bi)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Boron (B)-Dissolved	<0.050		0.050	mg/L	5			24-JUL-13	R2655890
Cadmium (Cd)-Dissolved	<0.000090		0.000090	mg/L	0.005			24-JUL-13	R2655890
Calcium (Ca)-Dissolved	61.5		0.50	mg/L				24-JUL-13	R2655890
Chromium (Cr)-Dissolved	<0.00050		0.00050	mg/L	0.05			24-JUL-13	R2655890
Cobalt (Co)-Dissolved	0.00057		0.00050	mg/L				24-JUL-13	R2655890
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L			1	24-JUL-13	R2655890
Iron (Fe)-Dissolved	<0.050		0.050	mg/L			0.3	24-JUL-13	R2655890
Lead (Pb)-Dissolved	<0.0010		0.0010	mg/L	0.01			24-JUL-13	R2655890
Magnesium (Mg)-Dissolved	20.4		0.50	mg/L				24-JUL-13	R2655890
Manganese (Mn)-Dissolved	0.346		0.0010	mg/L		**	0.05	24-JUL-13	R2655890
Molybdenum (Mo)-Dissolved	0.0210		0.0010	mg/L				24-JUL-13	R2655890
Nickel (Ni)-Dissolved	<0.0020		0.0020	mg/L				24-JUL-13	R2655890
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L				24-JUL-13	R2655890
Potassium (K)-Dissolved	2.0		1.0	mg/L				24-JUL-13	R2655890
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L	0.01			24-JUL-13	R2655890
Silicon (Si)-Dissolved	7.4		1.0	mg/L				24-JUL-13	R2655890
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L				24-JUL-13	R2655890
Sodium (Na)-Dissolved	99.7	DLM	5.0	mg/L	** 20		200	24-JUL-13	R2655890
Strontium (Sr)-Dissolved	0.127		0.0010	mg/L				24-JUL-13	R2655890
Thallium (Tl)-Dissolved	<0.00030		0.00030	mg/L				24-JUL-13	R2655890

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

** Analytical result for this parameter exceeds Criteria Specific Limit listed on this report.

Ontario DW Std O.Reg 169/03 JUNE 2007

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Criteria Specific Limits			Analyzed	Batch
					STANDARDS		GUIDELINES		
L1336559-6 BH-19-10									
Sampled By: D. SOUTER on 23-JUL-13 @ 14:30									
Matrix: WATER									
General Chemistry Package 1-Groundwater									
Dissolved Metals in Water by ICPMS									
Tin (Sn)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Titanium (Ti)-Dissolved	<0.0020		0.0020	mg/L				24-JUL-13	R2655890
Tungsten (W)-Dissolved	<0.010		0.010	mg/L				24-JUL-13	R2655890
Uranium (U)-Dissolved	<0.0050		0.0050	mg/L	0.02			24-JUL-13	R2655890
Vanadium (V)-Dissolved	<0.0010		0.0010	mg/L				24-JUL-13	R2655890
Zinc (Zn)-Dissolved	0.0038		0.0030	mg/L			5	24-JUL-13	R2655890
Zirconium (Zr)-Dissolved	<0.0040		0.0040	mg/L				24-JUL-13	R2655890
Hardness (as CaCO3)	238		10	mg/L		**	80-100	25-JUL-13	
Phosphate-P (ortho)	0.0038		0.0030	mg/L				25-JUL-13	R2656091
Total Dissolved Solids	466		20	mg/L			500	29-JUL-13	R2658620
Turbidity	40.0		0.10	NTU		**	5	24-JUL-13	R2655140
pH	8.13		0.10	pH units			6.5-8.5	24-JUL-13	R2655776

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

** Analytical result for this parameter exceeds Criteria Specific Limit listed on this report.

Ontario DW Std O.Reg 169/03 JUNE 2007

Qualifiers for Sample Submission Listed:

Qualifier	Description
CINT	Cooling initiated. Samples were packaged with ice or ice packs upon receipt.

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Preparation Method Reference(Based On)	Analytical Method Reference(Based On)
ALK-WT	Water	Alkalinity, Total (as CaCO3)		EPA 310.2
ANIONS5-WT	Water	CL,F,NO2,NO3,SO4		EPA 300.0 (IC)
COLOUR-WT	Water	Colour		APHA 2120
		Apparent colour is determined by analysis of the decanted sample using the platinum-cobalt colourimetric method.		
EC-WT	Water	Conductivity		APHA 2510 B
		Water samples can be measured directly by immersing the conductivity cell into the sample.		
ETL-HARDNESS-CALC-WT	Water	Hardness (as CaCO3)		APHA 2340 B
MET-D-MS-WT	Water	Dissolved Metals in Water by ICPMS		EPA 200.8
		The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.		
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).		
NH3-WT	Water	Ammonia, Total as N		EPA 350.1
		Sample is measured colorimetrically. When sample is turbid a distillation step is required, sample is distilled into a solution of boric acid and measured colorimetrically.		
P-ORTHO-LOW-WT	Water	Phosphorus-P (ortho)		APHA 4500-P B E
PH-WT	Water	pH		APHA 4500 H-Electrode
		Water samples are analyzed directly by a calibrated pH meter.		
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).		
SOLIDS-TDS-WT	Water	Total Dissolved Solids		APHA 2540C
		A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 105–5°C overnight and then 180–10°C for 1hr.		
TURBIDITY-WT	Water	Turbidity		APHA 2130 B
		Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.		

Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

Chain of Custody numbers:

144397

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

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

Reference Information

P-0003455-0-05-305-01

GLOSSARY OF REPORT TERMS

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

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

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

Quality Control Report

Workorder: L1336559 Report Date: 29-JUL-13

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT	**Water**							
Batch R2656098								
WG1713740-5 CRM		**WT-ALK-CRM**						
Alkalinity, Total (as CaCO3)			97.2		%		80-120	25-JUL-13
WG1713740-2 CVS								
Alkalinity, Total (as CaCO3)			104.7		%		85-115	25-JUL-13
WG1713740-3 DUP		**L1336883-1**						
Alkalinity, Total (as CaCO3)		94	101		mg/L	7.7	20	25-JUL-13
WG1713740-4 DUP		**L1336931-5**						
Alkalinity, Total (as CaCO3)		23	23		mg/L	2.2	20	25-JUL-13
WG1713740-6 DUP		**L1336124-1**						
Alkalinity, Total (as CaCO3)		346	349		mg/L	1.0	20	25-JUL-13
WG1713740-7 DUP		**L1336147-3**						
Alkalinity, Total (as CaCO3)		118	110		mg/L	7.0	20	25-JUL-13
WG1713740-8 DUP		**L1336193-4**						
Alkalinity, Total (as CaCO3)		412	411		mg/L	0.4	20	25-JUL-13
WG1713740-9 DUP		**L1336807-7**						
Alkalinity, Total (as CaCO3)		283	264		mg/L	6.9	20	25-JUL-13
WG1713740-1 MB								
Alkalinity, Total (as CaCO3)			<10		mg/L		10	25-JUL-13
ANIONS5-WT	**Water**							
Batch R2655968								
WG1713003-6 DUP		**L1336559-4**						
Chloride		17.9	17.8		mg/L	0.4	20	24-JUL-13
Fluoride		<0.10	<0.10	RPD-NA	mg/L	N/A	20	24-JUL-13
Nitrite-N		<0.10	<0.10	RPD-NA	mg/L	N/A	20	24-JUL-13
Nitrate-N		16.4	16.3		mg/L	0.5	20	24-JUL-13
Sulphate		32.0	31.8		mg/L	0.4	20	24-JUL-13
WG1713003-2 LCS								
Chloride			101.5		%		85-115	24-JUL-13
Fluoride			100.5		%		85-115	24-JUL-13
Nitrite-N			104.7		%		85-115	24-JUL-13
Nitrate-N			101.3		%		85-115	24-JUL-13
Sulphate			102.9		%		85-115	24-JUL-13
WG1713003-3 LCSD		**WG1713003-2**						
Chloride		101.5	101.2		%	0.3	25	24-JUL-13
Fluoride		100.5	101.6		%	1.1	25	24-JUL-13
Nitrite-N		104.7	102.0		%	2.7	25	24-JUL-13

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ANIONS5-WT	**Water**							
Batch R2655968								
WG1713003-3 LCSD		**WG1713003-2**						
Nitrate-N		101.3	101.2		%	0.1	25	24-JUL-13
Sulphate		102.9	102.4		%	0.5	25	24-JUL-13
WG1713003-1 MB								
Chloride			<2.0		mg/L		2	24-JUL-13
Fluoride			<0.10		mg/L		0.1	24-JUL-13
Nitrite-N			<0.10		mg/L		0.1	24-JUL-13
Nitrate-N			<0.10		mg/L		0.1	24-JUL-13
Sulphate			<2.0		mg/L		2	24-JUL-13
COLOUR-WT	**Water**							
Batch R2656077								
WG1713733-4 CRM		**WT-COLOUR-CRM**						
Color, Apparent			105.9		%		80-120	25-JUL-13
WG1713733-2 CVS								
Color, Apparent			99.9		%		85-115	25-JUL-13
WG1713733-3 DUP		**L1336558-1**						
Color, Apparent		1.3	1.3		C.U.	1.1	20	25-JUL-13
WG1713733-5 DUP		**L1336883-1**						
Color, Apparent		6.1	6.0		C.U.	2.1	20	25-JUL-13
WG1713733-6 DUP		**L1336931-5**						
Color, Apparent		210	211		C.U.	0.5	20	25-JUL-13
WG1713733-1 MB								
Color, Apparent			<1.0		C.U.		1	25-JUL-13
EC-WT	**Water**							
Batch R2655771								
WG1712970-2 CVS								
Conductivity			102.0		%		90-110	24-JUL-13
WG1712970-3 CVS								
Conductivity			103.1		%		90-110	24-JUL-13
WG1712970-5 CVS								
Conductivity			102.1		%		90-110	24-JUL-13
WG1712970-6 DUP		**L1336833-2**						
Conductivity		833	838		umhos/cm	0.6	10	24-JUL-13
WG1712970-7 DUP		**L1336922-4**						
Conductivity		41.6	41.7		umhos/cm	0.2	10	24-JUL-13
WG1712970-8 DUP		**L1336931-4**						
Conductivity		142	142		umhos/cm	0.2	10	24-JUL-13

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT	**Water**							
Batch R2655771								
WG1712970-1 MB								
Conductivity			<3.0		umhos/cm		3	24-JUL-13
WG1712970-4 MB								
Conductivity			<3.0		umhos/cm		3	24-JUL-13
MET-D-MS-WT	**Water**							
Batch R2655890								
WG1712936-2 CVS								
Aluminum (Al)-Dissolved			104.4		%		80-120	24-JUL-13
Antimony (Sb)-Dissolved			99.4		%		80-120	24-JUL-13
Arsenic (As)-Dissolved			106.7		%		80-120	24-JUL-13
Barium (Ba)-Dissolved			103.5		%		80-120	24-JUL-13
Beryllium (Be)-Dissolved			94.4		%		80-120	24-JUL-13
Bismuth (Bi)-Dissolved			107.6		%		80-120	24-JUL-13
Boron (B)-Dissolved			119.1		%		80-120	24-JUL-13
Cadmium (Cd)-Dissolved			104.9		%		80-120	24-JUL-13
Calcium (Ca)-Dissolved			105.3		%		80-120	24-JUL-13
Chromium (Cr)-Dissolved			99.0		%		80-120	24-JUL-13
Cobalt (Co)-Dissolved			97.7		%		80-120	24-JUL-13
Copper (Cu)-Dissolved			101.5		%		80-120	24-JUL-13
Iron (Fe)-Dissolved			102.7		%		80-120	24-JUL-13
Lead (Pb)-Dissolved			104.3		%		80-120	24-JUL-13
Magnesium (Mg)-Dissolved			104.9		%		80-120	24-JUL-13
Manganese (Mn)-Dissolved			100.6		%		80-120	24-JUL-13
Molybdenum (Mo)-Dissolved			103.8		%		80-120	24-JUL-13
Nickel (Ni)-Dissolved			99.8		%		80-120	24-JUL-13
Phosphorus (P)-Dissolved			100.0		%		80-120	24-JUL-13
Potassium (K)-Dissolved			99.9		%		80-120	24-JUL-13
Selenium (Se)-Dissolved			102.0		%		80-120	24-JUL-13
Silicon (Si)-Dissolved			102.1		%		80-120	24-JUL-13
Silver (Ag)-Dissolved			101.8		%		80-120	24-JUL-13
Sodium (Na)-Dissolved			104.4		%		80-120	24-JUL-13
Strontium (Sr)-Dissolved			103.1		%		80-120	24-JUL-13
Thallium (Tl)-Dissolved			106.9		%		80-120	24-JUL-13
Tin (Sn)-Dissolved			98.3		%		80-120	24-JUL-13
Titanium (Ti)-Dissolved			102.5		%		80-120	24-JUL-13

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-MS-WT	**Water**							
Batch R2655890								
WG1712936-2 CVS								
Tungsten (W)-Dissolved			99.9		%		80-120	24-JUL-13
Uranium (U)-Dissolved			105.9		%		80-120	24-JUL-13
Vanadium (V)-Dissolved			107.3		%		80-120	24-JUL-13
Zinc (Zn)-Dissolved			98.4		%		80-120	24-JUL-13
Zirconium (Zr)-Dissolved			106.1		%		80-120	24-JUL-13
WG1712936-3 CVS								
Aluminum (Al)-Dissolved			105.4		%		80-120	25-JUL-13
Antimony (Sb)-Dissolved			98.7		%		80-120	25-JUL-13
Arsenic (As)-Dissolved			106.4		%		80-120	25-JUL-13
Barium (Ba)-Dissolved			107.0		%		80-120	25-JUL-13
Beryllium (Be)-Dissolved			107.6		%		80-120	25-JUL-13
Bismuth (Bi)-Dissolved			99.6		%		80-120	25-JUL-13
Boron (B)-Dissolved			115.9		%		80-120	25-JUL-13
Cadmium (Cd)-Dissolved			107.4		%		80-120	25-JUL-13
Calcium (Ca)-Dissolved			102.5		%		80-120	25-JUL-13
Chromium (Cr)-Dissolved			101.2		%		80-120	25-JUL-13
Cobalt (Co)-Dissolved			103.0		%		80-120	25-JUL-13
Copper (Cu)-Dissolved			102.6		%		80-120	25-JUL-13
Iron (Fe)-Dissolved			103.4		%		80-120	25-JUL-13
Lead (Pb)-Dissolved			102.3		%		80-120	25-JUL-13
Magnesium (Mg)-Dissolved			100.8		%		80-120	25-JUL-13
Manganese (Mn)-Dissolved			101.9		%		80-120	25-JUL-13
Molybdenum (Mo)-Dissolved			103.1		%		80-120	25-JUL-13
Nickel (Ni)-Dissolved			101.5		%		80-120	25-JUL-13
Phosphorus (P)-Dissolved			103.3		%		80-120	25-JUL-13
Potassium (K)-Dissolved			104.2		%		80-120	25-JUL-13
Selenium (Se)-Dissolved			99.7		%		80-120	25-JUL-13
Silicon (Si)-Dissolved			96.3		%		80-120	25-JUL-13
Silver (Ag)-Dissolved			102.9		%		80-120	25-JUL-13
Sodium (Na)-Dissolved			107.4		%		80-120	25-JUL-13
Strontium (Sr)-Dissolved			105.8		%		80-120	25-JUL-13
Thallium (Tl)-Dissolved			103.6		%		80-120	25-JUL-13
Tin (Sn)-Dissolved			104.0		%		80-120	25-JUL-13
Titanium (Ti)-Dissolved			102.9		%		80-120	25-JUL-13

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-MS-WT	**Water**							
Batch R2655890								
WG1712936-3 CVS								
Tungsten (W)-Dissolved			96.9		%		80-120	25-JUL-13
Uranium (U)-Dissolved			99.6		%		80-120	25-JUL-13
Vanadium (V)-Dissolved			101.9		%		80-120	25-JUL-13
Zinc (Zn)-Dissolved			97.8		%		80-120	25-JUL-13
Zirconium (Zr)-Dissolved			102.1		%		80-120	25-JUL-13
WG1712933-4 DUP		**WG1712933-3**						
Aluminum (Al)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-JUL-13
Antimony (Sb)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JUL-13
Arsenic (As)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JUL-13
Barium (Ba)-Dissolved		0.0840	0.0864		mg/L	2.8	20	24-JUL-13
Beryllium (Be)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JUL-13
Bismuth (Bi)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JUL-13
Boron (B)-Dissolved		0.015	0.015		mg/L	1.0	20	24-JUL-13
Cadmium (Cd)-Dissolved		<0.000090	<0.000090	RPD-NA	mg/L	N/A	20	24-JUL-13
Calcium (Ca)-Dissolved		118	118		mg/L	0.5	20	24-JUL-13
Chromium (Cr)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JUL-13
Cobalt (Co)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JUL-13
Copper (Cu)-Dissolved		0.0013	0.0013		mg/L	3.2	20	24-JUL-13
Iron (Fe)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	24-JUL-13
Lead (Pb)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JUL-13
Magnesium (Mg)-Dissolved		41.9	41.1		mg/L	1.8	20	24-JUL-13
Manganese (Mn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JUL-13
Molybdenum (Mo)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JUL-13
Nickel (Ni)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JUL-13
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	24-JUL-13
Potassium (K)-Dissolved		4.8	4.7		mg/L	2.7	20	24-JUL-13
Selenium (Se)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	24-JUL-13
Silicon (Si)-Dissolved		4.3	4.1		mg/L	5.3	20	24-JUL-13
Silver (Ag)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-JUL-13
Sodium (Na)-Dissolved		70.5	72.5		mg/L	2.8	20	24-JUL-13
Strontium (Sr)-Dissolved		0.109	0.112		mg/L	3.3	20	24-JUL-13
Thallium (Tl)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	24-JUL-13
Tin (Sn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JUL-13

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-MS-WT	**Water**							
Batch R2655890								
WG1712933-4 DUP		**WG1712933-3**						
Titanium (Ti)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	24-JUL-13
Tungsten (W)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-JUL-13
Uranium (U)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JUL-13
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JUL-13
Zinc (Zn)-Dissolved		0.0053	0.0051		mg/L	2.4	20	24-JUL-13
Zirconium (Zr)-Dissolved		<0.0040	<0.0040	RPD-NA	mg/L	N/A	20	24-JUL-13
WG1712933-2 LCS								
Aluminum (Al)-Dissolved			103.5		%		80-120	24-JUL-13
Antimony (Sb)-Dissolved			102.3		%		80-120	24-JUL-13
Arsenic (As)-Dissolved			102.4		%		80-120	24-JUL-13
Barium (Ba)-Dissolved			105.2		%		80-120	24-JUL-13
Beryllium (Be)-Dissolved			106.6		%		80-120	24-JUL-13
Bismuth (Bi)-Dissolved			98.1		%		80-120	24-JUL-13
Boron (B)-Dissolved			115.0		%		80-120	24-JUL-13
Cadmium (Cd)-Dissolved			106.6		%		80-120	24-JUL-13
Calcium (Ca)-Dissolved			109.4		%		80-120	24-JUL-13
Chromium (Cr)-Dissolved			101.8		%		80-120	24-JUL-13
Cobalt (Co)-Dissolved			105.7		%		80-120	24-JUL-13
Copper (Cu)-Dissolved			103.1		%		80-120	24-JUL-13
Iron (Fe)-Dissolved			106.9		%		80-120	24-JUL-13
Lead (Pb)-Dissolved			98.6		%		80-120	24-JUL-13
Magnesium (Mg)-Dissolved			107.3		%		80-120	24-JUL-13
Manganese (Mn)-Dissolved			101.8		%		80-120	24-JUL-13
Molybdenum (Mo)-Dissolved			102.7		%		80-120	24-JUL-13
Nickel (Ni)-Dissolved			102.0		%		80-120	24-JUL-13
Phosphorus (P)-Dissolved			105.9		%		80-120	24-JUL-13
Potassium (K)-Dissolved			108.5		%		80-120	24-JUL-13
Selenium (Se)-Dissolved			104.8		%		80-120	24-JUL-13
Silicon (Si)-Dissolved			98.9		%		80-120	24-JUL-13
Silver (Ag)-Dissolved			100.7		%		80-120	24-JUL-13
Sodium (Na)-Dissolved			108.2		%		80-120	24-JUL-13
Strontium (Sr)-Dissolved			100.0		%		80-120	24-JUL-13
Thallium (Tl)-Dissolved			100.4		%		80-120	24-JUL-13

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-MS-WT	**Water**							
Batch R2655890								
WG1712933-2 LCS								
Tin (Sn)-Dissolved			98.5		%		80-120	24-JUL-13
Titanium (Ti)-Dissolved			100.7		%		80-120	24-JUL-13
Tungsten (W)-Dissolved			101.9		%		80-120	24-JUL-13
Uranium (U)-Dissolved			98.9		%		80-120	24-JUL-13
Vanadium (V)-Dissolved			102.2		%		80-120	24-JUL-13
Zinc (Zn)-Dissolved			104.9		%		80-120	24-JUL-13
Zirconium (Zr)-Dissolved			96.6		%		80-120	24-JUL-13
WG1712933-1 MB								
Aluminum (Al)-Dissolved			<0.010		mg/L		0.01	24-JUL-13
Antimony (Sb)-Dissolved			<0.00050		mg/L		0.0005	24-JUL-13
Arsenic (As)-Dissolved			<0.0010		mg/L		0.001	24-JUL-13
Barium (Ba)-Dissolved			<0.0020		mg/L		0.002	24-JUL-13
Beryllium (Be)-Dissolved			<0.00050		mg/L		0.0005	24-JUL-13
Bismuth (Bi)-Dissolved			<0.0010		mg/L		0.001	24-JUL-13
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-JUL-13
Cadmium (Cd)-Dissolved			<0.000090		mg/L		0.00009	24-JUL-13
Calcium (Ca)-Dissolved			<0.50		mg/L		0.5	24-JUL-13
Chromium (Cr)-Dissolved			<0.00050		mg/L		0.0005	24-JUL-13
Cobalt (Co)-Dissolved			<0.00050		mg/L		0.0005	24-JUL-13
Copper (Cu)-Dissolved			<0.0010		mg/L		0.001	24-JUL-13
Iron (Fe)-Dissolved			<0.050		mg/L		0.05	24-JUL-13
Lead (Pb)-Dissolved			<0.00050		mg/L		0.0005	24-JUL-13
Magnesium (Mg)-Dissolved			<0.50		mg/L		0.5	24-JUL-13
Manganese (Mn)-Dissolved			<0.0010		mg/L		0.001	24-JUL-13
Molybdenum (Mo)-Dissolved			<0.00050		mg/L		0.0005	24-JUL-13
Nickel (Ni)-Dissolved			<0.0010		mg/L		0.001	24-JUL-13
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	24-JUL-13
Potassium (K)-Dissolved			<1.0		mg/L		1	24-JUL-13
Selenium (Se)-Dissolved			<0.00040		mg/L		0.0004	24-JUL-13
Silicon (Si)-Dissolved			<1.0		mg/L		1	24-JUL-13
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	24-JUL-13
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	24-JUL-13
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	24-JUL-13
Thallium (Tl)-Dissolved			<0.00030		mg/L		0.0003	24-JUL-13

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-MS-WT	**Water**							
Batch R2655890								
WG1712933-1 MB								
Tin (Sn)-Dissolved			<0.0010		mg/L		0.001	24-JUL-13
Titanium (Ti)-Dissolved			<0.0020		mg/L		0.002	24-JUL-13
Tungsten (W)-Dissolved			<0.010		mg/L		0.01	24-JUL-13
Uranium (U)-Dissolved			<0.0010		mg/L		0.001	24-JUL-13
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-JUL-13
Zinc (Zn)-Dissolved			<0.0030		mg/L		0.003	24-JUL-13
Zirconium (Zr)-Dissolved			<0.0040		mg/L		0.004	24-JUL-13
WG1712933-5 MS		**WG1712933-3**						
Aluminum (Al)-Dissolved			93.1		%		70-130	24-JUL-13
Antimony (Sb)-Dissolved			93.2		%		70-130	24-JUL-13
Arsenic (As)-Dissolved			100.3		%		70-130	24-JUL-13
Barium (Ba)-Dissolved			N/A	MS-B	%		-	24-JUL-13
Beryllium (Be)-Dissolved			95.0		%		70-130	24-JUL-13
Bismuth (Bi)-Dissolved			77.9		%		70-130	24-JUL-13
Boron (B)-Dissolved			107.8		%		70-130	24-JUL-13
Cadmium (Cd)-Dissolved			89.9		%		70-130	24-JUL-13
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	24-JUL-13
Chromium (Cr)-Dissolved			91.8		%		70-130	24-JUL-13
Cobalt (Co)-Dissolved			87.8		%		70-130	24-JUL-13
Copper (Cu)-Dissolved			84.7		%		70-130	24-JUL-13
Iron (Fe)-Dissolved			93.8		%		70-130	24-JUL-13
Lead (Pb)-Dissolved			89.8		%		70-130	24-JUL-13
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	24-JUL-13
Manganese (Mn)-Dissolved			90.9		%		70-130	24-JUL-13
Molybdenum (Mo)-Dissolved			95.5		%		70-130	24-JUL-13
Nickel (Ni)-Dissolved			87.0		%		70-130	24-JUL-13
Phosphorus (P)-Dissolved			100.5		%		70-130	24-JUL-13
Potassium (K)-Dissolved			N/A	MS-B	%		-	24-JUL-13
Selenium (Se)-Dissolved			112.6		%		70-130	24-JUL-13
Silicon (Si)-Dissolved			N/A	MS-B	%		-	24-JUL-13
Silver (Ag)-Dissolved			101.6		%		70-130	24-JUL-13
Sodium (Na)-Dissolved			N/A	MS-B	%		-	24-JUL-13
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	24-JUL-13
Thallium (Tl)-Dissolved			92.3		%		70-130	24-JUL-13

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-MS-WT	**Water**							
Batch R2655890								
WG1712933-5 MS		**WG1712933-3**						
Tin (Sn)-Dissolved			90.7		%		70-130	24-JUL-13
Titanium (Ti)-Dissolved			93.3		%		70-130	24-JUL-13
Tungsten (W)-Dissolved			93.1		%		70-130	24-JUL-13
Uranium (U)-Dissolved			92.3		%		70-130	24-JUL-13
Vanadium (V)-Dissolved			94.6		%		70-130	24-JUL-13
Zinc (Zn)-Dissolved			88.1		%		70-130	24-JUL-13
Zirconium (Zr)-Dissolved			90.6		%		70-130	24-JUL-13
NH3-WT	**Water**							
Batch R2655383								
WG1713265-2 CVS								
Ammonia, Total (as N)			100.1		%		85-115	24-JUL-13
WG1713265-10 DUP		**L1336408-1**						
Ammonia, Total (as N)		0.874	0.814		mg/L	7.1	20	24-JUL-13
WG1713265-12 DUP		**L1336559-2**						
Ammonia, Total (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	24-JUL-13
WG1713265-14 DUP		**L1336836-11**						
Ammonia, Total (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	24-JUL-13
WG1713265-3 DUP		**L1336750-1**						
Ammonia, Total (as N)		0.081	0.078		mg/L	2.9	20	24-JUL-13
WG1713265-5 DUP		**L1336020-4**						
Ammonia, Total (as N)		0.052	0.059		mg/L	13	20	24-JUL-13
WG1713265-7 DUP		**L1336137-2**						
Ammonia, Total (as N)		0.103	0.112		mg/L	9.1	20	24-JUL-13
WG1713265-1 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	24-JUL-13
WG1713265-11 MS		**L1336559-2**						
Ammonia, Total (as N)			100.5		%		75-125	24-JUL-13
WG1713265-13 MS		**L1336836-11**						
Ammonia, Total (as N)			100.7		%		75-125	24-JUL-13
WG1713265-4 MS		**L1336750-1**						
Ammonia, Total (as N)			96.3		%		75-125	24-JUL-13
WG1713265-6 MS		**L1336020-4**						
Ammonia, Total (as N)			100.3		%		75-125	24-JUL-13
WG1713265-8 MS		**L1336137-2**						
Ammonia, Total (as N)			94.1		%		75-125	24-JUL-13
WG1713265-9 MS		**L1336408-1**						

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-WT	**Water**							
Batch R2655383								
WG1713265-9 MS		**L1336408-1**						
Ammonia, Total (as N)			93.0		%		75-125	24-JUL-13
P-ORTHO-LOW-WT	**Water**							
Batch R2656091								
WG1713876-3 DUP		**L1336922-1**						
Phosphate-P (ortho)		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	25-JUL-13
WG1713876-5 DUP		**L1336931-8**						
Phosphate-P (ortho)		0.0039	0.0040		mg/L	2.6	20	25-JUL-13
WG1713876-8 DUP		**L1336508-1**						
Phosphate-P (ortho)		0.0037	0.0044		mg/L	19	20	25-JUL-13
WG1713876-2 LCS								
Phosphate-P (ortho)			103.3		%		80-120	25-JUL-13
WG1713876-1 MB								
Phosphate-P (ortho)			<0.0030		mg/L		0.003	25-JUL-13
WG1713876-4 MS		**L1336922-1**						
Phosphate-P (ortho)			101.3		%		70-130	25-JUL-13
WG1713876-6 MS		**L1336931-8**						
Phosphate-P (ortho)			92.3		%		70-130	25-JUL-13
WG1713876-7 MS		**L1336508-1**						
Phosphate-P (ortho)			90.6		%		70-130	25-JUL-13
PH-WT	**Water**							
Batch R2655776								
WG1712966-5 DUP		**WG1712966-4**						
pH		8.08	8.08	J	pH units	0.00	0.2	24-JUL-13
WG1712966-6 DUP		**L1336833-8**						
pH		8.27	8.26	J	pH units	0.02	0.2	24-JUL-13
WG1712966-7 DUP		**L1336922-4**						
pH		7.14	7.11	J	pH units	0.03	0.2	24-JUL-13
WG1712966-1 LCS								
pH			7.01		pH units		6.9-7.1	24-JUL-13
WG1712966-2 LCS								
pH			7.02		pH units		6.9-7.1	24-JUL-13
WG1712966-3 LCS								
pH			7.00		pH units		6.9-7.1	24-JUL-13
SOLIDS-TDS-WT	**Water**							

Quality Control Report

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-WT	**Water**							
Batch R2658620								
WG1715071-3 DUP		**L1336559-6**						
Total Dissolved Solids		466	462		mg/L	0.9	20	29-JUL-13
WG1715071-6 DUP		**L1336833-8**						
Total Dissolved Solids		610	612		mg/L	0.3	20	29-JUL-13
WG1715071-2 LCS								
Total Dissolved Solids			97.3		%		85-115	29-JUL-13
WG1715071-5 LCS								
Total Dissolved Solids			96.0		%		85-115	29-JUL-13
WG1715071-1 MB								
Total Dissolved Solids			<20		mg/L		20	29-JUL-13
WG1715071-4 MB								
Total Dissolved Solids			<20		mg/L		20	29-JUL-13
TURBIDITY-WT	**Water**							
Batch R2655140								
WG1712973-2 CVS								
Turbidity			98.0		%		85-115	24-JUL-13
WG1712973-6 CVS								
Turbidity			101.0		%		85-115	24-JUL-13
WG1712973-3 DUP		**L1336559-1**						
Turbidity		8.15	8.13		NTU	0.2	20	24-JUL-13
WG1712973-7 DUP		**L1336836-11**						
Turbidity		1.27	1.23		NTU	3.2	20	24-JUL-13
WG1712973-1 MB								
Turbidity			<0.10		NTU		0.1	24-JUL-13
WG1712973-5 MB								
Turbidity			<0.10		NTU		0.1	24-JUL-13

Quality Control Report

Workorder: L1336559 Report Date: 29-JUL-13

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: CHRIS HELMER

Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

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

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

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

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

144397

C of C # 00000

60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910
Fax: (519) 886-9047
Toll Free: 1-800-668-9878

ALS Environmental

CHAIN OF CUSTODY / ANALYTICAL SERVICES REQUEST FORM

Page 1 of 1

Note: all TAT Quoted material is in business days which exclude statutory holidays and weekends. TAT samples received past 3:00 pm or Saturday/Sunday begin the next day.

Specify date required

Service requested		
5 day (regular)	α	2 day TAT (50%)
3-4 day (25%)		Next day TAT (100%)
		Same day TAT (200%)

COMPANY NAME	LVM inc.
OFFICE	Kitchener
PROJECT MANAGER	Chris Helmer
PROJECT #	P-0003455-0-05-305-01
PHONE	519 741 1313
FAX	519 741 5422
ACCOUNT #	
QUOTATION #	
PO #	209225

CRITERIA — Criteria on report YES α NO ___

Reg 153/04 ☐ Reg 511/09 ☐

Table 1 2 3 4 5 6 7 8 9

TCLP ___ MISA ___ PWQO ___

ODWS α OTHER ___

REPORT FORMAT/DISTRIBUTION

EMAIL α FAX ___ BOTH ___

SELECT: PDF α DIGITAL ___ BOTH ___

EMAIL 1 susanna.meteer@lvm.ca

EMAIL 2 chris.helmer@lvm.ca

ANALYSIS REQUEST

PLEASE INDICATE FILTERED, PRESERVED OR BOTH <----- (F, P, F/P)

SUBMISSION #: L1336559

ENTERED BY: RH

DATE/TIME ENTERED: 23-Jul-13

BIN #: 112.

SAMPLING INFORMATION

Sample Date/Time		TYPE		MATRIX			SAMPLE DESCRIPTION TO APPEAR ON REPORT	NUMBER OF CONTAINERS	General Chemistry 1	COMMENTS	LAB ID
Date (dd-mm-yy)	Time (24hr) (hh.mm)	COMP	GRAB	WATER	SOIL	OTHER					
23-07-13	9:30		✓	✓			BH-18A-10	4	✓		1
	11:30		✓	✓			BH-11-10	4	✓		2
	13 30		✓	✓			BH-112-10	4	✓		3
	13:00		✓	✓			BH-16-10	4	✓		4
	10:00		✓	✓			BH-01-10	4	✓		5
	14:30		✓	✓			BH9-10	4	✓		6

L1336559-COFC

SPECIAL INSTRUCTIONS/COMMENTS

THE QUESTIONS BELOW MUST BE ANSWERED FORWATER SAMPLES (CHECK Yes OR No)

Are any samples taken from a regulated DW System? Yes ☐ No ☑

If yes, an authorized drinking water COC MUST be used for this submission.

Is the water sampled intended to be potable for human consumption? Yes ☐ No ☑

SAMPLE CONDITION

FROZEN	☐
COLD	☑
COOLING INITIATED	☑
AMBIENT	☐
MEAN TEMP	11.5
OBSERVATIONS Yes ☐ No ☐ If yes add SIF	
INIT	RH

SAMPLED BY:	Dan Souter		
RELINQUISHED BY:	Dan Souter	DATE & TIME 23-7-13 1510	RECEIVED AT LAB BY: RH
		DATE & TIME 23-Jul-13	DATE & TIME 15:20.

Notes

1. Quote number must be provided to ensure proper pricing
2. TAT may vary dependent on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs.
3. Any known or suspected hazards relating to a sample must be noted on the chain of custody in comments section.