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Ministry of the Environment and Climate Change
Attention: Permit to Take Water, Director
Environmental Approvals Access and Service Integration Branch
135 St. Clair Avenue West, 1st Floor
Toronto, ON M4V 1P5

January 18, 2018

Dear Sir/Madam,

Application for Permit to Take Water Renewal
CRH Canada Group Inc. – Teedon Pit, Tiny Ontario

Please find enclosed a Category 1 Permit to Take Water (PTTW) #5003-APFH26 renewal application for the Dufferin Aggregates Teedon Pit. The Teedon Pit is located at North 1/2 Lot 79, South 1/2 Lot 80, Concession 1 WPR, Tiny Ontario. Dufferin Aggregates is a division of CRH Canada Group Inc.

The application is comprised of the following:

- Supporting Hydrologic and Hydrogeologic Study for a Category 1 Permit-To-Take-Water Application, by GHD Limited, which contains the PTTW application form and supporting documents

Do not hesitate to contact the undersigned should you have any questions.

Yours sincerely,

Nicolle Bellissimo

Nicolle Bellissimo
Environment and Resource Specialist
Environment, Property, and Permitting

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Cc: District Manager, Ministry of the Environment and Climate Change – Barrie District Office

Category 1 Permit-To-Take-Water Renewal Application

Supporting Hydrologic and Hydrogeologic Study

Dufferin Teedon Pit

Township of Tiny, County of Simcoe, Ontario

GHD | 651 Colby Drive Waterloo Ontario N2V 1C2 Canada

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1. Introduction

1.1 Purpose of Report

The purpose of this report is to provide a hydrologic and hydrogeologic assessment in support of a Category 1 Permit-To-Take-Water (PTTW) Renewal Application under Section 34 (34s) of the Ontario Water Resources Act (OWRA) for the water taking at the licensed Dufferin Aggregates (Dufferin) Teedon Pit (or Site) located on the north 1/2 Lot 79 Concession 1, PT south 1/2 Lot 80 Concession 1, in the Township of Tiny, County of Simcoe, Ontario. Note that this Study is being provided on a voluntary basis as it is not a requirement under Section 34 (34s) of the OWRA since this is a Category 1 PTTW Renewal Application.

The Ontario Ministry of the Environment and Climate Change (MOECC) requirements for a Category 1 PTTW Renewal is the completion of a Category 1 application consisting of the following:

1. A copy of the existing PTTW, which is provided in Appendix A of this report. A completed, signed application form included in Appendix B of this report. A Schedule of Conservation Measures is also included in Appendix B.
2. All required supporting information (as indicated in Condition 4.3 of the existing PTTW, this report has been prepared by a Qualified Person - P. Geo) identified in the application form and the Guide.
3. A certified cheque or money order, in Canadian funds made payable to the Ontario Minster of Finance for the application fee when required.

Notwithstanding the MOECC requirements, Dufferin has gone above and beyond the minimum requirements and has prepared an assessment of the hydrologic and hydrogeologic conditions, based on the available Site and regional data.

The purpose of this hydrologic and hydrogeologic assessment is to provide the MOECC, other Agencies, and the public with sufficient information to demonstrate that the aggregate washing operations at the Teedon Pit do not pose a threat to water supplies or the environment.

1.2 Background

1.2.1 History

The Teedon Pit is owned by Dufferin Aggregates, a division of CRH Canada Group Inc. (Dufferin), and is located approximately 10 kilometres (km) south of Midland, Ontario. The location of the Teedon Pit is shown on Figure 1.1. An aerial view of the Teedon Pit and surrounding lands is shown on Figure 1.2.

The Teedon Pit was acquired by Dufferin in 2017 and was previously owned by Cedarhurst Quarries & Crushing Limited since 1987. Extraction at the Site began in 2003. On August 4, 2004, Cedarhurst Quarries & Crushing Limited received a class "A" licence (Pit Licence Reference No. 3670) to operate an 85.45-hectare (ha) gravel pit. This licence was an amendment to the

previously existing licence to deal with the address change for the operation. The licence was "Pursuant to the Aggregate Resources Act and Regulations thereunder, and subject to the limitations and to the conditions of the licence and the requirements of the Site plans." One condition of Schedule "A" of the licence was that no more than 600,000 tonnes of aggregate be removed in any 1 calendar year.

The current and approved Site plans and Articles of Incorporation are provided in Appendix D of this report.

Monitoring and investigations of hydrogeologic conditions conducted by Dufferin (and previously Cedarhurst Quarries & Crushing Limited) have been ongoing since 2006. Copies of reports documenting these investigations are provided in Appendix C of this report. Specifically the following investigations have been conducted at the Teedon Pit:

- Test Pits (TP1 to TP4) were completed in 2006 by Waterloo Geoscience Consultants Ltd. for the purposes of determining subsurface conditions
- Installation of monitoring wells in 2007 (MW1), 2009 (MW1-09) and 2010 (MW4-10) for the purposes of determining the water table elevation
- Installation of a pumping well (supply well) in 2009 (PW1-09)
- Performance of a long-term pumping test in PW1-09 on March 19, 2010 to determine the optimum pumping rate for this well for the aggregate washing "top up" operations and also assess the radius of influence associated with operation of this well
- Performance of a water well survey in 2015 around the Teedon Pit
- Installation of pressure transducers at all monitoring well locations, and selected domestic wells in 2010
- Installation of a surface water level monitoring station (staff gauge) in the Sump Pond
- Focused domestic well survey of five residences and collection of groundwater samples from five domestic wells on two occasions during the summer of 2017

Groundwater and surface water elevations data are presently collected at the various monitoring locations.

1.2.2 Licence Area

Aggregate extraction presently occurs within the 50.5-ha limit of extraction of the licenced 85.45 ha.

1.2.3 Current Conditions

Dufferin is currently extracting aggregate in accordance with their Provincial (Aggregate Resource Act) and Municipal (Land Use/Zoning) approvals.

The current conditions at the Teedon Pit and the surrounding properties are shown on Figures 1.2 and 2.1.

1.2.4 Teedon Pit Water Use

The Teedon Pit is an above water table aggregate extraction operation. Aggregate extraction occurs from resources located 1.5 metres (m) above the groundwater table.

The major water handling for the Teedon Pit is an aggregate washing operation. This operation involves washing of the aggregate after extraction to remove fine soil particles from the sand and gravel for the preparation of aggregate products. The washing operations use a recirculation washing system where the wash water is recirculated through silt ponds to remove the particulates and returned back to the Sump Pond. In this operation, only a small amount "make-up" water is needed to compensate for moisture retained on the sand and gravel and for evaporation. A supply well (PW1-09) is used to "top up" the Sump Pond.

This Category 1 PTTW is a renewal of its current PTTW (5003-APFH26) dated August 14, 2017 and issued to CRH Canada Group Inc., which expires on April 30, 2018. This Permit cancels and replaces Permit Number 4317-87CNZN issued on July 23, 2010. The PTTW allows for the water taking from PW1-09 with takings up to 24 hours per day and up to 210 days per year. Routine takings are up to 1,136 litres/minute (L/min) (maximum of 1,635,840 litres per day [L/day]). The PTTW also allows for the water taking for the Sump Pond with takings up to 12 hours per day and up to 210 days per year. Routine takings are up to 7,274 L/min (maximum of 5,237,280 L/day).

1.3 Report Organization

The report is organized into the following sections:

Section 1 Introduction

Section 2 Description of Current Water Taking

Section 3 Hydrogeologic Setting

Section 4 Evaluation of Potential Receptors

Section 5 Impact Assessment

Section 6 Proposed Monitoring Program

Section 7 Summary and Recommendations

Section 8 References

The following forms and legal documentation are provided in the appendices:

- Existing PTTW (5003-APFH26) dated August 14, 2017 and issued to CRH Canada Group Inc., which expires on April 30, 2018 is included in Appendix A.
- A copy of PTTW renewal application forms and Schedule of Conservation Measures are included in Appendix B.
- The Articles of Incorporation for CRH Canada Group, Inc. is included in Appendix D.

2. Description of Current Water Taking

Water is required for the purpose of aggregate washing as part of processing operations at the Teedon Pit. Aggregate washing has been conducted since 2009.

A schematic of the current aggregate washing system is shown on Figure 2.2. A recent (2015) photograph of this system is shown on Figure 2.3. The wash plant system operates as a recirculating system circulating all the water through the Sump Pond, the wash plant, and the Silt Ponds.

The Sump Pond and Silt Ponds were constructed during the winter of 2008-2009. The location of the Sump Pond and Silt Ponds are shown on Figure 2.1.

The aggregate wash water is drawn from the Sump Pond through a floating intake located about 1 m below the pond surface. The water is pumped through the wash plant where it is used to wash aggregate. The water is then recirculated back to the Silt Ponds where the fines are allowed to settle before the water is discharged by gravity back to the Sump Pond through a weir and pipe system.

Some loss of water from the system is expected through evaporation and moisture remaining on the aggregate following washing. Some loss to the groundwater flow system may also occur under non-pumping (washing) conditions. A rule of thumb used in the aggregate industry is a loss of about 10 percent of the wash water that must be made up from other sources, whether it be from natural recharge to the Sump Pond and/or supplementation of the water loss through a well or surface water supply (Golder, 2006). The expected maximum amount of daily loss of wash water from the system is 523,728 litres.

Supply (production) well PW1-09 is used to supplement the Sump Pond. The location of PW1-09 is shown on Figure 2.1.

3. Hydrogeologic Setting

3.1 Regional Setting

The Teedon Pit is located south of Midland, Ontario in the Township of Tiny within the County of Simcoe, Ontario. The regional physiographic, geologic, and hydrogeologic settings in the vicinity of the Teedon Pit are described in the following sections.

Scientific literature and public well records and data on file with the Ministry of Natural Resources and Forestry (MNRF) and Environment Canada were relied upon to describe the regional setting.

3.1.1 Climate

The climate is characterized by moderate winters, warm summers and a long growing season with usually reliable precipitation. It is influenced by the proximity to Georgian Bay and Lake Simcoe. The Midland area receives approximately 1,041 millimetres (mm) of precipitation annually (Environment Canada, 2017).

3.1.2 Regional Physiography

The topography in the vicinity of the Teedon Pit ranges from about 240 to 300 metres above mean sea level (m AMSL) and is part of the Simcoe Uplands physiographic region (Singer, 1999). The surficial geology is characterized by the Wisconsonian glaciation which ended approximately 10,000 years ago. The most prominent glacial features in the area are the sand plains, till plains (drumlinized) and clay plains (Chapman & Putnam, 2007), as shown on Figure 3.1.

The area of the Teedon Pit is considered in the Simcoe County Official Plan OMB as Approved Secondary Sand and Gravel Deposits (Township of Tiny, 2017).

3.1.3 Regional Hydrology

The Teedon Pit is located within the Severn Sound Watershed (Tiny Township - Schedule B, Natural Features, 2005).

Figures 3.2 and 3.3 show the regional watershed boundaries and more local surface water features and drainage, respectively, described below.

Hogg Creek is located approximately 800 m south and east of the Site. It has a drainage area of approximately 64 km^2 and a main channel length of 22 km (Singer, 1999). Hogg Creek originates in Medonte Township, flows in a northerly direction through Tay Township and empties into Hogg Bay in Severn Sound. The creek has cut a shallow channel in a flat-floored valley and is fed largely by springs along the valley's sides. Hogg Creek has 15 first order tributaries and several second and third order tributaries (Singer, 1999).

The Wye River is located approximately 1 km north and west from the Site. It arises from springs on the Simcoe Uplands near Orr Lake to the southeast of the Site. The main branch flows southwest from Orr Lake through the agricultural clay plains of the Simcoe Lowlands and urban Elmvale before flowing northward out of Springwater Township toward Wye Marsh and Midland. It flows from south to north to its outlet into Georgian Bay. The Wye River has a drainage area of approximately 217 km^2 and a main channel length of 40 km (Singer, 1999). Orr Lake is located approximately 5 km to the southeast of the Site. Orr Lake drains an area of approximately 14 km^2 and lies within the headwaters of the Wye River. Several small streams enter the lake from the surrounding uplands. The Tiny Marsh is located approximately 6.5 km southwest of the Site. It is classified as a provincially significant wetland (PSW). The Tiny Bog Wetland Complex is located approximately 6.5 km west of the Site, southwest of Wyevale. It is classified as a regionally and locally significant wetland (Township of Tiny – Schedule B, Natural Features, 2005).

There are no Environmentally Sensitive Areas or Provincially Significant Wetlands (PSWs) near (within 120 m) the Site as shown on Figure 3.4.

3.1.4 Regional Quaternary Geology

The overburden deposits in the vicinity of the Site are regionally approximately 140 to 150 m thick (Singer et al., 1999). They were deposited during and shortly after the Wisconsonian glaciation, therefore they are all Pleistocene in age. The primary overlying deposits are the silty to sandy till, as shown on Figure 3.5. These deposits are stone-poor and carbonate-derived (OGS, 2003).

3.1.5 Regional Bedrock Geology

The top of bedrock elevations in the vicinity of the Site are approximately 130 to 140 m AMSL (Singer et al., 1999). The bedrock beneath the overburden in this area is the Shadow Lake Formation, which is part of the Simcoe and Ottawa Groups and are Middle Ordovician in age (OGS, 2006) as shown on Figure 3.6. It is usually found to be more that 12 m thick, and due to its relative thinness the Shadow Lake Formation and overlying Gull River Formation are commonly portrayed as a single unit (Singer, 1999). The Shadow Lake Formation consists of shale, sandstone, limestone and conglomerate.

3.1.6 Regional Hydrogeology

The Teedon Pit is located within the Alliston Aquifer Complex (an overburden aquifer) which covers the entire area between the Oak Ridges Moraine and Georgian Bay. It consists of fine to coarse sand deposits that occur at variable depths in close association with silt and clay deposits (Singer, 2007). All these materials were laid down in glacial and glaciolacustrine environments (Singer, 2007). The Alliston Aquifer Complex consists of multiple aquifers at shallow and deep levels. They are 3 to 6 m thick. This aquifer is the source of drinking water for local residents. The Alliston Aquifer has a relatively high permeability and generally has good water yielding capacity.

Appendix C of this report contains regional geologic/hydrogeologic cross-sections provided in the Singer et al., 1999 study of the Severn Sound area.

The 1999 Severn Sound Study also included geochemical characteristics of groundwater within the shallow and deep overburden aquifers. Note that the 1999 Study compared the water quality to the Provincial Drinking Water Objectives (PDWOs) in place in 1999. The PDWOs have been superseded by the Ontario Drinking Water Quality Standards (ODWQS) derived from the Safe Drinking Water Act, 2002 and are currently in place.

The regional groundwater quality study within the Severn Sound area indicated the following with respect to shallow (wells less than 20 m deep) and deep (wells more than 20 m deep) overburden wells:

- The concentrations of total dissolved solids ranged from 36 to 889 milligrams per litre (mg/L) for the shallow wells and from 92 to 470 mg/L for the deep wells. About 11% of the samples collected from the shallow wells exhibit total dissolved solids (TDS) levels above the PDWO. All the samples collected from the deep wells, on the other hand, were within the objective.
- Water hardness ranged from 76 to 458 mg/L for samples collected from the shallow wells and from 22 to 335 mg/L for samples collected from the deep wells. The water in all the samples range from moderately hard to very hard.
- The concentrations of chloride ranged from 0.30 to 285 mg/L for the shallow wells and from 0.40 to 85 mg/L for the deep wells. About 3% of the shallow wells had concentrations of chloride above the PDWO; all the concentrations for the deep wells were within the PDWO.
- The concentrations of sulphate ranged from 7.41 to 59 mg/L for the shallow wells and from 0.50 to 37 mg/L for the deep wells. All the sulphate concentrations for both the shallow and deep wells were within the PDWO.

- The concentrations of nitrate for the shallow wells ranged from 0.05 to 58 mg/L for the shallow wells and from 0.05 to 6.05 mg/L for the deep wells. About 11% of the samples collected from the shallow wells exceeded the PDWO. All the samples collected from the deep wells were within the PDWO.
- The concentrations of sodium ranged from 1.00 to 116 mg/L for the shallow wells and from 1.00 to 49 mg/L for the deep wells. All the sodium concentrations for both the shallow and deep wells were within the PDWO.
- The concentrations of iron ranged from 0.01 to 4.80 mg/L for the shallow wells and from 0.01 to 1.00 mg/L for the deep wells. About 18% of the samples collected from the shallow wells and 12% of the samples collected from the deep wells exceeded the PDWO.

Singer (1999) classified the shallow and deep overburden groundwater quality according to geochemical (Durov) water type systems. The plots are provided in Appendix C of this report.

The results of the analyses indicate that 30 samples (81%), obtained from the shallow wells, are of calcium-bicarbonate type, 2 samples (5%) are of bicarbonate type, and 2 samples (5%) are of magnesium-bicarbonate type. The results of the analyses also indicate that 68 samples (76%), obtained from deep overburden wells, are of calcium-bicarbonate type, 12 samples (13%) are of bicarbonate type, and 9 samples (10%) are of sodium-potassium-bicarbonate type.

This essentially means that the groundwater in the shallow and deep overburden aquifers in this area reflect the mineralogical composition of these aquifers.

3.1.7 Wellhead Protection Areas

The Teedon Pit is outside of any municipal wellfields and is outside of the Wellhead Protection Areas (WHPAs) associated with wellfield in the area. The closest municipal well is located in Wyevale approximately 5 km to the northwest of the Site (County of Simcoe, 2017).

3.2 Site Setting

The Teedon Pit physical characterization has been developed based on the regional information (above) and the Site-specific information (Appendices E, F, and G of this report).

Completion details for Dufferin monitoring wells located within the licensed area and in close proximity of the Teedon Pit are provided in Table 3.1. The Site-specific setting is described in the following sections.

3.2.1 Site-Specific Hydrologic Setting

Drainage of surface water from the Teedon Pit is primarily via infiltration into the groundwater flow system with a component flowing to the north towards the Wye River.

The main surface water features are the existing ponds (Sump Pond and Silt Ponds) as shown on Figure 2.1. A small unnamed pond is located directly north of the Sump Pond which is connected to an unnamed stream north of this pond. The small unnamed pond and unnamed stream were evaluated in the January 2016 PTTW Inspection Report of the Teedon Pit by the MOECC, which is included in Appendix C. The small unnamed pond was determined to be either natural or a dug out

cattle watering pond. The small unnamed stream was determined to be a small ephemeral (seasonal) creek that only flows during spring freshet or periods of extremely heavy rain. When the Sump Pond was established in 2009, the small unnamed pond was retained with a catch basin style drainage system installed and overland spillway to drain excess water from the Sump Pond (if required). During the June 30, 2015 Site inspection, it was apparent the Sump Pond had not recently discharged water into the small unnamed pond, as the water level was several meters below both the catch basin and spillway discharge elevations.

MOECC concluded during the January 2016 PTTW Inspection Report that there is little possibility water taking/usage at the Teedon Pit property could adversely impact stream flow since water taking records show a strong tendency to take water during the summer months, when flow in the stream is not likely. MOECC also concluded that since the Sump Pond needs to be “topped up” with well water from the well (PW1-09), it is unlikely the drain systems will ever be used.

A thick clay layer appears to underlie the unnamed pond and the unnamed stream. The clay layer appears to limit the interconnected between this surface water system and the deeper aquifer.

3.2.2 Study Area Geologic Setting

The geologic framework within the Study Area was characterized through the evaluation of stratigraphic data from historical borehole, monitoring well and test pit logs. The stratigraphic and instrumentation logs are provided in Appendix E.

The borehole/monitoring well stratigraphic data were used to prepare hydrogeologic cross sections. The locations of the hydrogeologic cross sections are shown on Figure 3.7. The hydrogeologic cross sections are shown on Figures 3.8 and 3.9.

As indicated in Section 3.1.2, the Teedon Pit is on the Simcoe Uplands, a physiographic unit consisting of broad rolling till plains and moraines which are sometimes overlain by or interstratified with ice-contact deposits.

The deposits are primarily glacial and glaciolacustrine (ice-contact deposit consisting of substratified to stratified gravel and sand including incorporated till).

3.2.3 Study Area Hydrogeologic Setting

The hydrogeologic cross-section locations are shown on Figure 3.7, and hydrogeologic cross-sections A-A' (west-east) and B-B' (north-south), are shown on Figures 3.8 and 3.9, respectively.

As shown on Figures 3.8 and 3.9, the Site is underlain primarily by sand and gravel with some local layers of clay. The subsurface stratigraphic conditions are consistent with the regional stratigraphy described in Sections 3.1.2, 3.1.4, and 3.1.6 of this report.

Note that in the area of the Sump Pond, there appears to be a clay layer. This clay layer is also identified in PW1-09 and domestic well No. 25425.

Close examination of hydrogeologic cross-sections A-A' and B-B' shows that there are two groundwater flow systems, a shallow and deep system. These flow systems appear to be vertically

defined by the clay layer found at MW-1, PW1-09, and domestic well No. 25425. This is consistent with previous hydrogeologic studies for the Site (see Appendix C of this report) and the regional hydrogeologic conditions described in Section 3.1.6 of this report.

Based on the Site-specific subsurface conditions shown on hydrogeologic cross-sections A-A' and B-B', deep groundwater contours were prepared with the aid of the March 16, 2017 hydraulic monitoring data.

The March 16, 2017 deep groundwater contours are shown on Figure 3.10.

The deep groundwater contours show that groundwater generally flows to the west at an average horizontal hydraulic gradient of 0.0003 which is very gentle.

Above the clay layer, there may be shallow groundwater present at some locations (e.g., MW4-10 and some domestic wells). Shallow groundwater flow patterns are likely controlled by the topographic conditions in the area. Previous hydrogeologic assessments conducted at the Site (see Appendix C) have identified radial flow from topographically high areas to topographically low area.

4. Evaluation of Potential Receptors

Water resources that may be potential receptors of any unlikely detrimental effect from the Teedon Pit in the area include private (domestic) wells, and ecological features as described below. There are no municipal supply wells near the Site.

4.1 Municipal Wellfields

As indicated in Section 3.1.7 of this report, the area of the Teedon Pit is outside of any municipal wellfields and is outside of the WHPAs associated with these wells. Therefore, water supplies from municipal wellfields are not potential receptors of any potential impairment from activities associated with water takings or aggregate washing operations conducted at the Teedon Pit. The closest municipal well is located in Wyevale approximately 5 km to the northwest of the Site (County of Simcoe, 2017).

4.2 Private Water Wells

A number of nearby domestic water supply wells have been identified near the Teedon Pit. Some residents have expressed water quantity and quality concerns. These concerns are discussed in Section 5 of this report.

4.3 Ecological Water Resources

As shown on Figures 3.2 and 3.3, more prominent surface water features are located at significant distances from the Teedon Pit. The off-Site ecological water resources in the area include Hogg Creek, Wye River, the Tiny Marsh (classified as a provincially significant wetland) and the Tiny Bog Wetland Complex (classified as a regionally and locally significant wetland) (Township of Tiny – Schedule B, Natural Features, 2005). Most of these ecological water resources are at significant

distances from Teedon Pit and will not be affected by the water taking associated with the aggregate washing operations.

A small unnamed pond is connected to an unnamed stream located on the northern property boundary are described in detail in Section 3.2.1. These were evaluated in the January 2016 PTTW Inspection Report of the Teedon Pit by the MOECC. The small unnamed stream was determined to be a small ephemeral (seasonal) creek that only flows during spring freshet or periods of extremely heavy rain. MOECC concluded there is little possibility water taking/usage at the Teedon Pit property could adversely impact stream flow since water taking records show a strong tendency to take water during the summer months, when flow in the stream is not likely.

There are no wetlands that have been classified as either "evaluated" or "provincially significant" located on the Site or in the vicinity of the Site.

4.4 Summary of Evaluation of Potential Receptors

Since Teedon Pit is not located within WHPAs, potential impact to municipal water supply is not a concern.

Also, there are no evaluated ecological water resources near the Teedon Pit.

The only potential receptor of any influence from the water taking and aggregate washing operations at Teedon Pit would be to groundwater quantity and/or quality at the nearby domestic wells.

5. Impact Assessment

5.1 Potential Water Quantity Impacts

Recirculation washing systems, such as the one at the Teedon Pit, do not consume large amounts of water or have large impacts on groundwater flow systems or associated resources.

In order to evaluate the potential impact to groundwater quantity in nearby domestic wells, a review was conducted of the historical groundwater elevation data collected and presented in Appendix G.2 of this report. Additionally, the pumping test data collected for a pumping test performed in PW1-09 in March 2010 were evaluated.

5.1.1 Evaluation of Hydrographs

Hydrographs for all the locations equipped with pressure transducers are presented in Appendix G.2 and include:

- PW1-09 Hydrograph - Figure 1
- MW4-10 Hydrograph - Figure 2
- MW1 Hydrograph - Figure 3
- MW1-09 Hydrograph - Figure 4

- #50632 - Figure 5
- #25425 - Figure 6
- #17709 - Figure 7
- SW1 (Sump Pond Staff Gauge) - Figure 8

These monitoring locations are shown on Figure 5.1.

Examination of these hydrographs indicate the following:

- Groundwater elevations in supply well PW1-09 show that fluctuations are due to pumping cycles. These cycles are short lived. There are no sustained declines in the groundwater elevation in PW1-09 associated with the water taking.
- Groundwater elevations in monitoring well MW4-10, adjacent to supply well PW1-09, reflect seasonal effects. There are no long-term declines in groundwater elevations in MW4-10.
- Groundwater elevations in MW1 located adjacent to the Sump Pond show seasonal effects and do not exhibit any influence from operation of the Sump Pond.
- The groundwater elevations in MW1-09 located within southwestern part of the property reflect seasonal fluctuations and are not affected by operation of the Sump Pond or supply well PW1-09.
- The groundwater elevation data for the #50632 domestic well are inconclusive due to adjustments of the datalogger; however, no influence of pit pumping is evident in the available data. The data does show pumping cycles due to operation of this well and seasonal effects. These are not effects of aggregate washing operations.
- The groundwater elevation for the #25425 domestic well show responses to this well's pumping cycles and seasonal fluctuations. These are not effects of aggregate washing operations.
- The groundwater elevation data for the #17709 domestic well show pumping cycles and seasonal effects. The trends in groundwater elevations for this well do not show any effects of operation of supply well PW1-09 of the Sump Pond. These are not effects of aggregate washing operations.
- The water elevation of the Sump Pond have not fluctuated significantly in the period from August to December 2017. These are not effects of aggregate washing operations. The water elevations fluctuate by less than 0.1 m.

The radius of influence for the pumping test conducted in 2010 are shown on Figure 5.1. Based on plots of drawdown versus distance using the data obtained during the pumping test, the cone of influence was identified as being of limited lateral extent. Based on a pumping rate of 950 L/min resulted in a cone of influence of 300 m.

Therefore, in summary, operation of supply well PW1-09 and the Sump Pond has not caused interference to the domestic well supplies. There is no indication that the future operation of the supply well and Sump Pond will result in interference to domestic well supplies.

5.2 Potential Water Quality Impacts

Historically, residents have raised their concerns regarding water quality and quantity issues related to the operation of the Teedon Pit.

Following a Public Meeting conducted on January 26, 2015 at the Planning and Development Department of the Township of Tiny, Alpha Environmental Services, Inc. (Alpha) the Consultant for the previous owner (K.J. Beamish Construction Co., Limited - or Beamish), contacted many of the local residents to ascertain the nature of the concerns.

Alpha conducted a well survey to identify supply wells around the Teedon Pit. A total of 27 wells were identified. The water well survey data are provided in Appendix C (Table 1 of Letter from Ross Campbell of Alpha, to Shawn Persaud of the Planning and Development Department of the Township of Tiny).

The well survey identified four residents who indicated that they had well water quality and/or quantity concerns. The four residents and an additional resident, declined an offer to inspect and sample their wells by Alpha.

The five residents were:

- Well on 1189 Marshall Road (No MOECC Well Record)
- Well on 6970 Highway 93 (No MOECC Well Record)
- Well on 7062 Highway 93 (Well No. 5711874)
- Well on 1190 Marshal Road (No MOECC Well Record)
- Well on 1119 Marshall Road (Well No. 5711301)

A hydrogeologic assessment of the water quality concerns was conducted by Alpha in 2015 and is presented in Appendix C of this report.

The hydrogeologic assessment concluded that the silt in the domestic wells and the reduced water supply is not due to the operations at Teedon Pit.

The distance of these domestic wells from the Teedon Pit and their shallow nature preclude Teedon Pit from being the cause of silt in the water supply. The shallow aquifer contains a significant amount of silt. The MOECC concurred with this assessment (see MOECC letter to residents provided in Appendix C). The MOECC added that poor well maintenance and/or construction may be the cause for the presence of silt in the domestic wells.

Despite previous groundwater quality assessments conducted by Alpha in 2015 on behalf of the previous owner/operator of Teedon Pit, and assessments by the MOECC in 2015 (see Appendix C for reports) which have concluded that groundwater quality in domestic wells has not been affected by the aggregate washing operations, Dufferin collected groundwater samples from five nearby domestic wells in late summer 2017. The groundwater samples collected from the nearby domestic wells in late summer 2017 were due to complaints of silt in the wells. The domestic wells which were sampled are shown on Figure 5.2 are the following:

- 20 Darby Road

- 30 Darby Road
- 1189 Marshall Road
- 6970 Highway 93
- 7062 Highway 93

The groundwater quality data collected from these five domestic wells are summarized in Table 5.1 and indicates the following:

- Water is slightly alkaline with pH slightly higher than 8
- Total dissolved solids (TDS) range from 190 to 300 mg/L
- Hardness as calcium carbonate is slightly above the operational guideline of 80 to 100 mg/L (ranges from 150 to 260 mg/L)
- Chloride levels are generally low ranging from less than 1.0 to 27 mg/L
- Sulphate concentrations are low and range from 7.7 to 21 mg/L
- Sodium levels are generally low and range from 2,500 to 14,000 μg/L (2.5 to 14 mg/L) (aesthetic objective is 200,000 μg/L or 200 mg/L).
- Generally low concentrations of metals with the exception of iron (ranges from less than 100 to 470 mg/L which exceeds the aesthetic objective of 300 mg/L) and aluminum (ranges from less than 5 to 300 mg/L which exceeds the ODWQs of 200 mg/L
- Relatively high levels of magnesium ranging from 4,100 to 15,000 μg/L
- Manganese for the most part less than 2.0 μg/L but at 1189 Marshall Road was 29 μg/L

The groundwater quality from these five domestic wells is in line with the regional groundwater quality reported in the Singer et al. (1999) Severn Sound Study.

Therefore, it is concluded as was concluded in the 2015 study by Alpha and as concurred by the MOECC that the silt in some of the domestic wells around Teedon Pit are not caused by the aggregate washing operations or water taking.

6. Proposed Monitoring Program

This section outlines the details of the groundwater and surface water monitoring program and monitoring locations for the PTTW.

The groundwater and surface water locations (Sump Pond) that have been monitored historically to collect hydraulic monitoring data will continue to be monitored.

6.1 Water Taking Volume

It is proposed that the volume of water taking be recorded on a daily basis (when water taking is underway) and tabulated monthly. It is recommended that the water volumes be measured near the point of taking at the Sump Pond, before water enters the aggregate wash process.

Daily water taking volumes will be reported by Dufferin to the Water Taking Reporting System (WTRS) annually, on or before March 31, for the previous calendar year.

6.2 Groundwater Monitoring

Groundwater monitoring will include hydraulic monitoring only.

A total of seven monitoring wells will be part of the groundwater monitoring network, as shown on Figure 6.1. The seven monitoring wells include:

- Three monitoring wells installed between 2007 and 2009 (MW1, PW1-09, and MW1-09)
- One monitoring well installed in 2010 (MW4-10)
- Three domestic wells located on private property (#50632, #25425, and #17709)

In order to monitor the groundwater levels, dataloggers have been installed in these monitoring wells and domestic wells.

Water levels will also be taken manually three times per year: prior to wash operations commencing in the spring, after operations are stopped for the year in late fall, and during operations of the wash plant. Datalogger information will be downloaded as part of the manual monitoring program.

6.3 Surface Water Monitoring

Surface water monitoring will include water level monitoring.

There is presently one surface water monitoring location identified as part of the surface water monitoring network (SW1), as shown on Figure 6.1. The SW1 location is identified by a staff gauge in the Sump Pond.

Surface water levels will also be measured manually three times per year in conjunction with groundwater monitoring events: prior to wash operations commencing in the spring, after operations are stopped for the year in late fall, and during operations of the wash plant.

6.4 Reporting

In the unexpected event that any water quantity or quality issues attributable to activities at the Teedon Pit, are identified through the course of the monitoring program, Dufferin will contact MOECC. In the event of a private water supply complaint, Dufferin will immediately undertake an investigation to determine the cause of the interference.

A monitoring report, providing a summary of the pumping data and interpretation of the results of monitoring activities will be completed annually (or at another frequency as specified by MOECC in the PTTW) by a qualified professional, and submitted to MOECC on or before March 31, for the previous calendar year. A copy of the previous year's report will be retained at the Teedon Pit and provided to the MOECC inspector upon request. All monitoring data, including data collected subsequent to the annual report, will be available to the MOECC upon request.

7. Summary and Recommendations

The following provides a summary of the hydrologic and hydrogeologic assessment in support of the Category 1 PTTW Renewal Application:

- The Teedon Pit operates a recirculation aggregate washing system which requires a relatively small amount of water for operation.
- The Teedon Pit is not located within any WHPAs.
- There are not significant surface water features or environmentally sensitive areas near the Teedon Pit.
- The hydraulic monitoring data collected historically to present have shown that the Sump Pond and operation of supply PW1-09 do not have a significant effect on nearby groundwater levels. This observation has been also supported by the data collected from a pumping test conducted in 2010.
- Past claims by a small number of nearby residents to the water quality (silt) in their domestic wells have been caused by operation of the aggregate washing operations have been investigated and determined to be unfounded. The MOECC has attributed the domestic well quality issues to the shallow and silty nature of the shallow aquifer and/or poor well maintenance.

Therefore, the following recommendations are made:

- An OWRA Section 34 Category 1 PTTW renewal be issued to Dufferin Aggregates for the aggregate washing operations at the Teedon Pit. It is recommended that this permit be issued for 10 years.
- The PTTW should be issued to allow water taking from PW1-09 for 1,136 L/min for a maximum of 24 hours per day (maximum daily taking of 1,635,840 L/day) and a maximum withdrawal rate for the Sump Pond for 7,274 L/min for a maximum of 12 hours per day (maximum daily taking of 5,237,280 L/day) for up to 210 days per year (not necessarily consecutive). These are consistent with the currently approved PTTW.
- A monitoring program be implemented as described in Section 6.

8. References

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All of Which is Respectfully Submitted,

GHD

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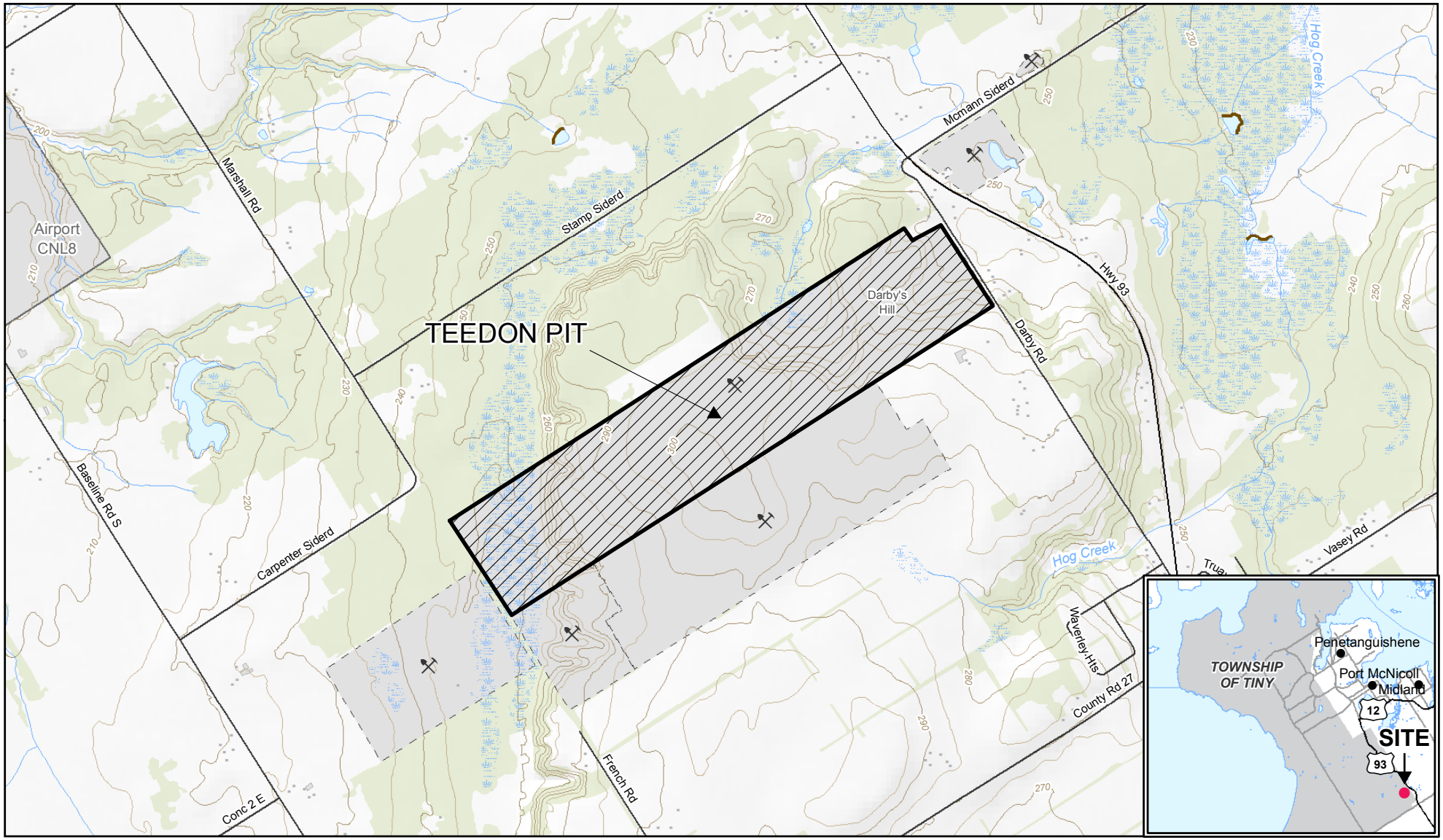
J. Richard Murphy, M.A.Sc., P.Eng.



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0 200 400 600
Meters

Coordinate System:
NAD 1983 UTM Zone 17N

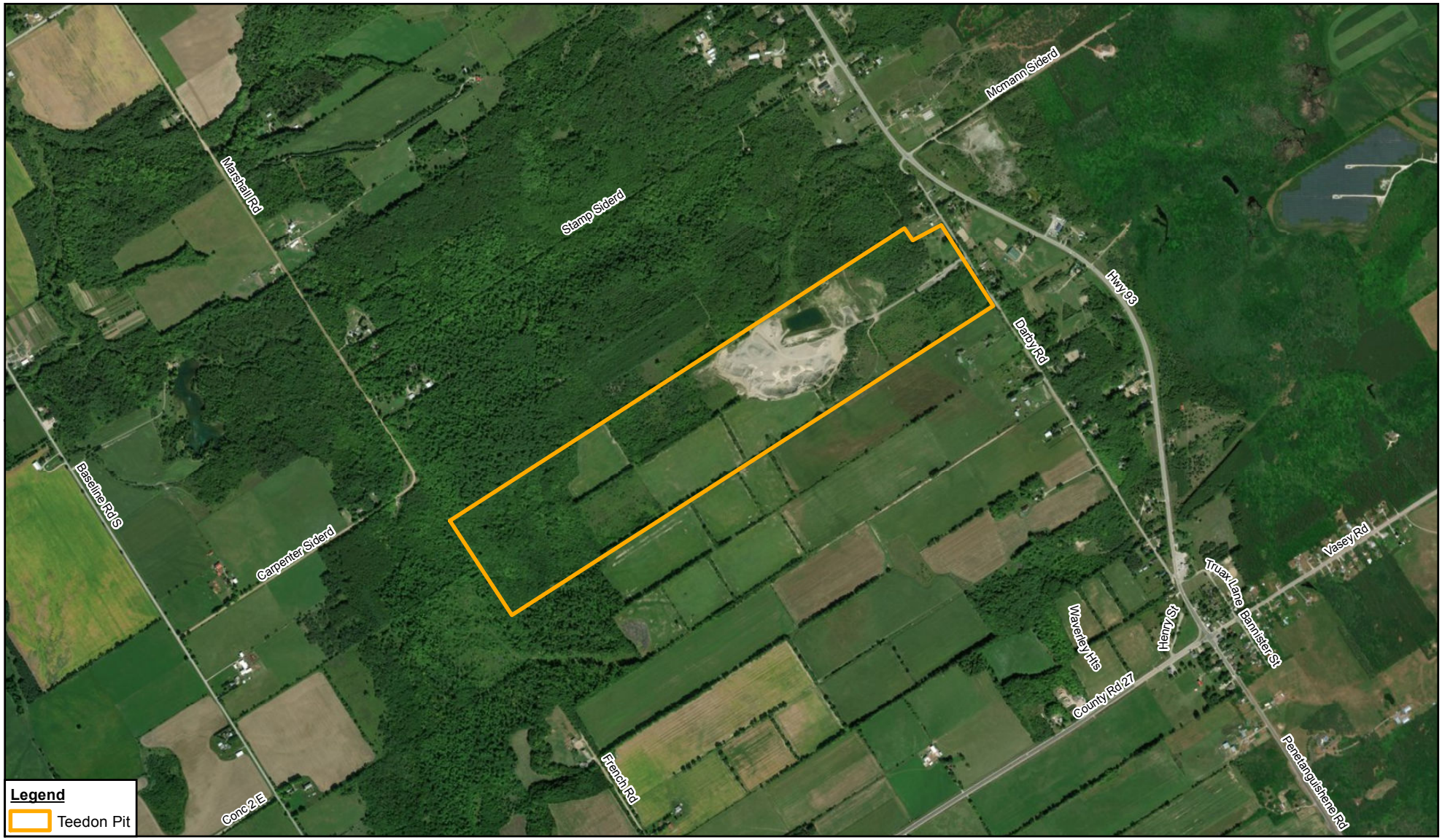
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

SITE LOCATION MAP

FIGURE 1.1

GIS File: Q:\GIS\PROJECTS\11155000s\11155365\Layouts\001\11155365-00(001)GIS-WA001.mxd



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Imagery: ESRI Basemap Imagery, Digital Globe, 2016.

0 200 400 600
Meters

Coordinate System:
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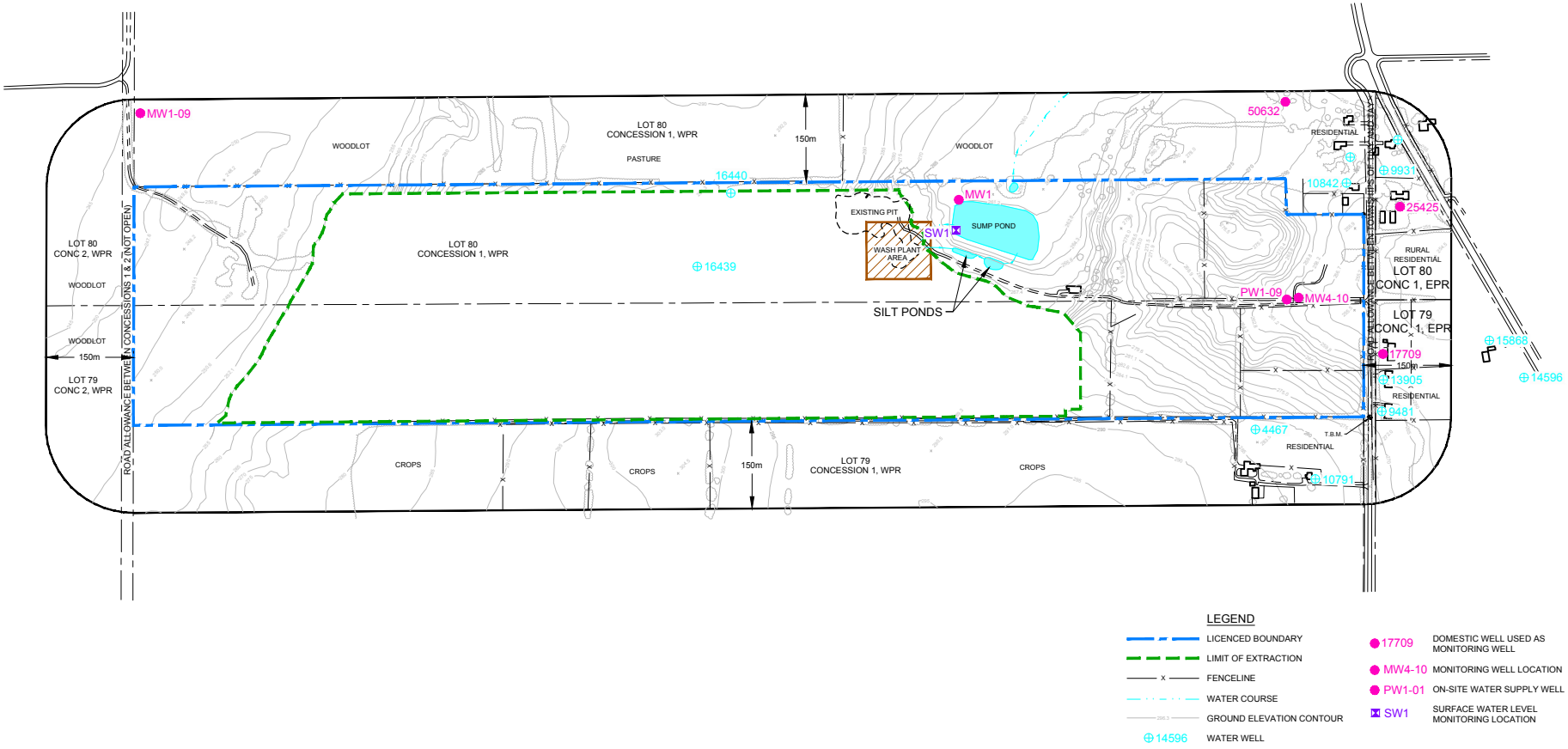
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

DUFFERIN TEEDON PIT AND SURROUNDING LANDS (2016 IMAGERY)

FIGURE 1.2

GIS File: Q:\GIS\PROJECTS\11155000s\11155365\Layouts\001\11155365-00(001)GIS-WA008.mxd



0 70 140 210m

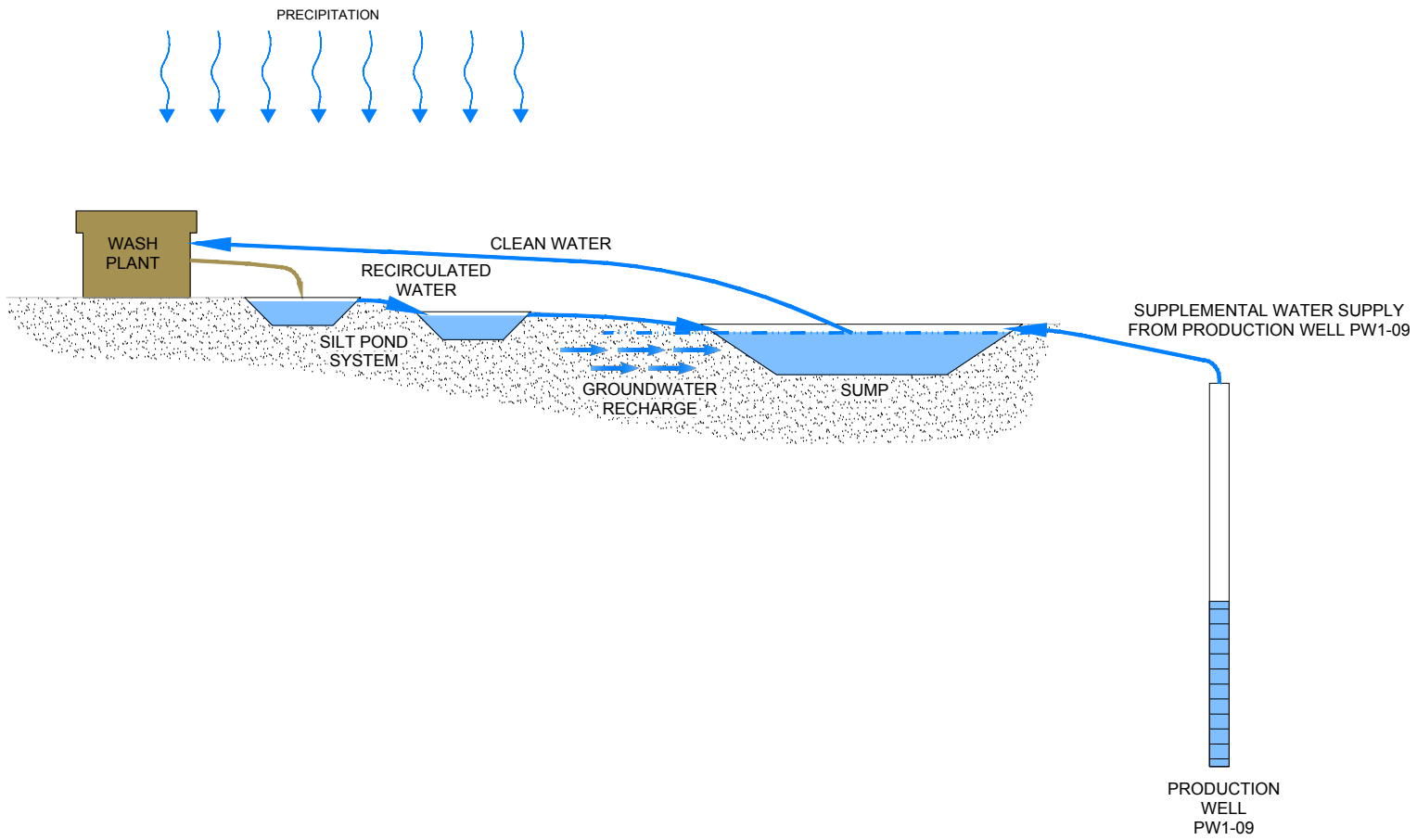
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

SITE PLAN / OPERATIONAL PLAN

FIGURE 2.1

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA001.dwg

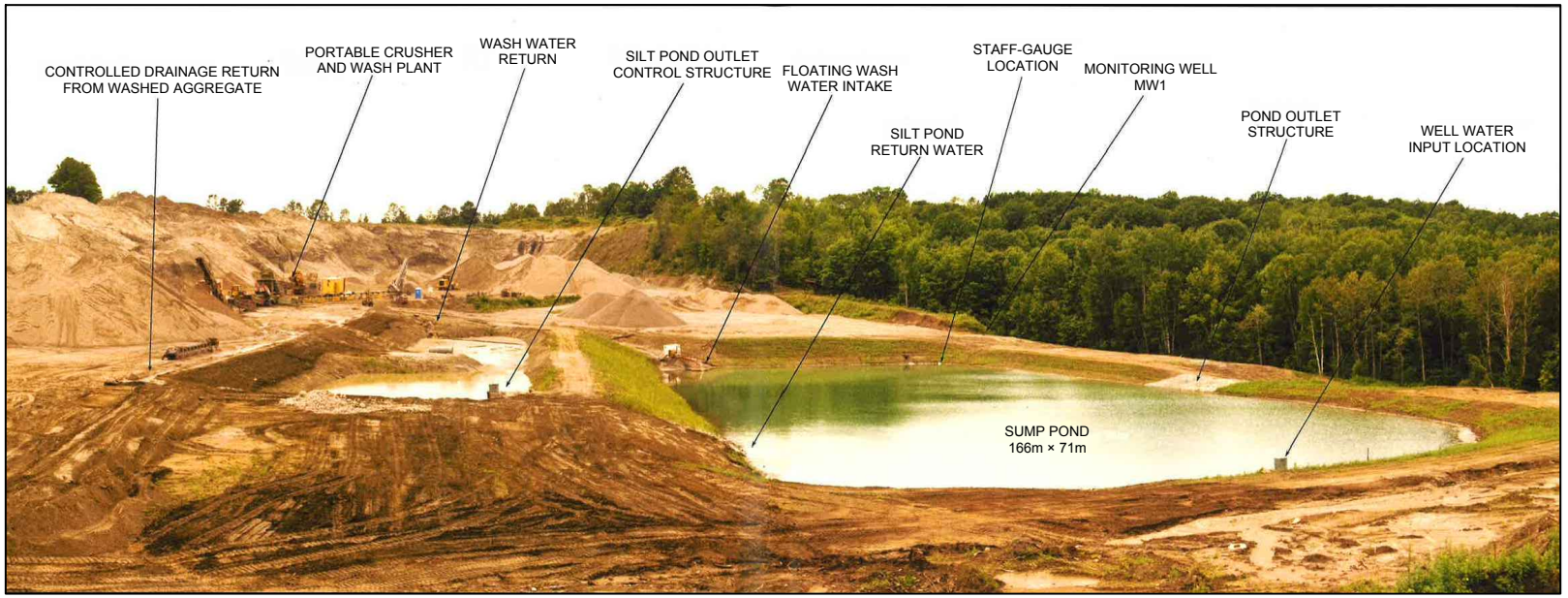


DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

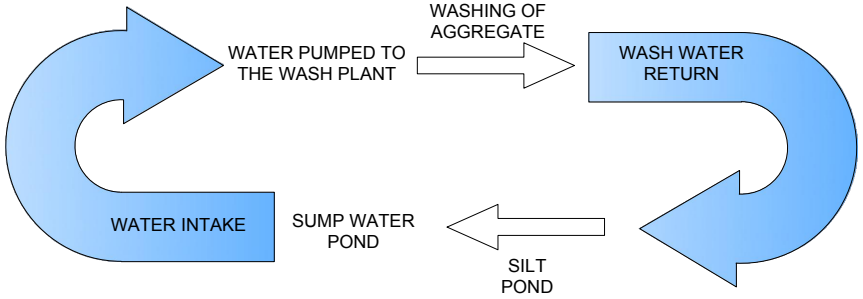
Jan 17, 2018

CURRENT AGGREGATE WASHING SYSTEM (RECIRCULATION) FIGURE 2.2

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA002.dwg



RECIRCULATION AGGREGATE WASHING SYSTEM



Source: Alpha Environmental Services File No 15-08 Figure 4

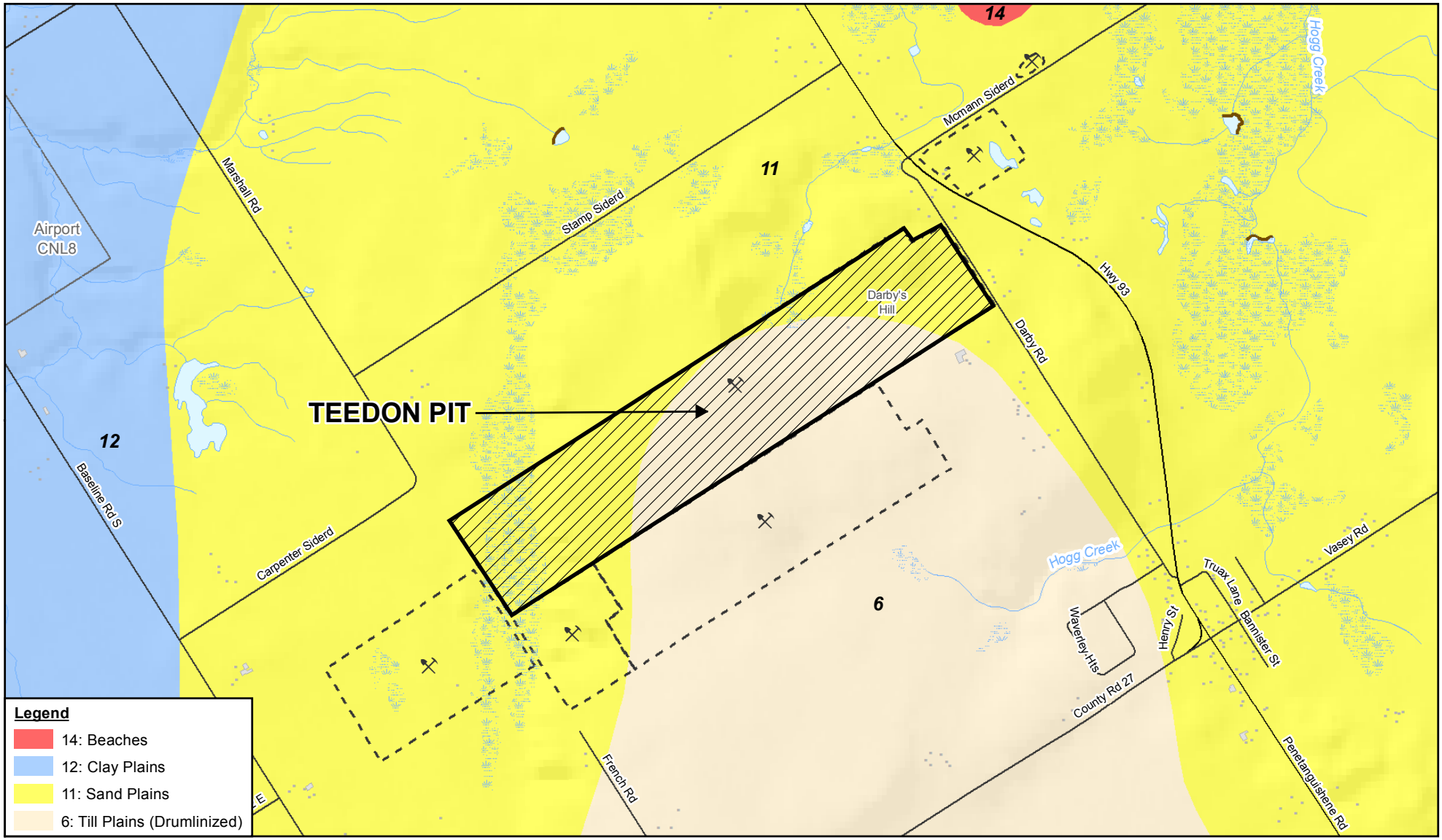
—

DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

Jan 17, 2018

PHOTO OF AGGREGATE WASHING SYSTEM (RECIRCULATION) FIGURE 2.3

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA003.dwg



Source: MNRF NRVIS, 2017. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2018
Chapman, L.J. and Putnam, D.F. 2007. Physiography of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 228.

0 200 400 600
Meters

Coordinate System:
NAD 1983 UTM Zone 17N

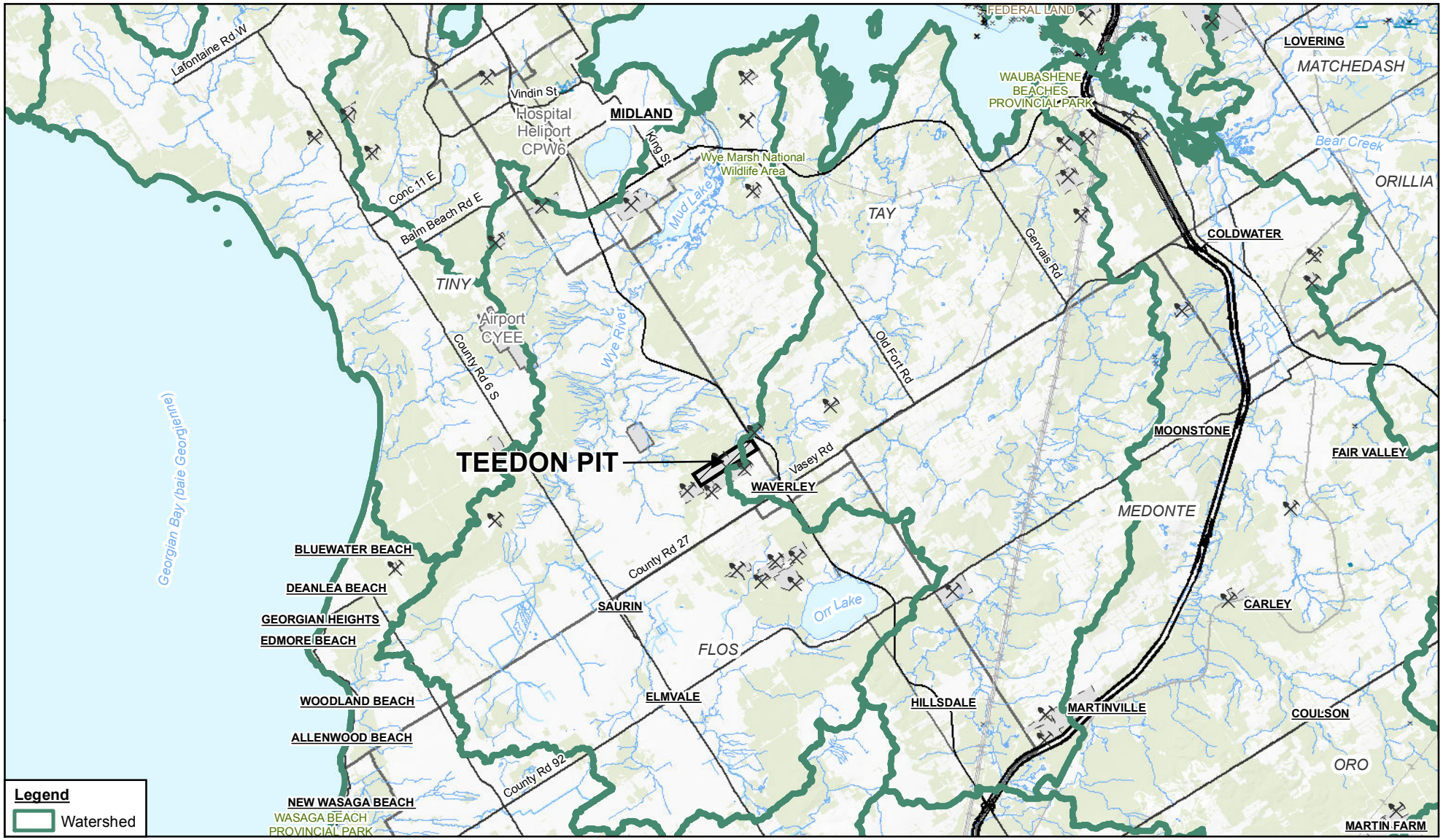
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

REGIONAL PHYSIOGRAPHY

FIGURE 3.1

GIS File: Q:\GIS\PROJECTS\11155000s\11155365\Layouts\001\11155365-00(001)GIS-WA002.mxd



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0 1,600 3,200 4,800
Meters

Coordinate System:
NAD 1983 UTM Zone 17N

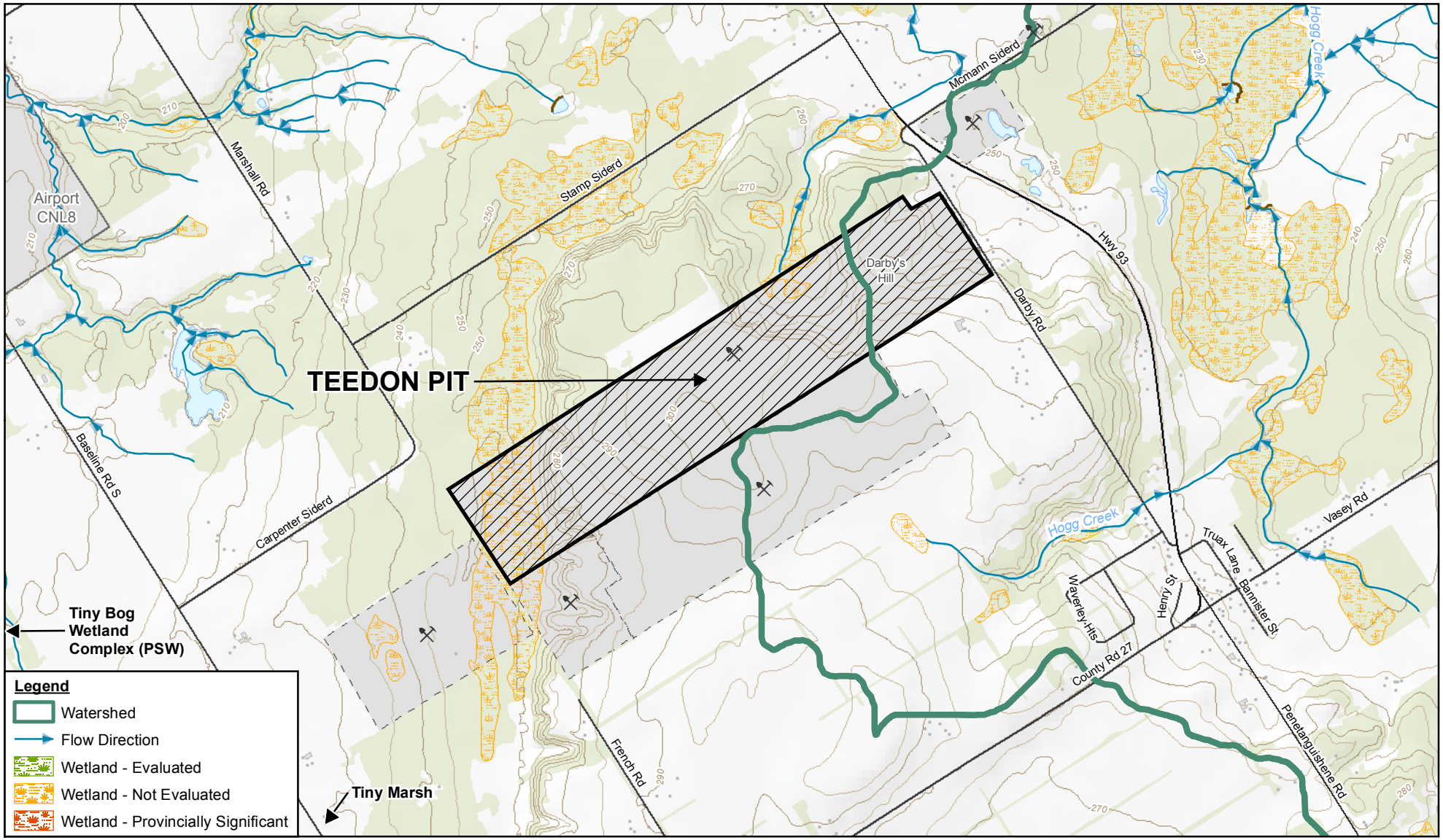
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

REGIONAL WATERSHED BOUNDARIES

FIGURE 3.2

GIS File: Q:\GIS\PROJECTS\11155000s\11155365\Layouts\001\11155365-00(001)GIS-WA006.mxd



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0 200 400 600
Meters

Coordinate System:
NAD 1983 UTM Zone 17N

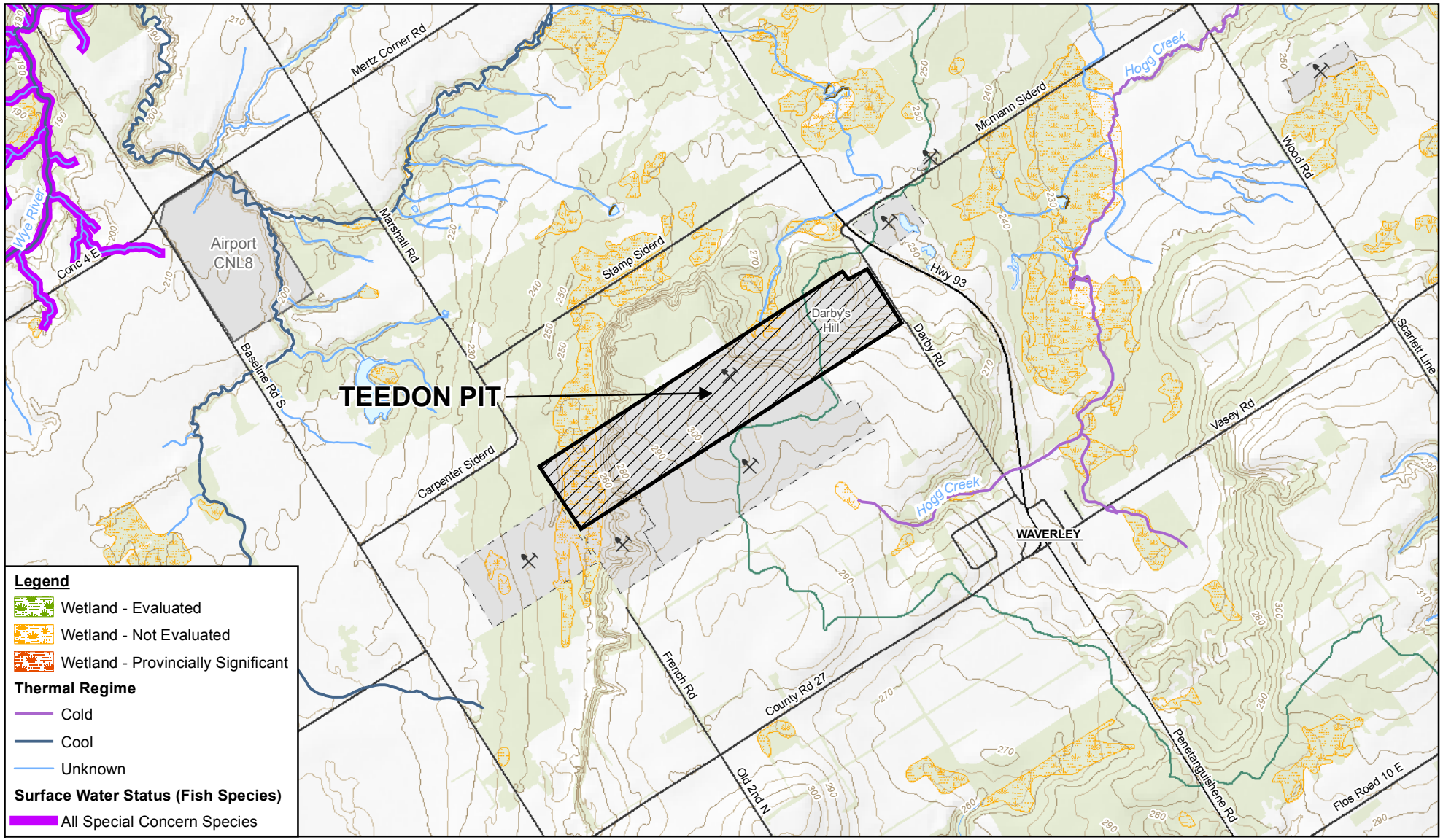
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

DRAINAGE AND LOCAL SURFACE WATER FEATURES

FIGURE 3.3

GIS File: Q:\GIS\PROJECTS\11155000s\11155365\Layouts\001\11155365-00(001)GIS-WA010.mxd



Source: MNRF NRVIS, 2017. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2018;

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Meters

Coordinate System:
NAD 1983 UTM Zone 17N

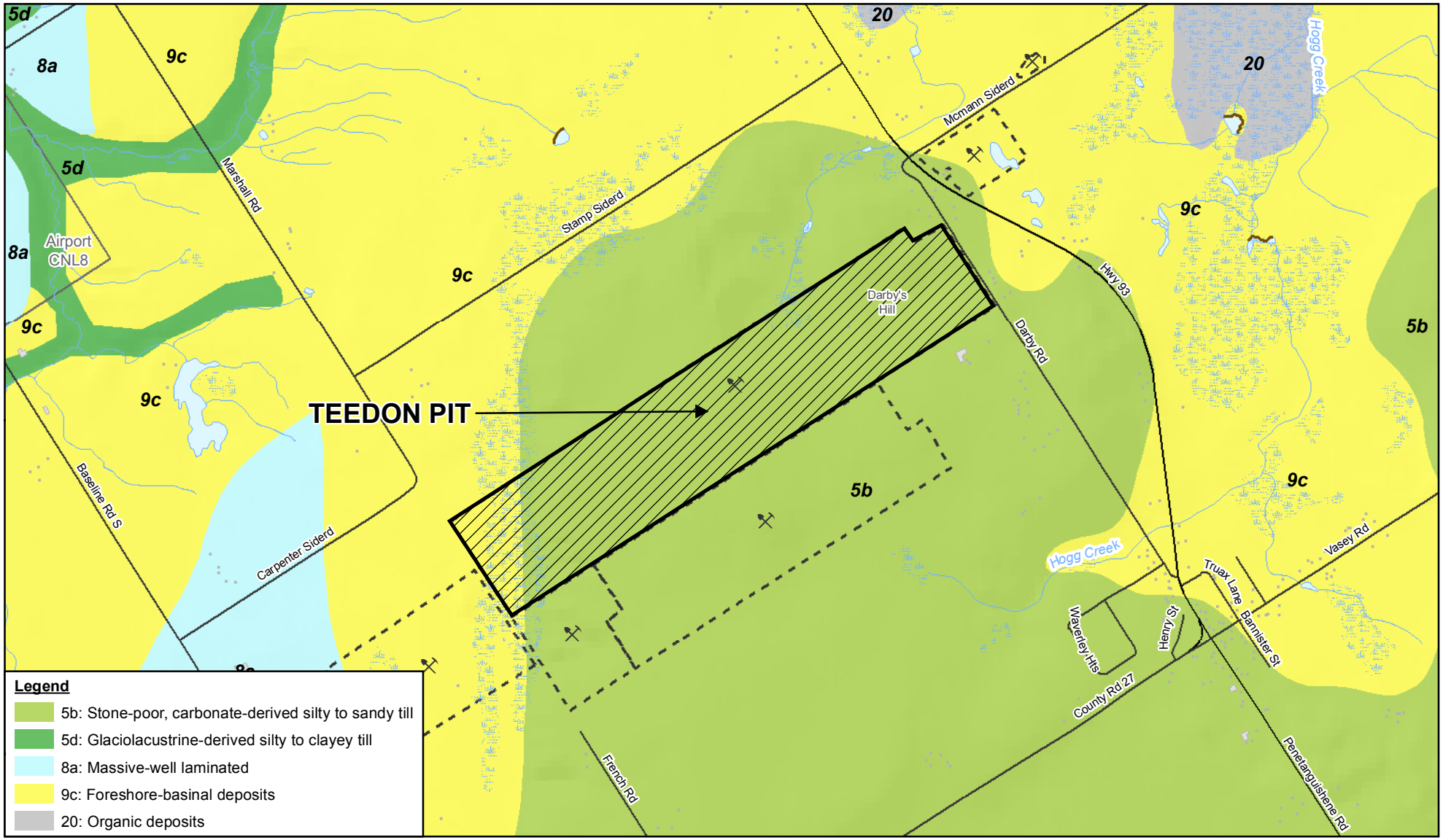
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

ENVIRONMENTALLY SENSITIVE AREAS

FIGURE 3.4

GIS File: Q:\GIS\PROJECTS\11155000s\11155365\Layouts\001\11155365-00(001)GIS-WA011.mxd



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Ontario Geological Survey 2003. Surficial geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release---Data 128.

0 200 400 600
Meters

Coordinate System:
NAD 1983 UTM Zone 17N

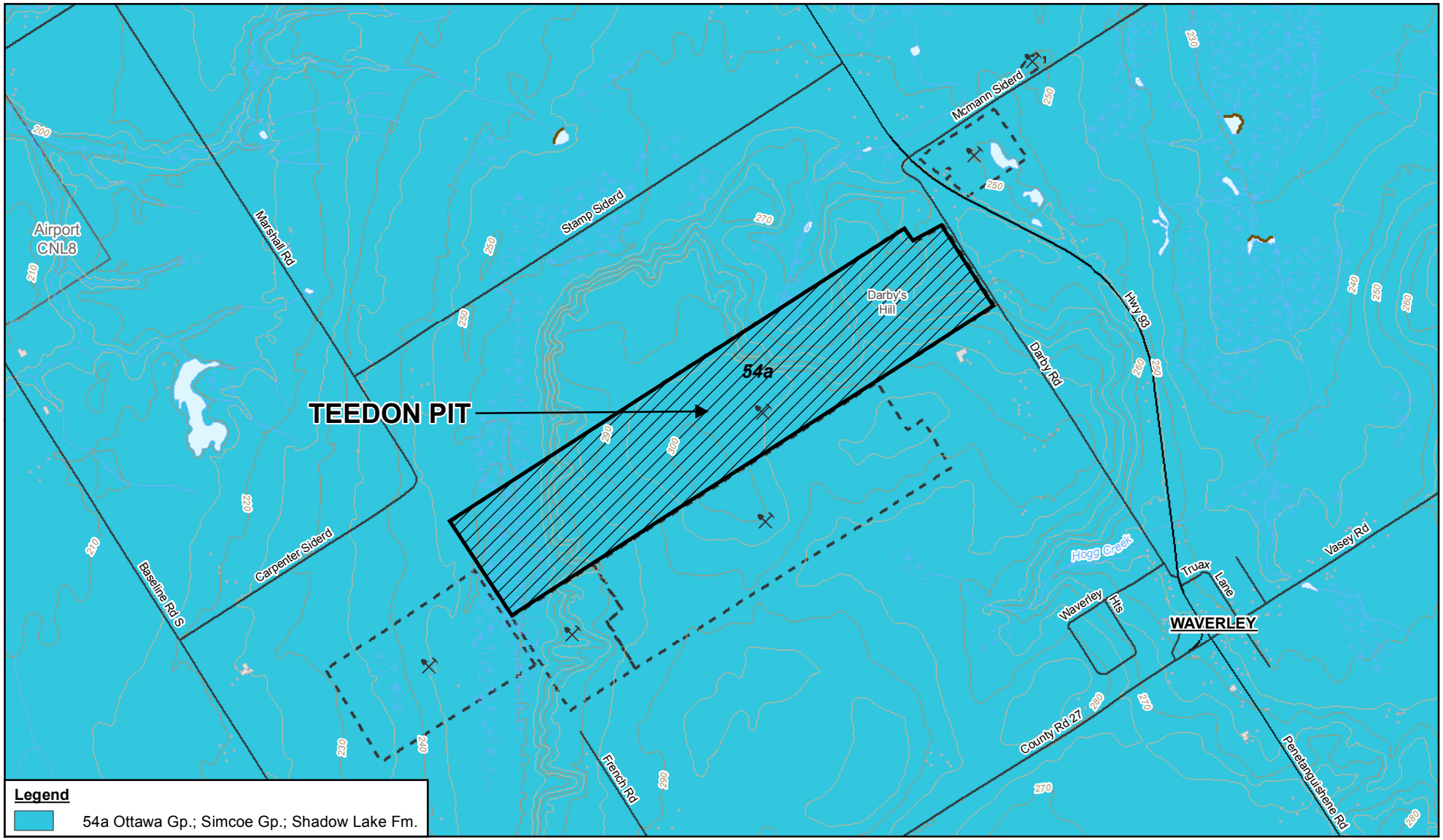
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

REGIONAL SURFICIAL GEOLOGY

FIGURE 3.5

GIS File: Q:\GIS\PROJECTS\11155000s\11155365\Layouts\001\11155365-00(001)GIS-WA003.mxd



Source: MNRF NRVIS, 2017. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2018;
Ontario Geological Survey 2006. 1:250 000 Scale Bedrock Geology of Ontario; Ontario Geological Survey, Miscellaneous Release---Data 126-revised. ISBN 0-7794-5172-4.

0 200 400 600
Meters

Coordinate System:
NAD 1983 UTM Zone 17N

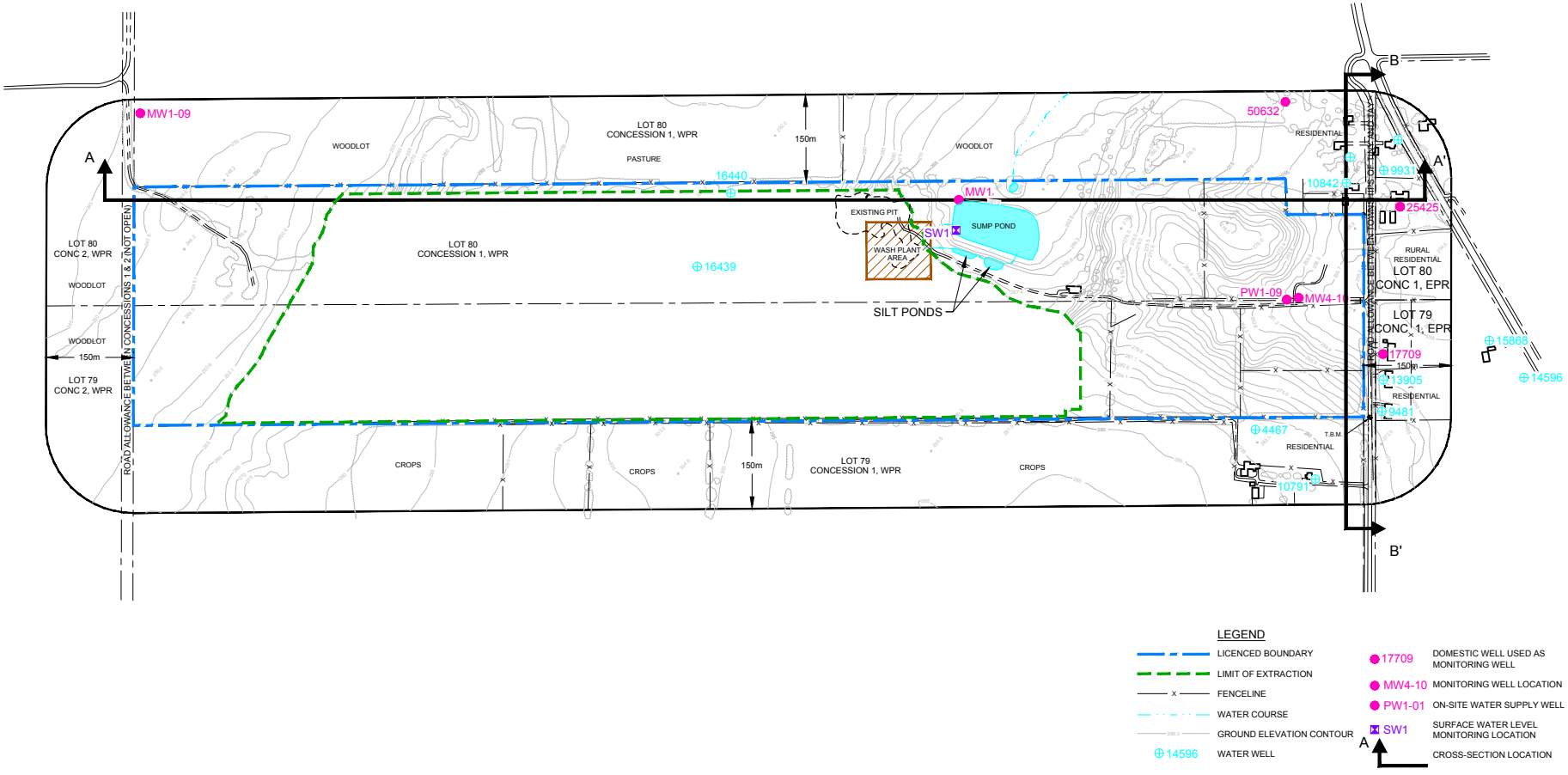
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

REGIONAL BEDROCK GEOLOGY

FIGURE 3.6

GIS File: Q:\GIS\PROJECTS\11155000s\11155365\Layouts\001\11155365-00(001)GIS-WA004.mxd



0 70 140 210m

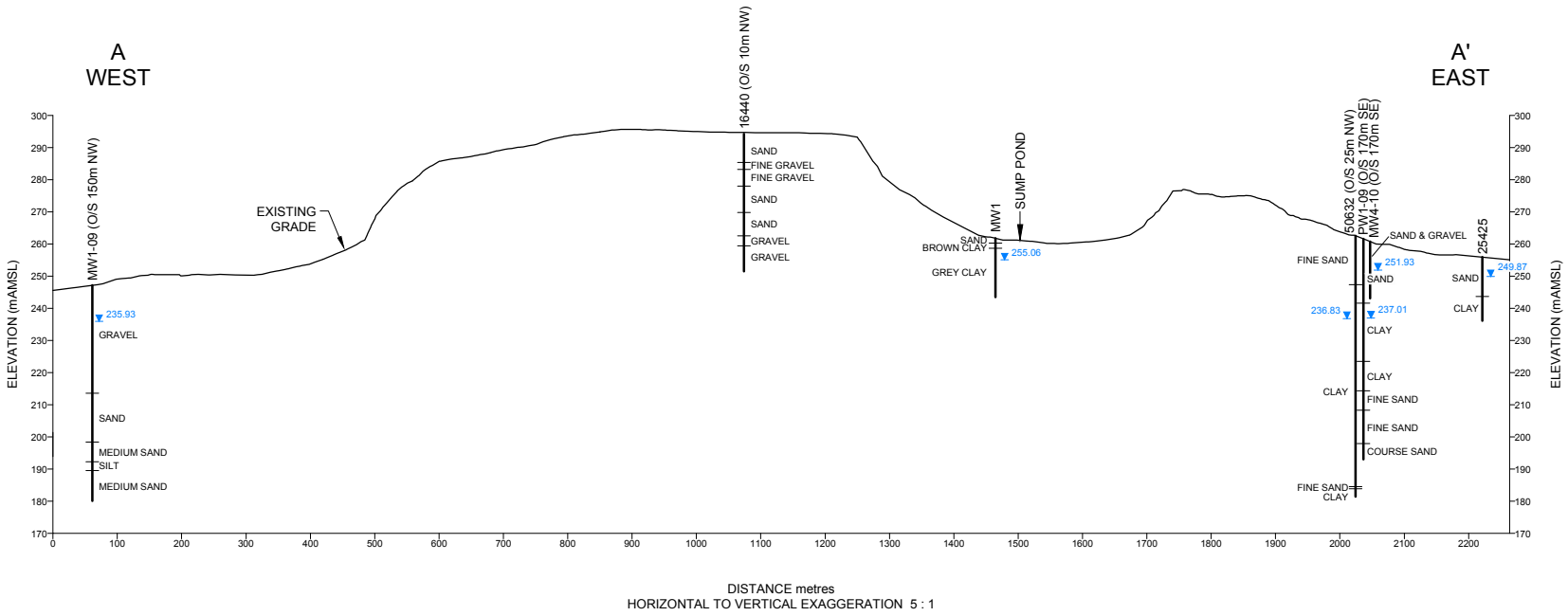
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 18, 2018

SITE HYDROGEOLOGIC
CROSS-SECTION LOCATION

FIGURE 3.7

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA004.dwg



LEGEND

255.06 GROUNDWATER ELEVATION MARCH 16, 2017

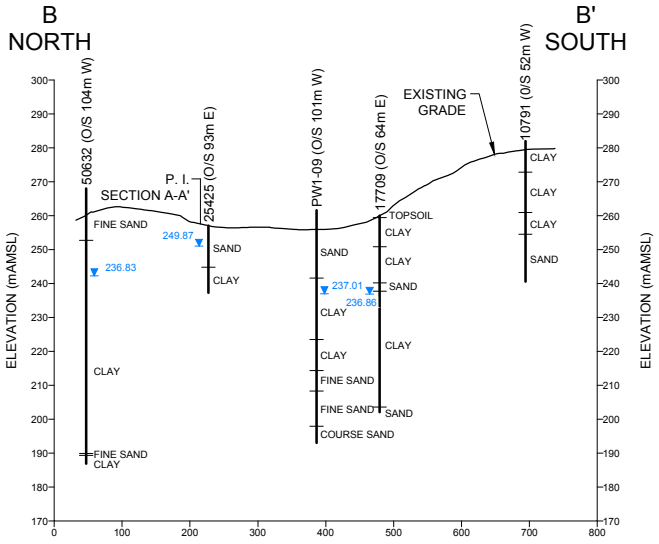
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

Jan 17, 2018

SITE HYDROGEOLOGIC CROSS-SECTION A-A'

FIGURE 3.8

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA005.dwg



LEGEND

▼237.01 GROUNDWATER ELEVATION MARCH 16, 2017

DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

Jan 17, 2018

SITE HYDROGEOLOGIC CROSS-SECTION B-B'

FIGURE 3.9

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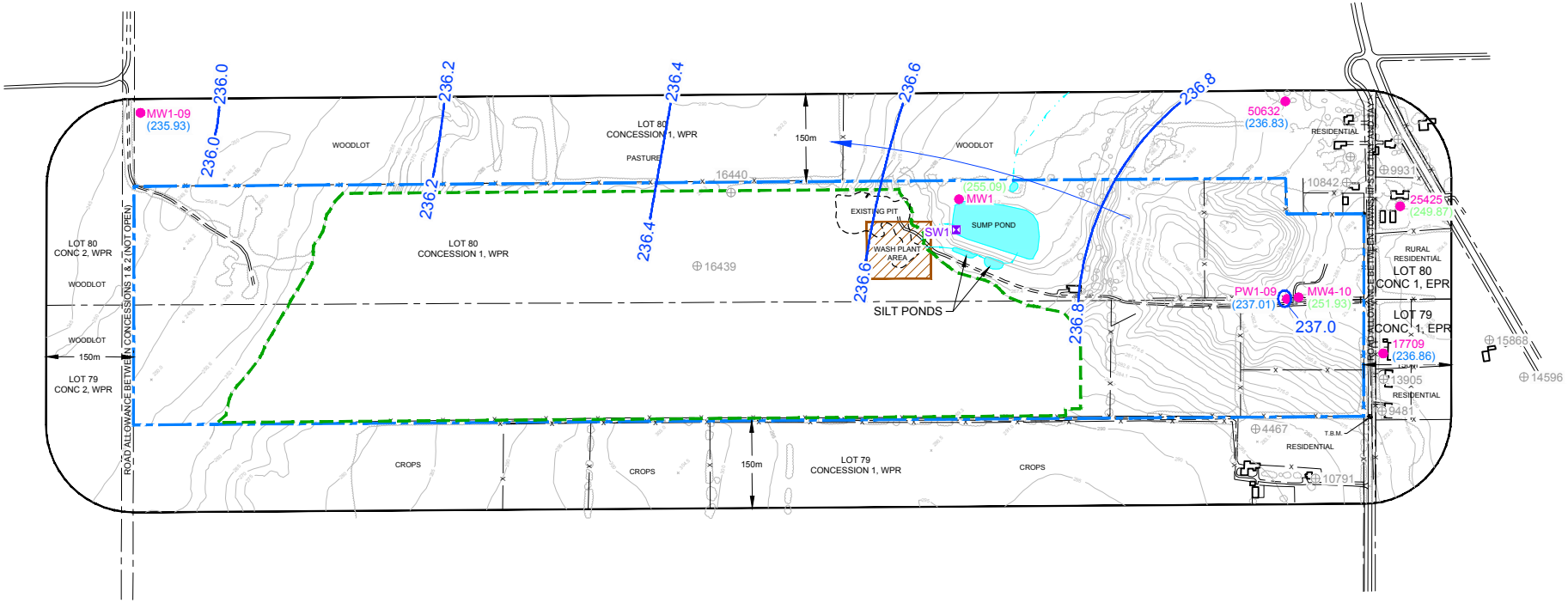


LEGEND

- LICENCED BOUNDARY
- LIMIT OF EXTRACTION
- FENCELINE
- WATER COURSE
- GROUND ELEVATION CONTOUR
- 14596 WATER WELL
- 17709 DOMESTIC WELL USED AS MONITORING WELL
- MW4-10 MONITORING WELL LOCATION
- PW1-01 ON-SITE WATER SUPPLY WELL
- SW1 SURFACE WATER LEVEL MONITORING LOCATION
- (236.86) DEEP GROUNDWATER ELEVATION (mAMSL), MARCH 16, 2017
- (251.93) SHALLOW GROUNDWATER ELEVATION (mAMSL), MARCH 16, 2017
- 236.4 GROUNDWATER ELEVATION CONTOUR (mAMSL)
- GROUNDWATER FLOW DIRECTION

* ONLY DEEP GROUNDWATER ELEVATIONS WERE CONTOURED

0 70 140 210m

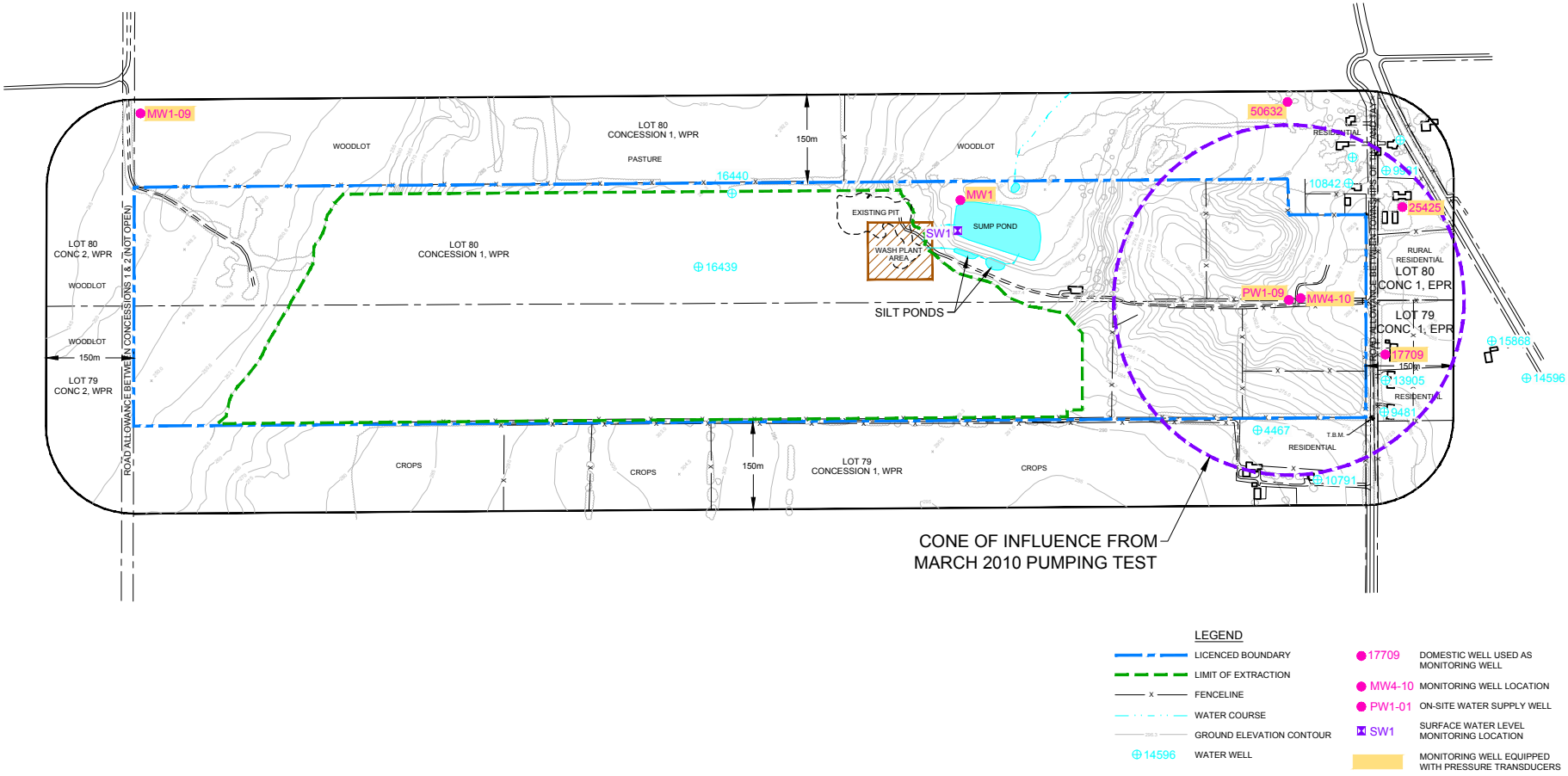
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

SITE DEEP GROUNDWATER ELEVATION CONTOURS
MARCH 16, 2017

FIGURE 3.10

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA008.dwg



0 70 140 210m

GHD

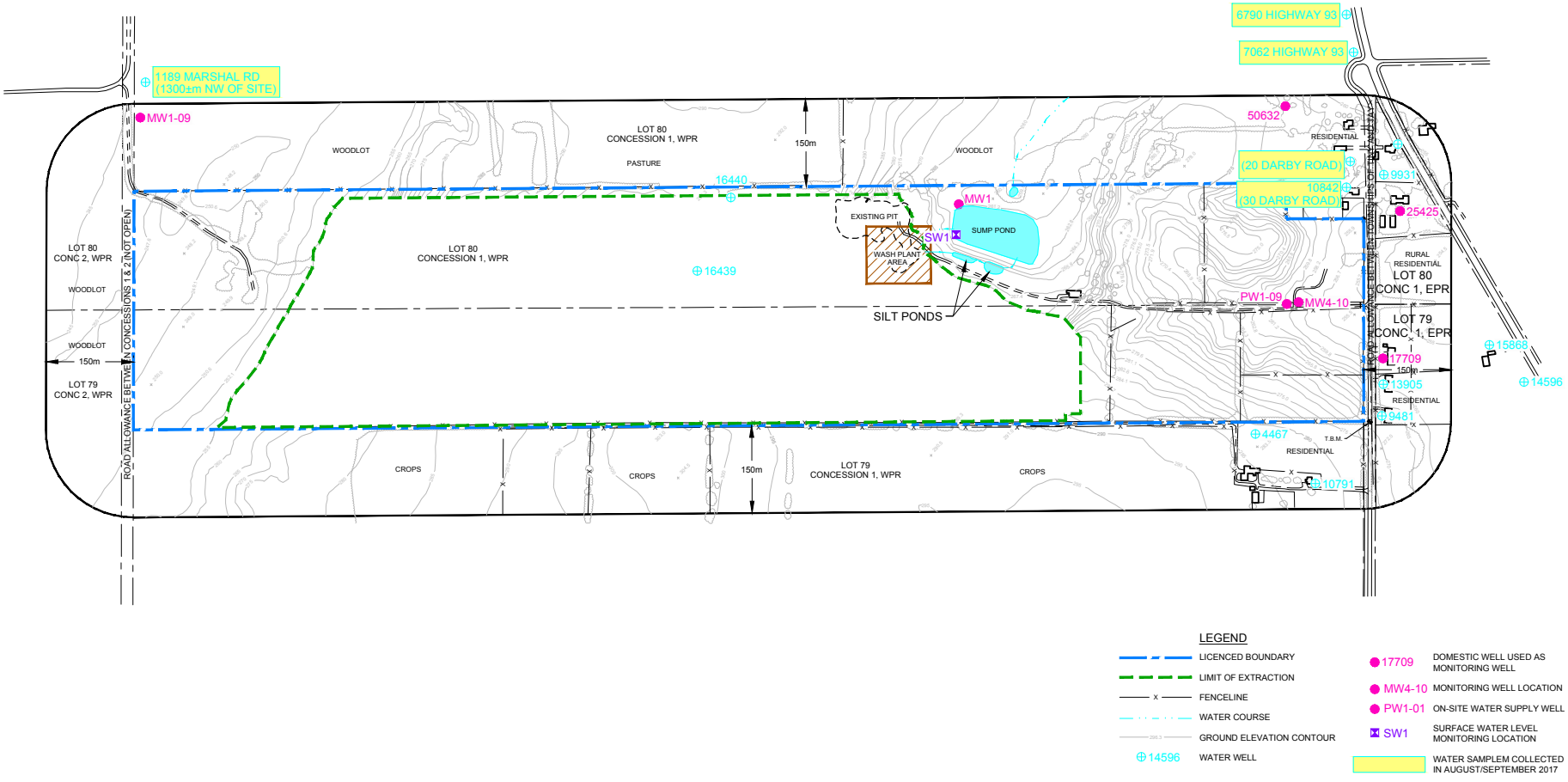
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

IMPACT ASSESSMENT - WATER QUANTITY

FIGURE 5.1

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA009.dwg



0 70 140 210m

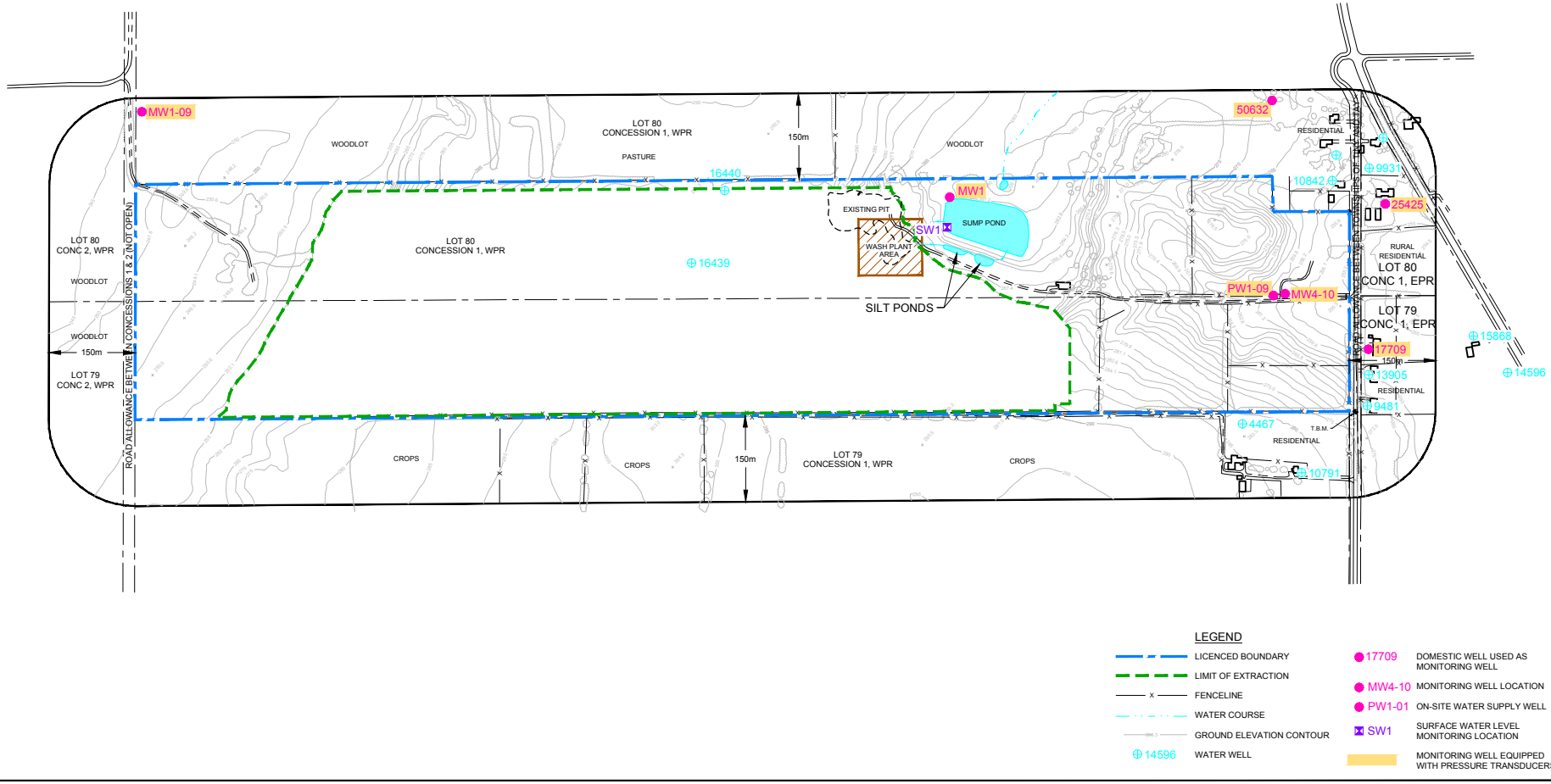
DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

IMPACT ASSESSMENT - WATER QUALITY

FIGURE 5.2

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA010.dwg



LEGEND

- LICENCED BOUNDARY
- LIMIT OF EXTRACTION
- FENCELINE
- WATER COURSE
- GROUND ELEVATION CONTOUR
- 14596 WATER WELL
- 17709 DOMESTIC WELL USED AS MONITORING WELL
- MW4-10 MONITORING WELL LOCATION
- PW1-01 ON-SITE WATER SUPPLY WELL
- SW1 SURFACE WATER LEVEL MONITORING LOCATION
- MONITORING WELL EQUIPPED WITH PRESSURE TRANSDUCERS

0 70 140 210m

GHD

DUFFERIN TEEDON PIT
TOWNSHIP OF TINY, COUNTY OF SIMCOE, ONTARIO

11155365-00
Jan 17, 2018

MONITORING PROGRAM LOCATIONS

FIGURE 6.1

CAD File: P:\drawings\11155000s\11155365\11155365-REPORTS\11155365-00(001)\11155365-00(001)GN\11155365-00(001)GN-WA011.dwg

Table 3.1

Monitoring Well Completion Details
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Monitoring Well	MOECC Well ID	Completion Date	Easting	Northing	Ground Elevation (m AMSL)	Reference Elevation (m AMSL)	Static Water Elevation (m AMSL)	Water Found Elevation (m AMSL)	Well Bottom Elevation (m AMSL)	Well Depth (m bgs)
PW1-09	7124734	4/29/2009	592343	4945072	260.00	260.62	237.7	202.1	191.4	67.7
MW1-09	7124729	6/2/2009	590513	4944298	247.50	247.96	236.0	235.3	180.4	67.1
MW1	7054134	11/8/2007	591776	4944922	263.00	263.20	254.8	NA	245.0	18.3
MW4-10	7150631	8/5/2010	592350	4945080	260.00	260.82	252.2	244.8	242.3	17.7
#50632	7150632	8/4/2010	592282	4945366	260.50	261.05	253.0	244.5	242.3	79.2
#25425	5725425	8/8/1989	592435	4945324	254.00	NA	252.2	242.4	234.2	19.8
#17709	5717709	9/23/1981	592539	4945093	256.00	256.40	234.2	199.6	198.0	57.9
#16440	5716440	NA	591461	4944573	293.00	NA	DRY	DRY	252.3	NA

Notes:

m AMSL	Metres above mean sea level.
m bgs	Metres below ground surface.
NA	Information not available.

Table 3.2

Summary of March 16, 2017 Groundwater Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Well Location	Ground Surface Elevation (m AMSL)	Reference Elevation (m AMSL)	Depth to Water (m bref)	March 16, 2017 Groundwater Elevation (m AMSL)
PW1-09	260.00	260.62	23.61	237.01
MW1-09	247.50	247.96	12.03	235.93
MW1	263.00	263.20	8.14	255.06
MW4-10	260.00	260.82	8.89	251.93
#50632	260.50	261.05	24.22	236.83
#25425	254.00	254.50	4.63	249.87
#17709	256.00	256.40	19.54	236.86

Notes:

m AMSL Metres above mean sea level.
m bref Metres below reference elevation.

Table 5.1

Summary of 2017 Groundwater Quality Results from Domestic Wells
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

		Ontario Drinking Water	20 Darby Road		30 Darby Road			1189 Marshall Rd		6970 Highway 93		7062 Highway 93	
Calculated Parameter	**Unit**	**Standards**	**Test 1 - Aug. 17**	**Test 2 - Sept. 8**	**Test 1 - Aug. 17**	**Test 2 - Sept. 8**	**Test 2 - Sept. 8 (post filter)**	**Test 1 - Aug. 17**	**Test 2 - Sept. 8**	**Test 1 - Aug. 17**	**Test 2 - Sept. 8**	**Test 1 - Aug. 17**	**Test 2 - Sept. 8**
Anion Sum	me/L	NS	4.23	3.80	3.56	3.60	3.66	4.28	4.21	5.18	5.13	5.91	5.69
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	NS	190	180	160	160	160	190	190	200	200	240	240
Calculated TDS	mg/L	500 (2)	220	200	190	190	190	220	220	270	270	300	300
Carb. Alkalinity (calc. as CaCO3)	mg/L	30 - 500 (1)	2.3	2.2	1.5	1.9	1.8	2.1	2.0	2.4	2.3	2.6	2.0
Cation Sum	me/L	NA	3.93	3.80	3.23	3.47	3.40	4.05	4.21	4.69	4.85	5.39	5.65
Hardness (CaCO3)	mg/L	80 - 100 (1)	190	180	150	170	160	190	200	200	210	250	260
Ion Balance (% Difference)	%	NS	3.73	0.0400	4.88	1.85	3.67	2.71	0.00	4.93	2.86	4.59	0.390
Langelier Index (@ 20C)	N/A	NS	0.779	0.753	0.559	0.685	0.673	0.669	0.680	0.757	0.772	0.903	0.809
Langelier Index (@ 4C)	N/A	NS	0.529	0.503	0.309	0.435	0.423	0.419	0.430	0.507	0.522	0.654	0.560
Saturation pH (@ 20C)	N/A	NS	7.33	7.38	7.44	7.40	7.40	7.40	7.38	7.34	7.32	7.15	7.14
Saturation pH (@ 4C)	N/A	NS	7.58	7.63	7.69	7.65	7.65	7.65	7.63	7.59	7.57	7.40	7.39
Inorganics													
Total Ammonia-N	mg/L	NS	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Conductivity	µmho/cm	NS	360	360	320	340	350	360	390	480	500	530	540
Dissolved Organic Carbon	mg/L	5.0 (2)	0.75	0.93	0.91	0.84	0.89	0.50	0.43	0.48	0.62	0.70	0.64
Orthophosphate (P)	mg/L	NS	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010
pH	pH	6.5 - 8.5 (1)	8.11	8.13	8.00	8.09	8.07	8.07	8.06	8.10	8.09	8.06	7.95
Dissolved Sulphate (SO4)	mg/L	500 (2)	15	11	8.9	7.7	7.7	21	21	12	12	13	9.5
Turbidity	NTU	NS	<0.1	<0.1	<0.1	<0.1	<0.1	3.5	2.1	0.2	0.1	<0.1	0.1
Alkalinity (Total as CaCO3)	mg/L	NS	190	180	160	160	170	190	190	200	200	240	240
Dissolved Chloride (Cl)	mg/L	250 (2)	1.6	<1.0	1.7	1.9	1.7	1.1	1.2	28	27	20	19
Nitrite (N)	mg/L	1.0	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	0.12	0.16	1.93	1.58	1.65	<0.10	<0.10	1.25	1.23	2.86	2.61
Nitrate + Nitrite (N)	mg/L	NS	0.12	0.16	1.93	1.58	1.65	<0.10	<0.10	1.25	1.23	2.86	2.61
Metals													
Dissolved Aluminum (Al)	µg/L	100.0 (1)	5.1	<5.0	5.6	<5.0	<5.0	100	300	<5.0	<5.0	<5.0	<5.0
Dissolved Antimony (Sb)	µg/L	6.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Arsenic (As)	µg/L	25.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	µg/L	1,000	26	25	9.9	12	11	88	94	41	42	44	48
Dissolved Beryllium (Be)	µg/L	NS	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Boron (B)	µg/L	NS	<10	<10	<10	<10	<10	10	10	22	23	11	12
Dissolved Cadmium (Cd)	µg/L	5.0	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	µg/L	NS	59,000	58,000	55,000	59,000	58,000	52,000	55,000	57,000	62,000	76,000	80,000
Dissolved Chromium (Cr)	µg/L	50.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Cobalt (Co)	µg/L	NS	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Copper (Cu)	µg/L	1.000 (2)	5.2	3.6	12	9.1	15	<1.0	<1.0	5.5	2.8	6.9	12
Dissolved Iron (Fe)	µg/L	300.0 (2)	<100	<100	<100	<100	<100	130	470	<100	<100	<100	<100
Dissolved Lead (Pb)	µg/L	10.0	<0.50	<0.50	1.4	0.77	0.92	<0.50	<0.50	<0.50	<0.50	<0.50	0.74
Dissolved Magnesium (Mg)	µg/L	NS	10,000	9,400	4,100	4,600	4,400	15,000	15,000	14,000	14,000	14,000	15,000
Dissolved Manganese (Mn)	µg/L	50.0	<2.0	<2.0	<2.0	<2.0	<2.0	15	29	<2.0	<2.0	<2.0	<2.0
Dissolved Molybdenum (Mo)	µg/L	NS	<0.50	<0.50	<0.50	<0.50	<0.50	0.87	0.74	0.57	0.51	<0.50	<0.50
Dissolved Nickel (Ni)	µg/L	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Phosphorus (P)	µg/L	NS	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	µg/L	NS	1,100	1,100	610	670	680	2,200	2,200	1,500	1,500	1,200	1,200
Dissolved Selenium (Se)	µg/L	50.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Silicon (Si)	µg/L	NS	5,100	5,400	4,500	4,700	4,600	5,200	5,500	5,000	5,200	4,700	5,000
Dissolved Silver (Ag)	µg/L	NS	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	µg/L	200,000 (2)	2,500	2,600	3,200	3,400	3,300	4,200	3,900	14,000	14,000	9,500	9,400
Dissolved Strontium (Sr)	µg/L	NS	84	80	93	100	96	150	150	230	230	130	130
Dissolved Thallium (Tl)	µg/L	NS	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Titanium (Ti)	µg/L	NS	<5.0	<5.0	<5.0	<5.0	<5.0	10	26	<5.0	<5.0	<5.0	<5.0
Dissolved Uranium (U)	µg/L	20.0	0.22	0.17	<0.10	<0.10	<0.10	1.3	1.2	1.2	1.2	0.24	0.24
Dissolved Vanadium (V)	µg/L	NS	1.6	1.5	0.82	0.86	0.76	<0.50	1.0	2.0	2.1	0.72	0.75
Dissolved Zinc (Zn)	µg/L	5,000	38	12	170	150	160	<5.0	<5.0	16	16	6.8	12

Notes:

(1) Operational Guideline
(2) Aesthetic Objective
N/A Not applicable
NS No Standard, Objective, or Guideline
☐ Exceeds Standard, Objective, or Guideline

Appendices

Appendix A
Existing Permit-To-Take-Water

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED PERMIT TO TAKE WATER

Surface and Ground Water
NUMBER 5003-APFH26

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

CRH Canada Group Inc.
2300 Steeles Avenue West, Floor 4
Concord, Ontario, L4K 5X6
Canada

For the water taking from: PW1-09, Wash Pond

Located at: 90 Darby Rd Lots 79 and 80 Concession 1 Original Township of Tiny
Tiny, County of Simcoe

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment and Climate Change.

(d) "District Office" means the Barrie District Office.

(e) "Permit" means this Permit to Take Water No. 5003-APFH26 including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.

(f) "Permit Holder" means CRH Canada Group Inc..

(g) "OWRA " means the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated April 29, 2010 and signed by Robert E. Graham, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals
The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and

the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **April 30, 2018**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	PW1-09	Well Drilled	Aggregate Washing	Industrial	1,136	24	1,635,840	210	17 592343 4945072
2	Wash Pond	Pond Dugout	Aggregate Washing	Industrial	7,274	12	5,237,280	210	17 591900 4944960
						Total Taking:	6,873,120		

4. Monitoring

4.1 The Permit Holder shall install and maintain flow meters on each source listed in Table A. Meter readings for each source shall be recorded daily and available for inspection by a Provincial Officer upon his or her request.

4.2 The Permit Holder shall install and maintain a continuous water level recorder within production well, PW1-09 prior to the start of any taking of water from that source. Additional water level recorders shall be installed and maintained in at least one onsite well of comparable depth to PW1-09 and one onsite well terminating within the shallower aquifer unit underlying this site. Data collected shall be available to Ministry staff at any time upon request.

4.3 Any request for an amendment or renewal of this Permit shall be accompanied by a report by a Qualified Person (P.Geo. or equivalent) assessing all data collected under the Conditions of this Permit. The report shall include an electronic version of the monitoring data collected.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Surface-Water Takings

The taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, as amended, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

a. The name of the appellant;
b. The address of the appellant;
c. The Permit to Take Water number;
d. The date of the Permit to Take Water;
e. The name of the Director;
f. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 326-5370
Email: ERTTribunalsecretary@ontario.ca

AND

The Director, Section 34.1, Ministry of the Environment and Climate Change
8th Floor
5775 Yonge St
Toronto ON M2M 4J1
Fax: (416) 325-6347

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by Telephone at	by Fax at	by e-mail at
(416) 212-6349	(416) 326-5370	www.ert.gov.on.ca
Toll Free 1(866) 448-2248	Toll Free 1(844) 213-3474	

This Permit cancels and replaces Permit Number 4317-87CNZN, issued on 2010/07/23.

Dated at Toronto this 14th day of August, 2017.

Karoly Tajnay
Director, Section 34.1
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule “A” forms part of Permit To Take Water 5003-APFH26, dated August 14, 2017.

1. Permit amendment application signed by Robert E. Graham on April 29, 2010.

2. Alpha Environmental Services Inc. report entitled "Aggregate Wash Water Supply Pumping Test Results, Teedon Pit, Waverly Ontario" dated April 2010.

3. E Mail clarification on proposed site monitors locations from Ross Campbell to MOE / MNR dated July 19, 2010.

4. Submission for company ownership change from Cedarhurst Quarries & Crushing Limited to CRH Canada Group Inc. dated June 23, 2017.

Appendix B
Permit-To-Take-Water Renewal Application Forms and Schedule for Conservation Measures

Application for Permit to Take Water

General Information and Instructions

General:

Information requested in this form is collected under the authority of the *Ontario Water Resources Act*, R.S.O. 1990 (OWRA) and the *Environmental Bill of Rights*, C. 28, Statutes of Ontario, 1993, (EBR) and will be used to evaluate applications for a Permit to Take Water as required by Section 34 (OWRA).

Instructions:

1. Applicants are responsible for ensuring that they complete the most recent application form. When completing this form, please refer to the "Guide to Permit to Take Water Application Form" (referred to as the Guide). Application forms and supporting documentation are available from your local Regional or District Office of the Ministry of the Environment and Climate Change, and on the Permit to Take Water program page at https://www.ontario.ca/page/permits-take-water.
2. Questions regarding completion and submission of this application should be directed to local Regional Office of the Ministry of the Environment and Climate Change. Contact information for these offices is available in the Guide or on the Ministry of the Environment and Climate Change website at http://www.infogo.gov.on.ca/infogo/#orgProfile/-181/en.
3. This form must be completed with respect to all the requirements of the Guide for it to be considered an application for approval. **Incomplete applications will be returned to the applicant.**
4. A complete application consists of:

   (1) a completed, signed application form

   (2) all required supporting information identified in this form and the Guide, and

   (3) a certified cheque or money order, in Canadian funds, made payable to the **Ontario Minister of Finance** for the application fee when required. Payment may also be made by Visa or MasterCard.

   The Ministry may require additional information during the technical review of any application initially accepted as complete.
5. The original application, along with supporting information and the application fee should be sent to:

   Ministry of the Environment and Climate Change,
   Attention: Permit to Take Water Director
   Director, Environmental Approvals Access and Service Integration Branch,
   135 St. Clair Avenue West
   1st Floor
   Toronto, Ontario M4V 1P5
6. Information contained in this application form is not considered confidential and will be made available to the public upon request. Information submitted as supporting information may be claimed as confidential but will be subject to the *Freedom of Information and Protection of Privacy Act* (FOIPPA) and the EBR. If you do not claim confidentiality at the time of submitting the information, the Ministry of the Environment and Climate Change may make the information available to the public without further notice to you. If you are identifying confidential material, please indicate why you believe the information is confidential.

Fields marked with an asterisk (*) are mandatory.

1. Permit Administration

Please indicate if this is an application for a:

- [ ] New Permit
- [ ] Amendment to Permit (attach a photocopy of permit)
- [x] Renewal of Permit (attach a photocopy of permit)

2. Classification

Classification	Fee Required	No Fee Required		Water Taking Source(s)
[x] Category 1	[x] $750	[ ] Reason		[ ] Surface Water
[ ] Category 2	[ ] $750	[ ] Reason		[ ] Groundwater
[ ] Category 3	[ ] $3,000	[ ] Reason		[x] Combined (surface and ground)

3. Applicant Information

Applicant Name
(legal name of individual or organization as evidenced by legal documents such as a copy of Driver's Licence or Master Business Licence)
CRH Canada Group Inc.

Business Identification Number
1171462923

Business Name
(the name under which the entity is operating or trading if different from the Applicant Name - also referred to as trade name)
Dufferin Aggregates

Applicant Type

- [x] Corporation
- [ ] Individual
- [ ] Partnership
- [ ] Sole Proprietor
- [ ] Federal Government
- [ ] Municipal Government
- [ ] Provincial Government
- [ ] Other (describe):

North American Industry Classification System (NAICS) Code
212321

4. Applicant Physical Address

Civic Address - Street information (street number/name/type/direction/unit/suite/emergency 911 location number and street)

Unit Number	Street Number	Street Name	City/Town
	2300	Steeles Avenue West, 4th Floor	Concord

County/District	Province/State	Country	Postal Code/Zip Code
York	Ontario	Canada	L4K 5X6

Telephone Number (including area code)
905-761-7500

Fax Number (including area code)
905-761-7505

Email Address
kevin.mitchell@ca.crh.com

5. Applicant Mailing Address

Same as Applicant Physical Address ? [x] Yes [ ] No (If no, complete below)

Civic Address - Street information (street number/name/type/direction/unit/suite/emergency 911 location number and street/ P.O.Box/Rural Route Number)

Unit Number	Street Number	Street Name	PO Box	Rural Route

City/Town	County/District

Province/State	Country	Postal Code/Zip Code

6. Project Technical Information Contact

Same as Applicant ? ☐ Yes ☑ No (If no, complete below)

Name	Company
Gary Lagos	GHD

Address Information

Same as Applicant Mailing Address ? ☐ Yes ☑ No (If no, please provide technical information contact mailing address below)

Civic Address - Street information (street number/name/type/direction/unit/suite/emergency 911 location number and street/ P.O.Box/Rural Route Number)

Unit Number	Street Number	Street Name	PO Box	Rural Route
	455	Phillip Street		

City/Town	County/District	
Waterloo	Waterloo	
Province/State	**Country**	**Postal Code/Zip Code**
Ontario	Canada	N2L 3X2

Telephone Number (including area code)	Fax Number (including area code)
519-884-0510 ext. 3411	519-725-1158

Email Address
gary.lagos@ghd.com

7. Source Information

Note: Source Information must be provided separately for each source. Please complete and submit multiple copies of this Source Information section if your application includes more than one source.

Number of Water Taking Sources Included in this Application (do not include domestic uses that do not require a permit)

Total Number of Wells	Total Number of Lake Intakes	Total Number of Ponds	Total Number of Watercourse Intakes
1	0	1	0

Watercourse 1

Watercourse Name	Tributary to

Does flow in the watercourse stop at any time during the year? ☐ Yes ☐ No

If yes ▼

During which months?	For what period of time?

Do you move/relocate the water intake (pump)? ☐ Yes ☐ No

► If yes, please provide primary and secondary locations on attached map

Source Location Information

Civic Address - Street information (street number/name/type/direction/unit/suite/emergency 911 location number and street)

Unit Number	Street Number	Street Name	PO Box

Lot	Concession	Part	Reference Plan

City/Town	County/District	Original Geographic Township

Province	Postal Code

Geographic (GPS) Coordinates (to be provided in Datum NAD83)

Method of Collection	Accuracy Estimate	
UTM Zone	**Easting**	**Northing**

Is the Applicant the owner of the site where water taking will occur? ☐ Yes ☐ No

► If no, attach the owner's name, address and a signed letter granting consent for the applicant to access the water taking location

Is the site where water taking will occur located in an area of development control as defined by the *Niagara Escarpment Planning & Development Act*?

☐ Yes ☐ No

Is the site where water taking will occur located on the Oak Ridges Moraine Conservation Area as defined by the Oak Ridges Moraine Conservation Plan (a regulation made under the *Oak Ridges Moraine Conservation Act*)?

☐ Yes ☐ No

Are you aware of any complaints or impacts resulting from water takings at the site? ☐ Yes ☐ No

If yes, please describe

Will water from the site be packaged in a container (bottled water, tanks)? ☐ Yes ☐ No

► If yes, what size of containers? ☐ greater than 20 litres ☐ 20 litres or less

Are wells located within 500 m of the site where water taking will occur? ☐ Yes ☐ No

If no, what is the distance to nearest well?

Is municipal water available to all dwellings within 500m of the site where water taking will occur?

☐ Yes ☐ No ☐ Unknown

Estimated start date of water taking (yyyy/mm/dd)

Water taking to extend for a period of: _____ ☐ days ☐ weeks ☐ months ☐ years ☐ indefinite

Well 1

Well Name / Identifier	Water Well Record Number
PW1-09	7124734

Name of property owner at time of well construction (If Water Well Record Number is not available)
Cedarhurst Quarries & Crushing Ltd.

Has the well been deepened? ☐ Yes ☑ No

Type of Well: ☑ Drilled ☐ Bored ☐ Dug ☐ Driven or Jetted (sandpoints/wellpoints)

Can you measure the depth to water in this well? ☑ Yes ☐ No

If yes ▼

what is the depth to static water level?	Date Measured (yyyy/mm/dd)
23.15 m btor	2017/11/01

Has a pumping test been done? ☑ Yes ☐ No

► If yes, please attach report

Source Location Information

Civic Address - Street information (street number/name/type/direction/unit/suite/emergency 911 location number and street)

Unit Number	Street Number	Street Name	PO Box
	40	Darby Road	

Lot	Concession	Part	Reference Plan
79 and 80	1		

City/Town	County/District	Original Geographic Township
Wyebridge	Simcoe	Tiny

Province	Postal Code
Ontario	L0K 2E1

Geographic (GPS) Coordinates (to be provided in Datum NAD83)

Method of Collection	Accuracy Estimate
Map	1 - 10 metres

UTM Zone	Easting	Northing
17	592343	4945072

Is the Applicant the owner of the site where water taking will occur? ☑ Yes ☐ No

Is the site where water taking will occur located in an area of development control as defined by the *Niagara Escarpment Planning & Development Act*?

☐ Yes ☑ No

Is the site where water taking will occur located on the Oak Ridges Moraine Conservation Area as defined by the Oak Ridges Moraine Conservation Plan (a regulation made under the *Oak Ridges Moraine Conservation Act*)?

☐ Yes ☑ No

Are you aware of any complaints or impacts resulting from water takings at the site? ☑ Yes ☐ No

If yes, please describe

Domestic well complaints regarding silt in the wells. MOECC investigation in 2015 concluded not from Teedon Pit water takings at the Site. Documentation in Appendix C of the Report.

Will water from the site be packaged in a container (bottled water, tanks)? ☐ Yes ☑ No

Are wells located within 500 m of the site where water taking will occur? ☑ Yes ☐ No

Is municipal water available to all dwellings within 500m of the site where water taking will occur?

☐ Yes ☑ No ☐ Unknown

Estimated start date of water taking (yyyy/mm/dd)

2018/03/30

Water taking to extend for a period of: _____ ☐ days ☐ weeks ☐ months ☑ years ☐ indefinite

Lake 1

Lake Name

Source Location Information

Civic Address - Street information (street number/name/type/direction/unit/suite/emergency 911 location number and street)

Unit Number	Street Number	Street Name	PO Box

Lot	Concession	Part	Reference Plan

City/Town	County/District	Original Geographic Township

Province	Postal Code

Geographic (GPS) Coordinates (to be provided in Datum NAD83)

Method of Collection	Accuracy Estimate	

UTM Zone	Easting	Northing

Is the Applicant the owner of the site where water taking will occur? ☐ Yes ☐ No

► If no, attach the owner's name, address and a signed letter granting consent for the applicant to access the water taking location

Is the site where water taking will occur located in an area of development control as defined by the *Niagara Escarpment Planning & Development Act*?

☐ Yes ☐ No

Is the site where water taking will occur located on the Oak Ridges Moraine Conservation Area as defined by the Oak Ridges Moraine Conservation Plan (a regulation made under the *Oak Ridges Moraine Conservation Act*)?

☐ Yes ☐ No

Are you aware of any complaints or impacts resulting from water takings at the site? ☐ Yes ☐ No

If yes, please describe

Will water from the site be packaged in a container (bottled water, tanks)? ☐ Yes ☐ No

► If yes, what size of containers? ☐ greater than 20 litres ☐ 20 litres or less

Are wells located within 500 m of the site where water taking will occur? ☐ Yes ☐ No

If no, what is the distance to nearest well?

Is municipal water available to all dwellings within 500m of the site where water taking will occur?

☐ Yes ☐ No ☐ Unknown

Estimated start date of water taking (yyyy/mm/dd)

Water taking to extend for a period of: _____ ☐ days ☐ weeks ☐ months ☐ years ☐ indefinite

Pond/Reservoir 1

Pond Name / Identifier
Wash Pond

Was the pond constructed (man made)? ☑ Yes ☐ No

If yes, please provide date of construction (yyyy/mm/dd)
2009/03/01

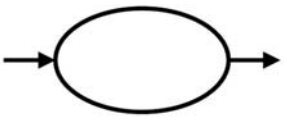
Pond Size

Average Length	Average Width	Average Depth of Water	Maximum Depth of Water	Approximate Volume of Pond
166 m	71 m	6.6	6.9	47,106 cubic metres

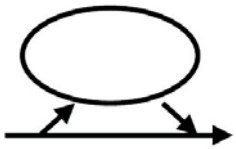
Pond Type

Select the diagram that most accurately resembles your pond:

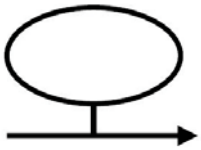
☐ online



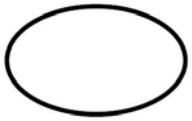
☐ by-pass



☐ connected



☑ dugout



Source of pond water (select all that apply)

☑ Seepage / springs / groundwater

☑ Surface water runoff (including tile drains, does not include watercourse or open channel)

☑ Pumped water (if water is pumped into a pond, complete section information for source from which water is pumped - i.e., well, lake or watercourse)

☐ Flowing water (watercourse, open drains, ditches, etc.)

If “flowing water”,

1. Does water flow into the pond (inflow)? ☐ Yes ☐ No

   If yes, is there a structure to regulate the inflow? ☐ Yes ☐ No

   If yes, describe

2. Does water flow out of the pond (outflow)? ☐ Yes ☐ No

   If yes, is there a structure to regulate the inflow? ☐ Yes ☐ No

   If yes, describe

Source Location Information

Civic Address - Street information (street number/name/type/direction/unit/suite/emergency 911 location number and street)

Unit Number	Street Number	Street Name	PO Box
	40	Darby Road	

Lot	Concession	Part	Reference Plan
79 and 80	1		

City/Town	County/District	Original Geographic Township
Wyebridge	Simcoe	Tiny

Province	Postal Code
Ontario	L0K 2E1

Geographic (GPS) Coordinates (to be provided in Datum NAD83)

Method of Collection	Accuracy Estimate
Map	1 - 10 metres

UTM Zone	Easting	Northing
17	591900	4944960

Is the Applicant the owner of the site where water taking will occur? ☑ Yes ☐ No

Is the site where water taking will occur located in an area of development control as defined by the *Niagara Escarpment Planning & Development Act*?

☐ Yes ☑ No

Is the site where water taking will occur located on the Oak Ridges Moraine Conservation Area as defined by the Oak Ridges Moraine Conservation Plan (a regulation made under the *Oak Ridges Moraine Conservation Act*)?

☐ Yes ☑ No

Are you aware of any complaints or impacts resulting from water takings at the site? ☑ Yes ☐ No

If yes, please describe

Domestic well complaints regarding silt in the wells. MOECC investigation in 2015 concluded not from Teedon Pit water takings at the Site. Documentation in Appendix C of the Report.

Will water from the site be packaged in a container (bottled water, tanks)? ☐ Yes ☑ No

Are wells located within 500 m of the site where water taking will occur? ☑ Yes ☐ No

Is municipal water available to all dwellings within 500m of the site where water taking will occur?

☐ Yes ☑ No ☐ Unknown

Estimated start date of water taking (yyyy/mm/dd)

2018/03/30

Water taking to extend for a period of: _____ ☐ days ☐ weeks ☐ months ☑ years ☐ indefinite

Is activity subject to the *Environmental Assessment Act*? ☐ Yes ☑ No

List any public consultation/notification that has occurred related to the proposed water taking (i.e., public hearings, notification of First Nations, etc.)

8. Public Consultation / Environmental Bill of Rights (EBR) Requirements

Is this application for water taking to extend for a period of less than one year? ☐ Yes ☑ No

► If no, this application may be subject to posting and/or public consultation requirements under the Environmental Bill of Rights. For more information, please refer to the Guide.

Is this application for agricultural use or aquaculture? ☐ Yes ☑ No

► If no, this application may be subject to posting and/or public consultation requirements under the Environmental Bill of Rights. For more information, please refer to the Guide.

9. Water Taking Volumes

Purpose options for Water Taking

Purpose Category	Specific Purpose
Agriculture	irrigation of (includes frost protection): field and pasture crops; fruit orchard; market garden/flowers; nursery; sod farm; tender fruits; tobacco, other (must specify)
Commercial	aquaculture, bottled water, golf course irrigation, mall/business; snowmaking, other (must specify)
Construction	Dredging, road building, other (must specify)
Dewatering	pits and quarries; construction; other (must specify)
Industrial	aggregate washing, brewing/soft drinks, cooling water, food processing, manufacturing; pipeline testing; power generation; other (must specify)
Institutional	school, hospital, other (must specify)
Recreation	aesthetic, fish pond, other (must specify)
Remediation	groundwater; other (must specify)
Water Supply	campground, communal, municipal, other (must specify)
Miscellaneous	dam/reservoir, heat pump, pumping test, other (must specify)

Water Source Information – Table A (Units in Litres)

Source Name	Purpose Category (select from “purpose category" column in table above)	Specific Purpose (select from “specific purpose” column in table above)	Maximum rate per minute	Maximum number of hours of taking a day	Maximum volume per day	Typical volume per day	Maximum number of days of taking in a year	Earliest calendar date of taking (mm/dd)	Latest calendar date of taking (mm/dd)
PW1-09	Industrial	Aggregate washing	1136	24	1,635,840.00	398,610.00	210	1/1	12/31
Wash Pond	Industrial	Aggregate washing	7274	12	5,237,280.00	1,797,391.00	210	1/1	12/31

10. Attachments

The following must be attached for all applications (Category 1, 2 and 3) to be complete:

☑ Map Requirements

On a 1:10 000 OBM (Ontario Base Map) (1:50 000 only acceptable in locations where 1:10 000 is not obtainable), mark and label:

- All existing and proposed water taking locations with sources corresponding with source name (refer to page 6 of the current application form).
- All of the following features within 500m of each source: existing wells (indicate use of existing well, springs, watercourses, wetlands, water bodies, property lines, locations and name of property owners, nearest road intersections, dwellings.

Browse... Remove

☑ Describe in detail how, where and when all water is obtained, stored, transferred, used and returned to the environment (if applicable). Details must include the source of all water takings (and corresponding source name if applicable), purpose of the water taking, period of water taking, and maximum quantity requested (see Guide for further instruction).

Note: If your application is subject to posting on the Environmental Bill of Rights (EBR) Registry, this description will be used to create the Proposal Notice. The ministry may change the wording as required, to meet the EBR posting requirements.

Browse... Remove

☑ Describe how water taking needs (rates, amounts and time periods) were determined. Provide all relevant information and calculations to demonstrate the water takings requested are warranted.

Browse... Remove

11. Statement/Signature of Applicant

I, the undersigned, hereby declare that to the best of my knowledge:

- The information contained herein and the information submitted in support of this application is complete and accurate in every way and I am aware of the penalties against providing false information.
- The Project Technical Information Contact identified in Section 6 if this form is authorized to act on my behalf for the purpose of obtaining this approval.

Print Name	Signature	Date (yyyy/mm/dd)
Nicolle Bellissimo	Nicolle Bellissimo	2018/01/17

For Office Use Only			
Reference Number	Payment Record $	Date (yyyy/mm/dd)	Initials

12. Payment Information

The Ministry of the Environment and Climate Change does not accept applications containing Credit Card information for Permit To Take Water via email. If an application containing credit card information is received via email, it will not be processed and will be destroyed.

Method of Payment *

☐ Certified Cheque ☐ Money Order ☑ VISA ☐ MasterCard

Amount Enclosed: $750.00

Name on Credit Card (please print)*: Nicolle Bellissimo

Credit Card Number*: 4859 8600 2002 2019

Expiry Date (mm/yy) *: 01/19

Credit Card Holder's Company Name *: CRH Canada Group Inc.

Card Holder's Signature *: Nicolle Bellissimo

Date (yyyy/mm/dd) *: 2018/01/17

Schedule for Water Conservation Measures

Schedule 1 – Implementation of Water Conservation in accordance with Best Management Practices and Standards for the Relevant Sector

Section 1: General Information

Information on this Schedule is collected under the authority of the *Ontario Water Resources Act*, R.S.O. 1990 (OWRA), and the new *Environmental Bill of Rights*, C. 28. Statutes of Ontario, 1993, and will be used to evaluate applications for a Permit to Take Water as required by Section 34 (OWRA).

Instructions:

1. This Schedule forms part of the Permit to Take Water application form and is subject to all provisions and instructions where applicable.
2. All questions of Section 2 of this Schedule must be answered for this Schedule to be considered complete.

Purpose:

The purpose of this Schedule is to allow persons applying for a permit required by the Ministry to document in the application all water conservation measures and practices that are currently being undertaken or that is anticipated to be undertaken for the duration of the permit.

Persons applying for a permit are encouraged to take all reasonable and practical measures to conserve water and to be up to date with sector-specific best management practices and standards for water conservation (i.e. whether you are currently implementing or anticipate implementing water conservation best water management standards and practices relevant to your sector).

Various sector associations publish information on best practices that may be useful in determining practices and standards for water conservation. Examples of these sector-specifc assocations include the following:

- **Municipal Sector** – Ontario Water Works Association
- **Agricultural Sector** – Ontario Ministry of Agriculture (Fact Sheets and Guides on Best Management Practices containing information on efficient irrigation systems, staggering irrigation schedules and preparing Environmental Farm Plans)
- **Other Sectors** – For information on up-to-date best management practices and measures for water conservation, contact your relevant sector association.

Please note that this schedule may not be directly applicable to certain takings, such as pumping tests, instream uses, site dewatering and certain industrial processes. In these cases, consideration must be given to the fate of the water or system design requirements.

Section 2: Water Conservation Best Management Practices and Standards

Use this section of the Schedule to indicate what conservation measures and practices you are currently implementing or anticipate implementing. Where relevant, additional information can be attached as an appendix to this Schedule.

State your goals for reducing the use, loss or waste of water or for increasing the efficiency of water use (e.g., litres per day per unit of production or litres per day per capita for the residential sector).

Check off which of the following water conservation best management measures and practices that you have implemented or will implement for the duration of the permit:

Water conservation best management measures and practices	Implemented	To be Implemented
Water Use Audit	☐	☑
Universal metering of all users (municipalities)	☐	☐
Water Efficient Fixtures/Equipment/Technology	☑	☐
Develop and Implement an Overall Water Conservation and Efficiency Program	☑	☐
Leak Detection/Loss Prevention/Control Program	☑	☐
Public/Employee Information/Education/Outreach	☐	☐
Landscaping techniques/Site and Urban Design Principles	☐	☐
Water Efficient production processes/practices (e.g. re-use of water)	☑	☐
Economic Incentives/Cost-Share/Full Costing recovery/tax credits/rebate programs	☐	☐

Other (please specify) ► _____

Of the measures and practices checked off above, provide specific details of the best management practices applied or to be applied including equipment (e.g. pump specification), processes, such as water used for industrial production and/or irrigation system(s), current and proposed technology, approach, processes and procedures:

Please see "Schedule for Water Conservation Measures" attachment for sections on "Industry Efficiencies" and "Site Specifics".

For the above measures and practices, list information relevant for your sector and/or other sources of information used in determining water conservation and efficiency management practices and measures:

Water Consumption Study prepared for Ontario Sand, Stone and Gravel Association by Gold Associates Ltd., 2006.

List dates of when the best management measures and practices were or will be applied for the duration of the permit:

The Best Management Measures and Practices have been applied since the beginning of operations at the Teedon Pit.

Identify any approval or certification that you have received for implementing water conservation and efficiency best management practices, e.g. Environmental Farm Plan, Audubon Cooperative Sanctuary Program for Golf Courses:

None

Appendix B Schedule for Water Conservation Measures

Schedule 1 – Implementation of Water Conservation in Accordance with Best Management Practices and Standards for the Relevant Sector

Information on this Schedule is collected under the authority of the Ontario Water Resources Act, R.S.O. 1990 (OWRA), and the new Environmental Bill of Rights, C.28. Statutes of Ontario, 1993, and will be used to evaluate applications for a Permit-to-Take-Water as required by Section 34 (OWRA).

Section 2: Water Conservation Best Management Practices and Standards

Use this section of the Schedule to indicate what conservation measures and practices you are currently implementing or anticipate implementing. Where relevant, additional information can be attached as an appendix to this Schedule.

State your goals for reducing the use, loss or waste of water or for increasing the efficiency of water use (e.g., litres per day per unit of production or litres per day per capita for the residential sector).

Check off which of the following water conservation best management measures and practices that you have implemented or will implement for the duration of the permit:

Water Conservation Best Management Measures and Practices	Implemented	To Be Implemented
Water Use Audit	☐	☒
Universal metering of all users (municipalities)	☐	☐
Water Efficient Fixtures/Equipment/Technology	☒	☐
Develop and Implement an Overall Water Conservation and Efficiency Program	☒	☐
Leak Detection/Loss Prevention/Control Program	☒	☐
a. Public/Employee Information/Education/Outreach	☐	☐
Landscaping techniques/Site and Urban Design Principles	☐	☐
Water Efficient production processes/practices (e.g., re-use of water)	☒	☐
Economic Incentives/Cost-Share/Full Costing recovery/Tax credits/Rebate programs	☐	☐
Other (please specify)		

Of the measures and practices checked off above, provide specific details of the best management practices applied or to be applied including equipment (e.g., pump specification), processes, such as water used for industrial production and/or irrigation system(s), current and proposed technology, approach, processes and procedures:

Please see attached sections on "Industry Efficiencies" and "Site Specifics".

For the above measures and practices, list information relevant for your sector and/or other sources of information used in determining water conservation and efficiency management practices and measures:

Water Consumption Study prepared for Ontario Sand, Stone and Gravel Association by Golder Associates Ltd., 2006.

List dates of when the best management measures and practices were or will be applied for the duration of the permit:

The Best Management Measures and Practices have been applied since the beginning of operations at the Teedon Pit.

Identify any approval or certification that you have received for implementing water conservation and efficiency best management practices, e.g., Environmental Farm Plan, Audubon Cooperative Sanctuary Program for Golf Courses:

None.

Industry Efficiencies

In response to the Ontario Ministry of the Environment and Climate Change (MOECC) initiative to ensure safe drinking water and sustainable aquatic ecosystems, a variety of investigations were conducted on water resources. Investigations focused on water users in Ontario and the MOECC determined the aggregate industry had the third largest permitted water taking volume in the province, behind the power industry and municipalities. As a result of the investigation, the Permit-To-Take-Water (PTTW) process has been restructured.

The Ontario Stone, Sand & Gravel Associations (OSSGA) hired a team of hydrologists, hydrogeologists and materials engineers from Golder Associates Ltd. (Golder) to evaluate the water use at a typical aggregate operations in Ontario. Golder determined that while it is generally understood that a PTTW does not accurately reflect the actual water taken, little information was available about the actual amount of water taken by the aggregate industry and even less data was available about the quantities of handled water versus consumed water.

In 2004, Golder looked at four representative sites of typical aggregate operations in Ontario:

- An above water table pit with aggregate washing
- A below water table pit with aggregate washing
- A partially below water table quarry with aggregate washing
- A below water table quarry without aggregate washing

The three primary water handling activities identified at the aggregate sites included: aggregate washing, dewatering in below water table quarries, and dust control. The three main water consumption activities identified at the aggregate sites included: retained moisture on aggregate product shipped from the site, water supplied to haul roads for dust suppression, and evaporation from stockpiled materials.

The following conclusions, taken directly from the Golder report, indicate that the aggregate industry consumes only small quantities of the water that they take.

- Actual water taking quantities relative to the PTTW maximum permitted amount ranged from 1 percent (%) to 37% for the studied sites. This demonstrates that the PTTW maximum permitted amount if not a reliable estimate of water "taken" at an individual aggregate site, even though the higher PTTW maximum permitted amounts are necessary to handle peak water taking that may occur from time to time.
- Consumed water (water not returned to the local surface water and/or groundwater system) was found to be a minor portion (1% to 12% at the study sites) of the PTTW maximum permitted amount and thus the PTTW maximum permitted amount should not be used to reflect the amount of consumed water. Consideration should be given to the purpose of the PTTW (wash plant make-up,

wash plant recirculation, quarry dewatering) in order to interpret the representative fraction of the consumed water at an individual site.

- Depending on the studied site, consumed water was only 2% to 8% of the handled water; i.e., water consumed in aggregate operations is only a small portion of the handled water. It can therefore be concluded that the sites that were studied, and the aggregate industry in general, are primarily handlers of water, with the bulk of handled water returned to the local hydrologic system (dewatering and infiltration) or recycled repeatedly through the wash plant.
- Consumed water was 12% or less of the amount of precipitation which falls on the site for the studied cases. Consumed water was at 4% to 10% of site dewatering for studied cases with site surface water discharges (quarries). It can therefore be concluded that the consumed water at the studied sites is a minor component of the site's surplus water.
- Between 50% to 100% of the water shipped off-Site with aggregate products was attributed to natural in-Situ water. The remainder was wash water and/or rainwater that adheres to the product.

The efficiencies outlined in this report are expected to hold true for the Teedon Pit property, as discussed in the Site Specifics section.

Site Specifics

The Teedon Pit is an above water table aggregate extraction operation. Aggregate extraction occurs from resources located 1.5 metres (m) above the groundwater table.

The major water handling for the Teedon Pit is an aggregate washing operation. This operation involves washing of the aggregate after extraction to remove fine soil particles from the sand and gravel for the preparation of aggregate products. The washing operations use a recirculation washing system where the wash water is recirculated through silt ponds to remove the particulates and returned back to the Sump Pond. In this operation, only a small amount of "make-up" water is needed to compensate for moisture retained on the sand and gravel and for evaporation. A supply well (PW1-09) is used to “top up” the Sump Pond.

A small amount of water is also used for dust control during dry weather conditions. The Sump Pond is used as the source of water for dust control.

The PTTW is for a maximum withdrawal rate from PW1-09 of 1,136 litres per minute (L/min) for a maximum of 24 hours per day (maximum daily taking of 1,635,840 litres per day [L/day]). The PTTW is also for a maximum withdrawal rate from the Sump Pond of 7,274 L/min for a maximum of 12 hours per day (maximum daily taking of 5,237,280 L/day). The combined maximum daily total for PW1-09 and the Sump Pond is 6,873,120 L/day. The PTTW is required for up to a total of 210 days per year (for both Sump Pond and PW1-09), which days need not be consecutive. However, it is noted that the number of pumping days at the maximum rate would be far less than 210 days.

The actual consumptive water use for aggregate washing is a very small fraction of the permitted pumping rates for wash operations, as the wash water is re-circulated after settling out of the fine particles.

The planned water use for the Teedon Pit operations is very small by comparison to the water availability in the area and other water uses. There is an overall availability of groundwater in the area and a low potential for groundwater quantity stress as confirmed through recent source water protection studies and earlier studies.

Appendix C
Historical Investigations and Correspondence

Appendix C.1
MOECC Correspondence with Residents

√

Ministry of the Environment and Climate Change

Central Region Office
Technical Support Section
Water Resources Unit

5775 Yonge Street
8th Floor
North York ON M2M 4J1

Tel.: 416 326-6700
Fax: 416-325-6347

Ministère de l'Environnement et de l'Action en matière de changement climatique

Région du Centre
Section d'appui technique
Ressource en eau

5775, rue Yonge
8 ième étage
North York (Ontario) M2M 4J1

Tél: (416) 326-6700
Téléc: (416) 325-6347

Ontario

November 23, 2015

Robert E. Graham
Cedarhurst Quarries & Crushing Limited
3300 King Vaughan Townline,
Post Office Box 250
King, Ontario, L7B 1B2

Dear Mr. Graham

The Ministry of Environment and Climate Change (MOECC) has reviewed the three water well interference complaints (Janet Irvine, Bonnie Pauze/Jake Pigeon, and Peter Anderson) regarding the Permit to Take Water # 4317-87CNZN (Permit) for Cedarhurst Quarries & Crushing Limited (Permit Holder) at the Teedon Pit, 90 Darby Road, Tiny Township (Teedon Pit).

I have concluded the following:

- I agree that when issuing the latest Permit, the MOECC should have kept the condition that required monitoring the surface elevation of the wash pond that was in the original 2008 Permit. I am requesting that Cedarhurst Quarries & Crushing Limited recommence with this type of monitoring effective immediately as outlined below in bullets *i* and *ii*, and provide the MOECC a response indicating your agreement to conduct said monitoring. The MOECC would also advise you that any requests to renew or amend the Permit will reinstate this condition.
  - *i. Prior to water being taken from the Wash Pond each year, the Permit Holder shall establish a staff gauge in the Wash Pond and determine the elevation of the staff gauge. The Permit Holder shall measure and record the Wash Pond water level at the start and end of each day on which taking occurs.*
  - ii. *If, during the year of operation, the elevation of the staff gauge is changed, the Permit Holder shall determine the new elevation.*

- The potential violations of the Permit regarding notification of well interference complaints have been forwarded to the local environmental officer who is planning on conducting a Permit inspection of the Teedon Pit in the near future.

- I believe that there have been sufficient hydrogeological investigations completed on-site to warrant the issuance of the Permit.

- I disagree with Mr. Ruland's conceptual model that silt from the wash pond is affecting local wells. It is not possible for silt to flow through a silt, sand and gravel aquifer as a silt plume as Mr. Ruland has proposed.

- I do not believe that the water well impacts of the three water well interference complainants are due to the water takings associated with the Permit for the Teedon Pit.

I have written separate letters to each of the complainants stating my above findings as well as commenting on their individual well issues. A copy of each of these letters is attached to this letter.

Should you have any questions, please do not hesitate to contact myself at (416) 325-7487 or Mr. Mihran Aslanyan, who will be taking over this file, at (416) 326-4418.

Sincerely,

Christopher Munro

Christopher R. Munro, M.Sc.Eng., P.Eng.
Geological Engineer / Hydrogeologist

cc. Helen Zhang, Supervisor, Water Unit, Technical Support Section, MOECC
Mihran Aslanyan, Hydrogeologist, Water Unit, Technical Support Section, MOECC
Greg Athron, Environmental Officer, Barrie District, MOECC
Ross Campbell, Alpha Environmental Services
Prabin Sharma, Aggregates Technical Intern, MNRF
Shawn Persaud, Manager of Planning & Development, Township of Tiny

Attachments: Letters to water well interference complainants (Janet Irvine, Bonnie Pauze/Jake Pigeon, and Peter Anderson)

Ministry of the Environment and Climate Change

Central Region Office
Technical Support Section
Water Resources Unit

5775 Yonge Street
8th Floor
North York ON M2M 4J1

Tel.: 416 326-6700
Fax: 416-325-6347

Ministère de l'Environnement et de l'Action en matière de changement climatique

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Tél: (416) 326-6700
Téléc: (416) 325-6347

Ontario

November 23, 2015

Mrs. Janet Irvine
7062 Highway 93
Tiny Township, Ontario
L0K 2E1

Dear Ms. Irvine

The Ministry of Environment and Climate Change (MOECC) has reviewed your water well interference complaint regarding the Permit to Take Water # 4317-87CNZN (Permit) for Cedarhurst Quarries & Crushing Limited (Permit Holder) at the Teedon Pit, 90 Darby Road, Tiny Township (Teedon Pit). In response to your complaint a site visit was conducted on June 30, 2015, and the Permit Holder's hydrogeologist, Ross Campbell, produced a water well assessment report dated August 2015. Acting on Mrs. Pauze and Mr. Pigeon's behalf, hydrogeologist, Wilf Ruland, conducted his own assessment and presented a report on October 20, 2015. In response, Mr. Campbell, produced another report responding to Mr. Ruland's report on November 5, 2015.

I have reviewed the above noted reports as well as the documentation within the file the MOECC has for this Permit and conclude the following:

- I agree that when issuing the latest Permit in 2010, the MOECC should have kept the condition that required monitoring the surface elevation of the wash pond that was in the original 2008 Permit. I am requesting that the Permit Holder recommence with this type of monitoring and recommend that upon any requests to renew or amend the Permit that this condition be reinstated.

- The potential violations of the Permit regarding notification of well interference complaints have been forwarded to the MOECC's local environmental officer who is planning on conducting a Permit inspection of the Teedon Pit in the near future.

- I believe that sufficient hydrogeological investigations were completed on-site to warrant the issuance of the Permit when it was issued in 2010.

- I disagree with Mr. Ruland's conceptual model that silt from the wash pond is affecting local wells, including your well. It is not possible for silt to flow through a silt, sand and gravel aquifer as a silt plume as Mr. Ruland has proposed.

- I do not believe that your water well impacts are due to the water takings associated with the Permit for the Teedon Pit.

During the site visit, you showed us the sediment that was collecting on the metal filter of your hot water tank and in the toilet tank. This material did not look like the silt/clay material of Mrs. Pauze. Mr. Campbell's water quality sample resulted in no detected total suspended solids or turbidity, iron related bacteria were present, and a background bacteria count of 1000 CFU/100 mL.

It is clear from the reported bacteria level that the well is contaminated with biological material that is likely due to construction of your well at surface. The top of your well is only about 2 inches above ground surface and the well cap has an open hole on the centre of it which is designed for piping to exit; however there is no pipe or other plug sealing this hole. The wellhead has a large overturned metal bowl shaped container loosely covering it. At the present your well is vulnerable to insects, vermin, horse manure runoff, and foreign mater entering your well through the top of the well.

The materials on your filter and toilet tank are likely from either material falling into your well from the hole in your well cap or from the scaling of the inside of the well casing.

I recommend that you hire a licenced water well technician to raise the height of your well, to install a protective well cap, and inspect/disinfect/clean the inside of the well casing. Should you have any questions, please do not hesitate to contact myself at (416) 325-7487 or Mr. Mihran Aslanyan, who will be taking over this file, at (416) 326-4418.

Sincerely,

Christopher R. Munro, M.Sc.Eng., P.Eng.
Geological Engineer / Hydrogeologist

cc. Helen Zhang, Supervisor, Water Unit, Technical Support Section, MOECC
Mihran Aslanyan, Hydrogeologist, Water Unit, Technical Support Section, MOECC
Greg Athron, Environmental Officer, Barrie District, MOECC
Robert E. Graham, Permit Holder, Cedarhurst Quarries & Crushing Limited
Ross Campbell, Alpha Environmental Services
Prabin Sharma, Aggregates Technical Intern, MNRF
Shawn Persaud, Manager of Planning & Development, Township of Tiny

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Ontario

November 23, 2015

Bonnie Pauze and Jake Pigeon
1189 Marshall Road
PO Box 1262
Tiny Township, Ontario
L0L 2J0

Dear Mrs. Pauze and Mr. Pigeon

The Ministry of Environment and Climate Change (MOECC) has reviewed your water well interference complaint regarding the Permit to Take Water # 4317-87CNZN (Permit) for Cedarhurst Quarries & Crushing Limited (Permit Holder) at the Teedon Pit, 90 Darby Road, Tiny Township (Teedon Pit). In response to your complaint a site visit was conducted on June 30, 2015, and the Permit Holder's hydrogeologist, Ross Campbell, produced a water well assessment report dated August 2015. Your hydrogeologist, Wilf Ruland, conducted his own assessment and presented a report on October 20, 2015. In response, Mr. Campbell, produced another report responding to Mr. Ruland's report on November 5, 2015.

I have reviewed the above noted reports as well as the documentation within the file the MOECC has for this Permit and conclude the following:

- I agree that when issuing the latest Permit in 2010, the MOECC should have kept the condition that required monitoring the surface elevation of the wash pond that was in the original 2008 Permit. I am requesting that the Permit Holder recommence with this type of monitoring and recommend that upon any requests to renew or amend the Permit that this condition be reinstated.

- The potential violations of the Permit regarding notification of well interference complaints have been forwarded to the MOECC's local environmental officer who is planning on conducting a Permit inspection of the Teedon Pit in the near future.

- I believe that sufficient hydrogeological investigations were completed on-site to warrant the issuance of the Permit when it was issued in 2010.

- I disagree with Mr. Ruland's conceptual model that silt from the wash pond is affecting local wells, including your well. It is not possible for silt to flow through a silt, sand and gravel aquifer as a silt plume as Mr. Ruland has proposed.

- I do not believe that your water well impacts are due to the water takings associated with the Permit for the Teedon Pit.

At the time of the site visit, it is clear that there is a silt issue with the well water at your house. I believe the silt issues with the house well and barn well are due to well construction and improper screen design. I cannot determine why the problem started in 2009; however, wells do deteriorate with age. My concern with the house well is that the silt that it is producing is likely coming from around the well screen (if a well screen is even present) and creating a void. With the house situated within a few metres of the well, I am concerned that this void may cause land subsidence that may damage or structurally compromise the house.

I strongly recommend that you hire a licensed well contractor and/or Professional Engineer/Professional Geoscientist to investigate your wells and that the appropriate actions be taken ensure that your wells stop discharging silt. Alternately, your current wells could be abandoned and a new well(s) be constructed.

Should you have any questions, please do not hesitate to contact myself at (416) 325-7487 or Mr. Mihran Aslanyan, who will be taking over this file, at (416) 326-4418.

Sincerely,

Christopher R. Munro, M.Sc.Eng., P.Eng.
Geological Engineer / Hydrogeologist

cc. Helen Zhang, Supervisor, Water Unit, Technical Support Section, MOECC
Mihran Aslanyan, Hydrogeologist, Water Unit, Technical Support Section, MOECC
Greg Athron, Environmental Officer, Barrie District, MOECC
Robert E. Graham, Permit Holder, Cedarhurst Quarries & Crushing Limited
Ross Campbell, Alpha Environmental Services
Prabin Sharma, Aggregates Technical Intern, MNRF
Shawn Persaud, Manager of Planning & Development, Township of Tiny

Ministry of the Environment and Climate Change

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Téléc: (416) 325-6347

Ontario

November 23, 2015

Mr. Peter Anderson
6970 Highway 93
Tiny Township, Ontario
L0K 2E1

Dear Mr. Anderson

The Ministry of Environment and Climate Change (MOECC) has reviewed your water well interference complaint regarding the Permit to Take Water # 4317-87CNZN (Permit) for Cedarhurst Quarries & Crushing Limited (Permit Holder) at the Teedon Pit, 90 Darby Road, Tiny Township (Teedon Pit). In response to your complaint a site visit was conducted on June 30, 2015, and the Permit Holder's hydrogeologist, Ross Campbell, produced a water well assessment report dated August 2015. Acting on Mrs. Pauze and Mr. Pigeon's behalf, hydrogeologist, Wilf Ruland, conducted his own assessment and presented a report on October 20, 2015. In response, Mr. Campbell, produced another report responding to Mr. Ruland's report on November 5, 2015.

I have reviewed the above noted reports as well as the documentation within the file the MOECC has for this Permit and conclude the following:

- I agree that when issuing the latest Permit in 2010, the MOECC should have kept the condition that required monitoring the surface elevation of the wash pond that was in the original 2008 Permit. I am requesting that the Permit Holder recommence with this type of monitoring and recommend that upon any requests to renew or amend the Permit that this condition be reinstated.

- The potential violations of the Permit regarding notification of well interference complaints have been forwarded to the MOECC's local environmental officer who is planning on conducting a Permit inspection of the Teedon Pit in the near future.

- I believe that sufficient hydrogeological investigations were completed on-site to warrant the issuance of the Permit when it was issued in 2010.

- I disagree with Mr. Ruland's conceptual model that silt from the wash pond is affecting local wells, including your well. It is not possible for silt to flow through a silt, sand and gravel aquifer as a silt plume as Mr. Ruland has proposed.

- I do not believe that your water well impacts are due to the water takings associated with the Permit for the Teedon Pit.

Your well is a drilled well situated with a well pit, likely an old dug well, therefore the well head is not accessible and is located below ground. Mr. Campbell's water quality sample resulted in no detected total suspended solids or turbidity, and no bacteria issues. At the time of water quality sampling there appears to be no water quality issues.

Wells that are installed in well pits can be susceptible to being flooded and material can enter the well through the top of well at these times or even around the outside of the drilled well casing if an appropriate seal is not in place. I recommend that you hire a licenced water well technician to inspect your well and to potentially raise the height of your well to above ground level, fill in the well pit with low permeable material to create a good seal from surface water, and to install a protective well cap.

Should you have any questions, please do not hesitate to contact myself at (416) 325-7487 or Mr. Mihran Aslanyan, who will be taking over this file, at (416) 326-4418.

Sincerely,

Christopher Munro

Christopher R. Munro, M.Sc.Eng., P.Eng.
Geological Engineer / Hydrogeologist

cc. Helen Zhang, Supervisor, Water Unit, Technical Support Section, MOECC
Mihran Aslanyan, Hydrogeologist, Water Unit, Technical Support Section, MOECC
Greg Athron, Environmental Officer, Barrie District, MOECC
Robert E. Graham, Permit Holder, Cedarhurst Quarries & Crushing Limited
Ross Campbell, Alpha Environmental Services
Prabin Sharma, Aggregates Technical Intern, MNRF
Shawn Persaud, Manager of Planning & Development, Township of Tiny

Ministry of the Environment and Climate Change
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Tel: (705) 739-6432

Ministère de l'Environnement et de l'Action en matière de changement climatique
Direction régionale du Centre
Bureau du district de Barrie
Bureau du secteur de Barrie
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Tél:(705) 739-6432

Ontario

January 27, 2016

Mr. Rick Geary - Project Manager
K.J. Beamish Construction Company Ltd.
Cedarhurst Quaries & Crushing Limited
#4293 Fairgrounds Road
P.O. Box 2177
Orillia, Ont.
L3V 6S1

Dear Mr. Geary

RE: Permit To Take Water Inspection Report - Cedarhurst Quarries & Crushing Limited - Teedon Pit.
Reference Number 7884-9Y2Q54

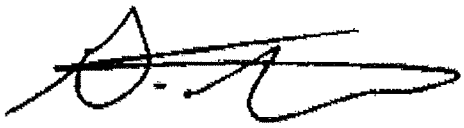
Enclosed is the Ministry of the Environment and Climate Change "Permit To Take Water" Inspection Report for Cedarhurst Quarries & Crushing Limited - Teedon Pit, Tiny Township.

The items listed in Section 5.0 "Actions Required" and 6.0 "Other Inspection Findings" of this Report required your attention and may require a written response to this office by the dates specified.

As discussed, a copy of this Inspection Report will be forwarded to Mr. Dennis Simmons (Dennis C. Simmons Development and Land Management Consulting Services) and to Ross Campbell (Alpha Environmental Services Inc.).

If you have any questions or concerns regarding this Inspection Report please do not hesitate to contact the undersigned at your convenience. Thank you for your assistance during this inspection.

Yours truly,



Gregory S Athron
Senior Environmental Officer
Barrie District Office

File Storage Number: SI SI TI DA 220
C. Dennis C. Simmons

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

Permit To Take Water Inspection Report

Client:	Cedarhurst Quarries & Crushing Limited Mailing Address: Post Office Box, 250, King, Ontario, Canada, L7B 1B2 Physical Address: 3300 King Vaughan Rd, King, Township, Regional Municipality of York, Ontario, Canada, L7B 1B2 Telephone: (905)833-4666, Extension: 252, FAX: (905)833-1400, email: phayward@kjbeamish.ca Client #: 3618-5ZEJGE, Client Type: Corporation		
Inspection Site Address:	Teedon Pit Address: Lot: 7980, Concession: 1, Lot: 79 80 Concession: 1 Original Township of Tiny 90 Darby Road, Geographic Township: TINY, Tiny, Township, County of Simcoe District Office: Barrie GeoReference: Map Datum: NAD83, Zone: 17, Accuracy Estimate: 1-10 metres eg. Good Quality GPS, Method: GPS, UTM Easting: 592343, UTM Northing: 4945072, , LIO GeoReference: Zone: , UTM Easting: , UTM Northing: , Latitude: 44.6503, Longitude: -79.8466 Site #: 4682-7RYJGF		
Contact Name:	Rick Geary	**Title:**	Project Manager
Contact Telephone:	705-325-7447 ext	**Contact Fax:**	705-325-7002
Last Inspection Date:			
Inspection Start Date:	2015/07/30	**Inspection Finish Date:**	2016/01/22
Region:	Central		

1.0 INTRODUCTION

Cedarhurst Quarries & Crushing Limited - Teedon Pit is a typical mid-sized sand and gravel extraction operation located approximately 9 km south of the Town of Midland, in the southeast corner of Tiny Township. The municipal address of the Teedon Pit is #40 Darby Road, Concession 1, Lots 79 & 80, original Township of Tiny. The Teedon Pit property is approximately 85.5 hectares in total area with 76.9 hectares licensed for aggregate extraction. However, at this time the pit operations (including all extraction areas, roads and ancillary land uses) only occupies approximately 1/4 of the total area of the property. Cedarhurst Quarries & Crushing Limited (Cedarhurst Quarries) is affiliated with K.J. Beamish Construction Co. Limited.

The Teedon Pit is situated on the northern side of a large sandy hill locally known as "French's Hill". Additional sand and gravel extraction operations are planned or proposed for adjacent areas of French's Hill. The Teedon Pit began operations in 2003 and is approved under Pit Licence Reference No. 3670 as issued by the Ministry of Natural Resources and Forestry pursuant to the Aggregates Resources Act. Under this licence no more than 600,000 tonnes of aggregate is to be removed from the site in any given calendar year. An earlier sand/gravel extraction operation was present prior to the establishment of the Teedon Pit by Cedarhurst Quarries, but this was a very small operation.

As with most sand and gravel pits, the Teedon Pit serves a relatively localized area, with product being sold/used largely in the northwest/central Simcoe County area. Demand for sand and gravel in this area is currently not high, so pit usage is limited. As part of their operations, Cedarhurst Quarries - Teedon Pit

offers washed gravel for sale to various clients. Gravel washing operations take place on the pit property with water being taken from the on-site wash water dug-out pond. This water is used to wash the extracted gravel and the resulting silty wash water is collected and directed back to the wash water dug-out pond. Reuse of the stored water in the wash water dug-out pond takes place for subsequent gravel washing operations. Additional water for gravel washing operations can be taken from an on-site groundwater well supply.

Pursuant to Section 34 of the Ontario Water Resources Act, Permit To Take Water #0503-7D4PX7 was issued to Cedarhurst Quarries & Crushing Limited in April of 2008. This PTTW was for water taking for gravel wash operations, with taking limited to 5,237,280 L/day from the on-site wash water dug-out pond. In July of 2010 Amended PTTW #4317-87CNZN was issued to Cedarhurst Quarries & Crushing Limited. This PTTW was issued for gravel washing operations, with taking permitted from the wash water dug-out pond and additional water taking from an on-site groundwater well. Water taking from the wash water dug-out pond remained set at a rate of 5,237,280 L/day and well water taking was set at a rate of 1,635,840 L/day.

This inspection occurred as part of the routine Proactive Inspection Program for the Barrie District Office. The inspection included a site visit on June 30, 2015, a review/assessment of the requirements/conditions of PTTW, a review of water taking data and a review/assessment of Cedarhurst Quarries compliance with the various requirements/conditions of PTTW #4317-87CNZN. The requirements of PTTW #0503-7D4PX7 are not being assessed as this PTTW is no longer valid.

During the June 30, 2015 site inspection, Mr. Dennis Simmons (Dennis C. Simmons Development and Land Management Consulting Services) was in attendance and provided valuable assistance. Mr. Ross Campbell (Alpha Environmental Services), also provided valuable assistance during post site inspection follow-up. Issues related to the findings of this inspection were also discussed with Mr. Rick Geary - Project Manager with K.J. Beamish Construction Co. Limited.

2.0 INSPECTION OBSERVATIONS

Permit Number:
Pursuant to Section 34 of the Ontario Water Resources Act, Permit To Take Water #0503-7D4PX7 was issued to Cedarhurst Quarries & Crushing Limited in April of 2008. This PTTW was for water taking for gravel wash operations, with taking limited to 5,237,280 L/day from an on-site wash water dugout pond.

NEW PTTW

It was subsequently determined that the dug-out pond water supply could not be replenished naturally at a rate sufficient to meet the wash water needs of Cedarhurst Quarries. In July of 2010, Amended PTTW #4317-87CNZN was issued to Cedarhurst Quarries & Crushing Limited. This PTTW was issued for gravel washing operations, with taking permitted from an on-site groundwater well at a rate of 1,635,840 L/day and continued taking from the on-site dug-out pond at a rate of 5,237,280 L/day.

Condition 3.1 of PTTW #4317-87CNZN sets an expiry date of April 18, 2018 on water taking under the authority of the PTTW.

2.1 PURPOSE OF TAKING

Industrial Supply
Additional Comments:

Cedarhurst Quarries operates the Teedon Pit, supplying sand and gravel to the local market in the north west/central Simcoe County area. Gravel washing operations take place on the pit property with water being taken from the on-site wash water dug-out pond. This water is used to wash the extracted gravel and the resulting silty wash water is collected and directed back to the wash water dug-out pond. Reuse of the stored water in the wash water dug-out pond takes place for subsequent gravel washing operations. Additional water for gravel washing operations can be taken from an on-site groundwater well supply.

Reuse of the dug-out retention pond water then takes place (for additional gravel washing) with the wash

water being repeatedly reused.

2.2 SYSTEM DESCRIPTION

Surface water source: Yes

Ground water source: Yes

Cedarhurst Quarries - Teedon Pit offers sand and washed gravel for sale to various clients in the north west/central Simcoe County area.

Gravel washing operations take place on the pit property, with water being taken from the on-site wash water dug-out pond. This water is used to wash the extracted gravel and the resulting silty wash water is collected and directed back to the wash water dug-out pond. Water taken from the wash water dug-out pond is metered to record flows/water taking rates and volumes.

Should natural replenishment of the wash water pond be inadequate for wash operations, additional water for gravel washing operations can be taken from an on-site ground water well supply which is identified as PW1-09. Water taken from PW1-09 is metered to record flows/water taking rates and volumes. Reuse of the wash water dug-out retention pond water occurs (for additional gravel washing) with the wash water being repeatedly reused. The wash water dug-out retention pond maintains a relatively stable minimum static water level and the stored water is available for repeated reuse. This repeated reuse of wash water significantly reduces the need to take 'fresh' water from the well supply.

2.3 QUANTITY ASSESSMENT

Requirements for the sources of water taking and the respective volumes of water that can be taken are set under the Condition 3 of PTTW #4317-87CNZN. Condition 3.2 of PTTW #4317-87CNZN establishes the sources of water taking and sets the rates/volumes of water that can be taken. Condition 3.2 states:

Condition 3.2
Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	PW1-09	Well Drilled	Aggregate Washing	Industrial	1,136	24	1,635,840	210	17 592343 4945072
2	Wash Pond	Pond Dugout	Aggregate Washing	Industrial	7,274	12	5,237,280	210	17 591900 4944960
						Total Taking:	6,873,120		

As part of this inspection, daily water taking records from Cedarhurst Quarries were requested for the period 2011-2015. These records were supplied by Mr. Dennis Simmons and Mr. Ross Campbell,

reviewed in detail and the following noted:

2011

Well PW1-09

A total of 14,203,386 litres were reportedly taken from Well PW1-09 during this year, with water taking occurring over 22 days. During 2012, the first day of water taking from Well PW1-09 occurred on June 29 and the last day of taking occurred on August 16. During this period, the maximum daily water taking occurred on July 6 when a reported 284,733 Imperial gallons (1,284,421 L) was pumped, which is below the permitted maximum daily taking of 1,635,840 L for PW1-09.

Wash Water Dug-out Pond

A total of 33,820,080 litres were reportedly taken from the wash water dug-out pond this year, with taking occurring over 30 days. During 2012, the first day of water taking from the wash water dug-out pond occurred on July 7 and the last day of taking occurred on August 22. During this period, the maximum daily water taking occurred on August 9 when a reported 449,157 US gallons (1,700,244 L) was taken, which is well below the permitted maximum daily taking of 5,237,280 L for the wash water dug-out pond.

2012

Well PW1-09

A total of 34,749,443 litres were reportedly taken from Well PW1-09 during this year, with water taking occurring over 36 days. During 2012, the first day of water taking from Well PW1-09 occurred on June 29 and the last day of taking occurred on August 24. During this period, the maximum daily water taking occurred on July 10 when a reported 285,387 Imperial gallons (1,297,395 L) was pumped, which is below the permitted maximum daily taking of 1,635,840 L for PW1-09.

Wash Water Dug-out Pond

A total of 53,950,298 litres were reportedly taken from the wash water dug-out pond this year, with taking occurring over 41 days. During 2012, the first day of water taking from the wash water dug-out pond occurred on July 13 and the last day of taking occurred on September 7. During this period, the maximum daily water taking occurred on July 23 and August 2 when a reported 577,745 US gallons (2,187,002 L) was taken, which is well below the permitted maximum daily taking of 5,237,280 L for the wash water dug-out pond.

2013

Well PW1-09

A total of 18,183,546 litres were reportedly taken from Well PW1-09 during this year, with water taking occurring over 18 days. During 2012, the first day of water taking from Well PW1-09 occurred on June 12 and the last day of taking occurred on August 27. During this period, the maximum daily water taking occurred on August 13 when a reported 281,113 Imperial gallons (1,277,964 L) was pumped, which is below the permitted maximum daily taking of 1,635,840 L for PW1-09.

Wash Water Dug-out Pond

A total of 55,388,557 litres were reportedly taken from the wash water dug-out pond this year, with taking occurring over 41 days. During 2012, the first day of water taking from the wash water dug-out pond occurred on June 10 and the last day of taking occurred on August 27. During this period, the maximum daily water taking occurred on June 12 when a reported 867,118 US gallons (3,282,399 L) was taken, which is well below the permitted maximum daily taking of 5,237,280 L for the pond.

2014

Well PW1-09

No recorded water taking from PW1-09 occurred in 2014.

Wash Water Dug-out Pond

No recorded water taking from the wash water dug-out pond occurred in 2014.
This lack of recorded water taking during 2014 was discussed with Rick Geary (Project Manager, J.K.

Beamish) and Dennis Simmons (Dennis C. Simmons Development and Land Management Consulting Services). Both individuals confirmed that there was no gravel washing undertaken at the Teedon Pit in 2014. Therefore, there was no water taken for gravel washing operations in 2014.

2015

Well PW1-09

No recorded water taking from PW1-09 occurred in 2015.

Wash Water Dug-out Pond

No recorded water taking from the wash water pond occurred in 2015.

It must be noted that at the time of the completion of this report, additional time remains for Cedarhurst Quarries to report their water taking for 2015.

As with 2014, both Rick Geary (Project Manager, J.K. Beamish) and Dennis Simmons (Dennis C. Simmons Development and Land Management Consulting Services) were spoken with and both confirmed that there was no gravel washing undertaken at the Teedon Pit in 2015. Therefore, there was no water taken for gravel washing operations in 2015.

Unplanned Water Taking in 2015

However, based upon telephone conversations with Dennis Simmons and Ross Campbell on January 18, 2016, an unplanned pumping of Well PW1-09 took place from July 29, 2015 until October 15, 2015. While servicing site equipment, staff from J.K. Beamish inadvertently turned on the pump for Well PW1-09 on July 29, 2015. The water taking remained unnoticed as staff were not present at the pit due to its non-operational status, with the pump running uninterrupted until this issue was noticed (and the pump shut off) on October 15, 2015.

The water pumped from Well PW1-09 was discharged into the wash water dug-out pond. This taking of water served no function as the pit was not operational and no gravel washing operations were occurring.

Due to the failure of the batteries of the pump meter on Well PW1-09, this taking was not accurately metered. Based upon early estimates, Mr. Ross Campbell reports that water taking likely occurred at a rate of 950 L/minute continuously for the full 79 days during which the pump was left running. This equates to approximately 1,368,000 L of water per day or 108,072,000 L of water over the approximately 2 1/2 month period during which the pump was left running. It must be noted that this estimate of the pumping rate is within the permitted taking rate and time period under PTTW #4317-87CNZN.

According to Mr. Ross Campbell, a data-logger in a residential well located on Darby Road did record a small draw down of the local ground water table as a result of the extended pumping of PW1-09. No complaints were received by the Ministry from nearby residents and Cedarhurst Quarries report having received no complaints.

Although this water taking was not used for the intended purpose, the taking occurred as part of the Teedon Pit operations, with the produced water being discharged into the wash water dug-out pond. The resulting water would have either exfiltrated into the surrounding soils or discharge to the natural pond which may have discharged into the ravine to the north. Mr. Rick Greary reports that during his site visit on October 15, 2015 the wash water dug-out pond was not discharging water into the small natural pond.

See See Section 4.0 of the Report for "Summary of Inspection Findings" and Section 5.0 of this Report for "Actions Required".

2.4 ASSESSMENT OF OTHER PERMIT CONDITIONS

Condition 4.1

Condition 4.1 of PTTW #4317-87CNZN requires Cedarhurst Quarries & Crushing Limited to undertake, install and maintain flow meters on each source listed in Table A of the PTTW #4317-87CNZN. These

meters are to be read and the results recorded daily.

Cedarhurst Quarries maintains the required meters on the water sources listed in Table A of PTTW #4317-87CNZN. Reading and recording of the flow meters only takes place on days when water is actively being taken.

As noted in Section 2.3 of this Report, there was an incident during the summer/fall of 2015 where the pump for PW1-09 was left running for an extended period of time. Due to the failure of the batteries of the pump meter on Well PW1-09, this taking was largely not metered.

See Section 4.0 of the Report for "Summary of Inspection Findings" and Section 5.0 of this Report for "Actions Required".

Condition 4.2
Condition 4.2 of PTTW #4317-87CNZN requires Cedarhurst Quarries & Crushing Limited to maintain continuos water level recorders within Well PW1-09, one on-site well of comparable depth to PW1-09 and in an on-site well terminating within the shallower aquifer unit underlying the site.

In discussions with Ross Campbell (Alpha Environmental Services Inc.) the location of the required monitoring wells was discussed. Cedarhurst Quarries actually maintains a total of seven (7) data-loggers in wells on and near the Teedon Pit property. Four (4) of these data-loggers are located in wells on the Teedon Pit property (including the locations as required by Condition 4.2) and 3 data-loggers are maintained in wells in close proximity to the Teedon Pit property. The report titled " Assessment of Local Well Water Quality Complaints - Teedon Pit August 2015" completed by Alpha Environmental Services Inc. contains detailed information and area maps that shows the locations of the various on and off site wells equipped with data-loggers.

Condition 5.1
Condition 5.1 of PTTW #4317-87CNZN requires Cedarhurst Quarries to immediately notify the local District Office of any complaint(s) arising from the taking of water authorized under PTTW # 4317-87CNZN. This condition also requires Cedarhurst Quarries to notify the local District Office of any action(s) taken or proposed action(s) with regard to any complaints. This Condition also requires self reporting of any impacts observed by Cedarhurst Quarries and provided for after hours calls to be made to the Spills Actions Centre.

During the winter/spring of 2015, several complaints were received by Cedarhurst Quarries. The proposed expansion of the pit may have initiated the majority of these complaints with these complaints being largely provided at a municipal meeting that occurred to discuss the proposed pit expansion. These complaints were from nearby area residents and dealt with perceived well interference issues, with issues of discoloured water and with wells discharging silt laden water.

Cedarhurst Quarries (through their consultants) had been discussing the complaints with staff from Central Region Technical Support. The Barrie District Office was made aware of the complaints/concerns by MOECC Technical Support staff. Therefore, the Barrie District Office was not notified directly (by Cedarhurst Quarries) of these complaints.

See Section 4.0 of this Report for "Summary of Inspection Findings" and Section 5.0 of this Report for "Actions Required".

Condition 5.2
Condition 5.2 of PTTW #4317-87CNZN requires Cedarhurst Quarries & Crushing Limited take water (both ground water and dug-out pond water) such that stream flow (from a ravine/creek) is not stopped or reduced to a rate that will cause interference with downstream uses of the water or with the natural functions of the stream.

As part of this inspection, the 'stream' in question was assessed.

Using "Discover Simcoe" air photos over the 2002-2013 period, it was determined that a small pond (either natural or a dug out cattle watering pond) has existed on the property for many years. The 2002 "Discover Simcoe" air photos show the existence of this small pond approximately 2/3 of the way up along the northern property line. This air photo was taken prior to the commencement of Cedarhurst Quarries establishment of pit operations on the site. A small ravine/creek originates near this natural pond, flows north easterly, under Highway #93 and drains onto a farm property on the east side of the Highway. At this point the ravine/creek ceases to exist. The creek eventually re-establishes itself a few hundred meters away, flows westward, crossing back under Highway #93 and eventually forms part of the MacDonald Creek system. McDonald Creek then flows northward and discharge into the Wye River just west of the community of Wyebridge, Ont.

In the area of the Cedarhurst Quarries - Teedon Pit, the ravine/creek would best be described as a seasonal water course that would flow during spring freshet and may potentially flow during other periods of extremely heavy or persistent rainfall. The ravine/creek would not be expected to carry water during other periods of the year. There may be some routine water seepage from the natural pond into the ravine but this would not be sufficient to create a flowing stream under most conditions/times of the year.

Again, using "Discover Simcoe" air photos from 2008, it appears the natural pond was enlarged significantly and used for drainage for a small area of the sand and gravel pit. With the establishment of the much larger wash water dug-out pond in 2009-2010, the small natural pond was retained, with a catch basin style drainage system being installed to drain excess water from the wash water dug-out pond to the small natural pond. An overland spillway was also installed to convey excess water from the wash water dug-out pond to the small natural pond should the catch basin drainage system become clogged. The spillway system is elevated approximately 1 meter above the catch basin drainage system. During the time of the June 30, 2015 site inspection, it was apparent that the wash water dug-out pond had not recently discharged water into the natural pond, with the water level being several meters below both the catch basin and spillway discharge elevations. As the wash water dug-out pond needs to be 'topped up' with well water from the well (PW1-09), it is unlikely that the drain systems will ever be used.

Therefore, it appears that the "stream" in question is a small seasonal creek that only flows during spring freshet or periods of extremely heavy rain. The large wash water dug-out pond discharges to the natural pond and the natural pond may discharge to the ravine. Given the location of the large wash water dug-out pond, the natural pond and the ravine/seasonal creek, it appears that there is little possibility water taking/usage on the Cedarhurst Quarries - Teedon Pit property could adversely impact stream flow in the ravine. This situation is further reinforced by the fact that Cedarhurst Quarries water taking records show a strong tendency to take water during the summer months, when flow in the ravine/creek is not likely.

2.5 ASSESSMENT OF REGULATION 387/04

Cedarhurst Quarries & Crushing Limited - Teedon Pit operation is a typical mid-sized sand and gravel extraction operation servicing a relatively localized area. As part of their operations, washed gravel is offered for sale to various clients.

Gravel washing operations take place on the pit property with ground water being taken from a on-site well, gravel washed, the resulting silty water being collected and directed to an on-site retention pond. Reuse of the stored water in the retention pond takes place, thereby greatly reducing the need to take water from the well supply.

Cedarhurst Quarries & Crushing Limited - Teedon Pit operation only uses water for gravel washing, vehicle washing and minor ancillary uses. There is no transfer of water off site and therefore, Section #10 (2) of Ontario Regulation 387/04 is not being contravened.

3.0 REVIEW OF PREVIOUS NON-COMPLIANCE ISSUES

This is the first 'Permit To Take Water' inspection of Cedarhurst Quarries & Crushing Limited - Teedon Pit operations. Therefore, there have been no non-compliance issues identified during previous inspections.

During the spring/summer of 2015, complaints were received by Cedarhurst Quarries & Crushing Limited regarding potential impacts of water taking on area residential wells. To assess the validity of these complaints, Cedarhurst Quarries & Crushing Limited retained the services of Alpha Environmental Services Inc. to visit/inspect each well of any area resident that had expressed concerns about potential well interference. Alpha Environmental Services Inc. was then to assess the validity of concerns regarding potential well interference complaints. As part of this process, site visits were undertaken on June 30, 2015 to the residential properties. During the June 30, 2015 well inspections, Ministry staff (Christopher Munro - Central Region Technical Support - Groundwater Specialist and Greg Athron - Barrie District Office - Senior Environmental Officer) accompanied Alpha Environmental Services staff and also visited the Teedon Pit. MOECC staff undertook their own assessment of the construction and maintenance of the reportedly impacted wells.

In a report titled "Assessment of Local Well Water Quality Complaints Teedon Pit" dated August 2015, Alpha Environmental Services Inc. concluded that any reported concerns about water quality or quantity issues in all off site wells was the result of poor well construction and/or poor maintenance of the wells and was not related to water taking or gravel washing operations that were occurring on the Teedon Pit property. The retained "hydrogeolgist" (employed by the one complainant) submitted a report that stated the Teedon Pit operations are causing the reported off-site impacts.

The MOECC reviewed both reports and accepts the findings of Alpha Environmental Services Inc., who stated that there was no connection between well water complaints from off-site domestic wells and the water taking/wash operations of the Teedon Pit.

The MOECC subsequently sent letters to the area residents that had expressed concerns about potential well impacts caused by the water taking by Cedarhurst Quarries - Teedon Pit. These letters stated that the the reported well issues were not related to the taking of water under PTTW #4317-87CNZN and provided specific information on proper well construction or maintenance.

4.0 SUMMARY OF INSPECTION FINDINGS (HEALTH/ENVIRONMENTAL IMPACT)

Was there any indication of a known or anticipated human health impact during the inspection and/or review of relevant material, related to this Ministry's mandate ?
No

Specifics:
N.A.

Was there any indication of a known or anticipated environmental impact during the inspection and/or review of relevant material ?
No

Specifics:
N.A.

Was there any indication of a known or suspected violation of a legal requirement during the inspection and/or review of relevant material which could cause a human health impact or environmental impairment ?
No

Specifics:
N.A.

Was there any indication of a potential for environmental impairment during the inspection and/or the review of relevant material ?
No

Specifics:
However, as noted in Section 2.3 of this Report, in 2015 the pump for Well PW1-09 was inadvertently turned on and water taking occurred for approximately 79 days uninterrupted. The Barrie District Office of the MOECC did not receive any complaints of well interference from nearby residents during this period.

Data on the volume of water taken during this unplanned taking is not detailed/precise as the pump meter on Well PW1-09 is battery operated and the batteries were exhausted at some point during the 79 day pumping event.

Due to the accidental nature of this taking, the extended period of this water taking and the lack of detailed information, additional actions are being required of Cedarhurst Quarries. It must be noted that "environmental impairment" is not suspect, but a detailed assessment is required to ensure that this is the case.

See Section 5.0 of this Report for "Actions Required".

Was there any indication of minor administrative non-compliance?
Yes

Specifics:
As noted in Section 2.4 of this Report, Cedarhurst Quarries received complaints of potential well interference from several local residents. Cedarhurst Quarries (through their consultants) had been discussing the complaints with staff from Central Region Technical Support. The Barrie District Office was made aware of the complaints/concerns by MOCEE Technical Support staff. Therefore, the Barrie District Office was not notified directly (from Cedarhurst Quarries) of these complaints.

See Section 5.0 of this Report for "Actions Required".

5.0 ACTION(S) REQUIRED

During this inspection, compliance issues were identified that need to be addressed. Therefore, Cedarhurst Quarries & Crushing Limited shall undertake the following actions by the specified times.

1. Cedarhurst Quarries & Crushing Limited shall retain a fully qualified Professional Engineer or Professional Geoscientist to undertake an assessment and produce a Report on the potential impacts of the July 29 - October 15, 2015, unplanned water taking from Well PW1-09. This assessment shall include but not be limited to the following:

   - An accurate assessment of both the rate of pumping from Well PW1-09 and of the daily taking volumes during the July 29 - October 15, 2015, unplanned pumping event. This assessment shall include a metered, multi-day long pump test under similiar conditions as those during July 29 - Oct 15, 2015.

   - A detailed assessment of potential impacts to the localized water table level, using all available information from both on-site wells and nearby off-site wells.

   - An assessment of potential impacts to flows of the small unnamed ravine/creek to the north of the wash water dug-out pond.

2. On or before June 30, 2016, provide to the undersigned Provincial Officer a copy of the Report that is required to be generated under Item #1 above.

3. Cedarhurst Quarries & Crushing Limited shall develop and maintain a "Complaints Log Book" and record all pertinent information regarding any Permit To Take Water related complaints received for the Teedon Pit operation. This "Complaints Log Book" shall be made available for review to Ministry staff upon request.

4. As part of the development of the "Complaints Log Book" Cedarhurst Quarries & Crushing Limited shall develop a "Complaints Manual" that provides clear direction to staff on procedures to deal with complaints received regarding any Permit To Take Water related issues for the Teedon Pit. As part of this "Complaints Manual"

clear direction will be provided to staff to comply with the requirements of Permit To Take Water #4317-87CNZN, specifically the requirement (Condition 5.1) requiring notification to the Barrie District Office immediately of any complaints that are received.

6.0 OTHER INSPECTION FINDINGS

During the review of PTTW #0503-7D4PX7 and Amended PTTW #4317-87CNZN, it was noted that requirements for monitoring the surface water level of the wash water dug-out pond were present in the original Permit To Take Water but not included in the current Permit To Take Water. This issue was discussed with Christopher Munro - Hydrogeologist - Technical Support - Central Region - MOECC. In a letter dated November 2, 2015 to Robert E. Graham of Cedarhurst Quarries, Mr. Munro required the establishment/re-establishment of a staff gauge in the wash water dug-out pond. Water level measurements were to be taken and recorded at the start and end of each day on which water taking occurs.

I agreed fully with the need to reinstate the routine monitoring of the wash water dug-out pond water level.

Therefore, on or before February 22, 2016 provide written notification to the undersigned Provincial Officer, that Cedarhurst Quarries & Crushing Limited has established/will re-establish a staff gauge in the wash water dug-out pond and is/will be taking water level measurements and recording these measurements at the start and end of each day on which water taking occurs.

During any subsequent request to amend or replace the Permit To Take Water for the Teedon Pit, this office will be recommending that the requirement for monitoring of the the surface water level of the wash water dug-out pond be reinstated.

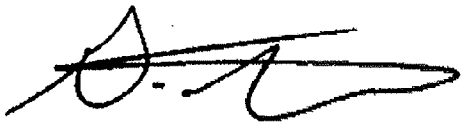
7.0 INCIDENT REPORT

Applicable
8151-A6DPFF

8.0 ATTACHMENTS

PREPARED BY:
Environmental Officer:

Name:	**Gregory S Athron**
District Office:	**Barrie District Office**
Date:	**2016/01/27**
Signature	



REVIEWED BY:
District Supervisor:

Name:	**Chris B Hyde**
District Office:	**Barrie District Office**
Date:	**2016/01/27**

Signature:

File Storage Number: SI SI TI DA 220

Note:
"This inspection report does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they may apply to this facility. It is, and remains, the responsibility of the owner and/or the operating authority to ensure compliance with all applicable legislative and regulatory requirements"

Appendix C.2
Teedon Pit Historical Reports

ALPHA ENVIRONMENTAL SERVICES INC.
212 Timpson Drive, Aurora, Ontario, L4G 5M7
905-841-7711 (V), 905-841-6014 (F)
416-722-7545 (Cell), ross@thecampbells.net

October 10, 2012

RE: Hydrogeological Assessment – Location of Watertable
Teedon Pit, Cedarhurst Quarries and Crushing Limited
North ½ Lot 79, South ½ Lot 80 Concession 1 WPR,
Township of Tiny, County of Simcoe, AES File 10-21

To Whom It May Concern,

Alpha Environmental Services Inc. ("AES") is pleased to provide you this letter of opinion as to the location of the watertable at the above noted site shown in Figures 1 and 2. Three wells (16440, MW1, and MW4) were constructed on site in the overburden at the location shown in Figure 3a. Well 16440 was drilled as a test well and was decommissioned shortly after construction. The locations of wells on the adjacent properties (MW1-09 and 25425) are shown in Figure 3a. The depths of the wells along with other relevant data are shown in the cross-section in Figure 3. The Physiography of the site and surrounding area is shown in Figure 4. The Sand and Gravel Resources Map in Figure 5 identifies the nature of the deposit on site. Figure 6 shows the drift thickness underlying the site and the surrounding area.

Cedarhurst Quarries and Crushing Limited ("Cedarhurst") has developed a Class A, Category 3 sand and gravel pit on the subject property. A proposed sand and gravel extraction operation, owned by Sargeant Company Limited, abuts the site along the southern property boundary. The remaining land around the site consists of a mix of residential and agricultural use.

The pit property, owned and operated by Cedarhurst, is located in the north ½ of Lot 79 and the south ½ of Lot 80, Concession 1 WPR, Township of Tiny, County of Simcoe, about 1.4 kilometres northwest of the community of Waverley along Darby Road (Figure 1).

The central portion of the site is relatively flat with elevations rising to about 295 m asl at the central-south-eastern property boundary (Figures 2 and 3). The topography drops sharply about 30 m over the shore cliff of former glacial Lake Algonquin located near the western property boundary (Figures 2, 3, 4 and 6) to an elevation of about 245 m asl at the western property boundary (Figure 2). The elevation at the entrance to the site along Darby Road at the eastern extreme of the site is about 255 m asl. (Figure 2)

The site resides primarily on an ice-contact deposit consisting of substratified to stratified gravel and sand including incorporated till (OGS Map P. 975). A steep scarp runs along the western and eastern portions of the site that is composed of beach ridges and near shore bars of previous stages of an ancient glacial lake (i.e., Lake Algonquin). At the base of the scarp the deposits have been sifted by subsequent lacustrine action producing a layer of boulders at the surface[1]. Sand and gravel will be extracted from the proposed pit. The material is reported to include gravel <35% with an average thickness of >6 m, having no restrictive quality indicators as shown in Figure 5. The drift thickness on site exceeds 400 feet or 122 metres according to the data in Figure 6.

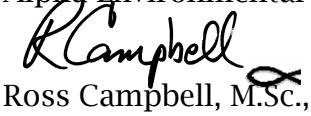
Based on the location of the watertable in MW1-09, 16440, MW1, MW4 and 25425, the watertable is estimated to vary from 236 m asl in the west portion of the site to 254.8 m asl in the center to 252.2 m asl in the east portion of the site, as shown in Figure 3. The floor of the pit will then be limited to an extraction depth of 237.5 m asl in the west portion of the site to 256.3 m asl in the center to 253.7 m asl in the east portion of the site, as shown in Figure 3 to maintain a 1.5 m buffer above the watertable. This will allow up to 41.2 m of material to be extracted from the site. By maintaining the 1.5 m buffer above the watertable, the extraction should have no impact on existing water users near the site. If there is a well interference complaint (water quantity and/or water quality), the Cedarhurst should be notified immediately and an investigation should be undertaken to determine the cause of the problem.

[1] Burwasser, G.J. and Boyd, S.T. 1974: Quaternary Geology of the Orr Lake Area (*Western Half*) – Nottawasaga Area (*Eastern Half*), Southern Ontario; Ontario Div. Mines, Prelim. Map P. 975, Geol. Ser., scale 1:50,000. Geology 1974.

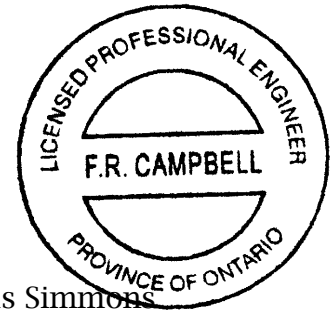
It is proposed that the aggregate will be extracted in a series of lifts. It is recommended that following each lift and prior to the commencement of the next lift, a number of test pits be excavated in the existing pit floor to probe for the watertable to ensure that groundwater is not encountered at an unexpected upper elevation and that the 1.5 metre separation distance is maintained. If water is identified at an unexpected upper elevation, an investigation should be undertaken by qualified personnel to determine if the watertable has been encountered or a perched water condition has been identified.

If you have any questions, please contact the undersigned at your convenience.

Yours truly
Alpha Environmental Services Inc.



Ross Campbell, M.Sc., P.Eng.
Hydrogeologist



c. Rick Geary, Bill Fitzgerald, Dennis Simmons

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May 8, 2015

Mr. Shawn Persaud, BA, MCIP, RPP
Manage of Planning & Development
Township of Tiny
130 Balm Beach Road West,
Tiny, Ontario, L0L 2J0

RE: Water Quality and Quantity Concerns of Local Residents
Teedon Pit, Part Lots 79 & 80, Concession 1 WPR
Township of Tiny, County of Simcoe, AES File 15-08

Dear Mr. Persaud:

Further to our recent telephone conversation, let me review what I have done to attempt to address the above noted concerns since our public meeting on Monday, January 26, 2015 that addressed the proposed Official Plan & Zoning By-Law Amendment, North Part Lot 80, Concession 1, Old Survey by K.J. Beamish Construction Company Limited (Beamish). In the minutes of that meeting, it is recorded that 11 residents voiced their concerns about water quality and quantity issues related to the operation of the existing Teedon Pit that is located adjacent to the proposed pit for which the amendment application was submitted to the Township. I spoke briefly at the meeting indicating in my professional opinion that the current operations of the existing gravel pit, specifically the pumping of water as allowed by an existing Permit to Take Water and the washing of aggregate, could not impact the groundwater in the Marshall Road area. The minutes conclude with Mayor Cornell's comment that "a second public meeting would be an appropriate next step after Beamish has an opportunity to address some of the issues."

With the approval of Beamish staff, I contacted many of the local residents to determine their concerns and offer to visit their properties to discuss their particular issues, inspect their well and obtain a sample of their well water for analyses purposes. My findings are summarized in the attached Table 1. As you can see, there are 27 wells that I have identified near or on the subject property, of which four residents indicated that they have well and/or pond water quality and/or quantity concerns. These concerned residents include: (1) Pigeons, (2) Andersons, (3) Irvines, and (4) Towers. While other residents that were contacted were agreeable to my suggested field inspection and well water sampling and analyses, the four residents with concerns, along with Christopher Williams who

had no water concerns, declined the offer of inspection and sampling. Mr. Williams stated to me that while he has no concerns now and that his well flows at 8-10 Igpm, he has concerns that the Pigeon's problems may become his problem. His well (Well #5711301) is about 2,500 metres away from the Teedon production well, PW1-09 (Well #7124734) as shown in Figure 1.

In light of the above noted reaction from the five concerned residents, I began an extended evaluation of the local hydrogeology based on the well record information available from the MOECC. The selected well locations that included the five concerned resident's wells are shown in the attached figure (Figure 1).

There are two major aquifer complexes locally, one relatively shallow and the other located at a deeper elevation. On Figure 1, I have drawn the shallow watertable contours and added arrows showing the groundwater flow direction in the shallow aquifer, based on the static water elevations reported in the shallow aquifer MOECC well records. Radial flow in this aquifer appears to centre on the high ground south of the wash pond at the Teedon site. The highest measured local static water elevation was found in the monitoring well beside the wash pond MW1 (Well #7054134), located in Figure 1 at about 252 m asl. The distance from this well to the concerned resident's wells were as follows: Pigeon (1,750 metres), Tower (1,820 metres), Williams (1,995 metres), Irvine (995 metres), and Anderson (775 metres).

It is reported that the Pigeon two wells (no well records), the Tower well (no well record), and the Williams well (Well #5711301) are all flowing wells; however, the well record indicates that the static water level of the Williams well (Well #5711301) was at 13.4 metres (or 202. 6 m asl) at the time of construction. The two Pigeon wells are old 4-inch diameter wells (probably about 1960 vintage), the Tower well is a sand-point and the Williams well (Well #5711301), drilled in June, 1961, is 6-inches in diameter. The ground elevation at these wells appears to vary from about 216 to 218 m asl. The Williams well (Well #5711301) located water at a depth of 35.1 metres (or 180.9 m asl). It would appear that the Williams well (Well #5711301) locates water in an aquifer that is deeper than the aquifer reached by either the Pigeon or Tower wells. The Williams well (Well #5711301) was drilled to a much deeper depth than a well point could reach (~8 metres) and, according to the well record, the well does not flow. The Williams well (Well #5711301) appears more likely to be getting water from the deeper aquifer, finding water at about the same elevation as the monitoring well (Well #7124729) found at the west end of the Sibthorpe property (located in Figure 1), as shown in Cross-Section #2 (Figure 3). Cross-Section #2 (Figure 3) together with Cross-Section #1 (Figure 2) shows the relationship between the aquifer complex yielding water to the Williams well, the monitoring well (Well #7124729) found at the west end of the Sibthorpe property, and the Teedon production well, PW1-09 (Well #7124734). All three wells locate water in sand that is overlain by clay or silt, which in turn is overlain by sand and gravel that was reported to be water bearing in the monitoring well (Well #7124729) found at the west end of the Sibthorpe property, and the Teedon production well, PW1-09 (Well #7124734). The shallow water bearing zone provides the water supply to well #7208201 (Figure 1) at a depth of 15.8 metres or an elevation of 220 m asl (Figure 3). The static water level in

this well is located at 2.7 metres below grade or 233.3 m asl and may be the shallow aquifer that provides water to the Pigeon and Tower wells (Figure 1).

The deeper aquifer, which is tapped by the production well, PW1-09 (Well #7124734) at the Teedon site, located water at a depth of 57.9 metres below grade and had a static water level of 22.3 metres below grade. Since the ground elevation at this well is about 261 m asl, the water was located at an elevation of about 203.1 m asl and the static elevation was about 238.7 m asl.

The above information was supplied to Mr. Ross Hodgins, Hydrogeologist, MOECC who is very familiar with the site and its operation, having reviewed and approved the Permit to Take Water application for the Teedon production well, PW1-09 (Well #7124734). Mr. Hodgins responded by email on February 27, 2015 (see attached) as follows:

> On February 9, 2015, Bonnie Pigeon called me at the suggestion of the Township who advised her to launch a formal complaint with MOECC. She explained that they have two rather old small diameter wells, one supplying the house and the second their barn both of which flow and have served the property since they moved in the 1980's. From her description, it appears the wells feed a cistern or reservoir from which they then pump for use and Ms. Pigeon complained that the flow had declined in the past few years. There are no records on file for her wells given the age and construction but I expect neither is screened. Assuming the wells rely totally on a free flow condition to an adjacent reservoir from which they then pump for use, long-standing Ministry policy would therefore not protect such supplies against interference. As I indicated in my previous correspondence, considering the limited zone of influence from past use of the site production well according to the off-site logger, even if the Pigeon wells and others in the vicinity were within the same aquifer unit all would likely be well beyond any potential impact zone.
>
> Although Ms. Pigeon indicated that she was lodging a formal complaint to the Ministry as recommended by the Township, I provided her my e-mail address and asked her to provide details of her complaint in writing. While she readily agreed to do so during the telephone conversation, I have not as yet received any correspondence from her. To this date, I have not been contacted by any other residence nor has Greg Athron, from our Barrie District Office.

I was out of the country for March, but on returning I sent a brief email on April 16, 2015 to Mr. Hodgins as follows:

> Any update on complaints at the Tendon site? Has Bonnie formally complained in writing? Do you have any further comments on the comments of the neighbours? Can you attend the next public meeting to address any complaints? Could you formalize your thoughts in writing to Shawn Persaud, the local planner with a copy to myself?

On April 21, 2015 in a telephone conversation with Mr. Hodgins and Mr. Chris Munro, Hydrogeologist, MOECC the following information was given to me:

- Mr. Hodgins is retiring in June and Mr. Munro will be taking over in his place.
- Ms. Bonnie Pigeon has not lodged her complaint formally in writing.
- Neither gentlemen will come to any future public meeting because it is not warranted.
- They both are of the opinion that given the information available, this would be classified as a trivial complaint without grounds.
- Again, given the information available, in their opinion, there is no potential for interference from the operation of the wash plant and/or the pumping well on the local residential wells.

Three additional items of interest were discussed with Mr. Hodgins and Mr. Munro, as follows:

- No washing of aggregate or pumping of water occurred on site in 2014, yet the residents with water quality/quantity issues reported similar problems occurred in 2014 as in other years.
- We reviewed the on-site water use records from 2008 to 2014, summarized the water taking records in the attached Tables, and noted the following:

    1. No water use was recorded in 2008.
    2. Water was recirculated through the wash plant on 88 days in 2009 with a total of 174,431,841 litres being pumped through the closed-loop system; no groundwater was pumped from the Teedon production well, PW1-09 (Well #7124734).
    3. Water, totalling 19,175,443 litres, was pumped to the wash pond from the Teedon production well, PW1-09 (Well #7124734) on 4 days in 2010; however, no water was recirculated through the wash plant that year.
    4. Water totalling 33,823,772 litres was recirculated through the wash plant in the closed-loop system on 30 days while 14,203,674 litres of water were pumped to the wash pond from the Teedon production well, PW1-09 (Well #7124734) on 23 days in 2011
    5. Water totalling 51,338,692 litres was recirculated through the wash plant in the closed-loop system on 41 days while 34,749,459 litres of water were pumped to

the wash pond from the Teedon production well, PW1-09 (Well #7124734) on 36 days in 2012

6. Water totalling 55,388,579 litres was recirculated through the wash plant in the closed-loop system on 36 days while 18,183,554 litres of water were pumped to the wash pond from the Teedon production well, PW1-09 (Well #7124734) on 18 days in 2013

7. No water was recirculated through the wash plant in the closed-loop system or pumped to the wash pond from the Teedon production well, PW1-09 (Well #7124734) in 2014

- Since the concept of a closed-loop aggregate washing system is not familiar to the local residents, please refer to the graphic representation of this concept that is attached as Figure 4 and Figure 7.

- Pumping of the Teedon production well (PW1-09, Well #7124734) has no impact on the adjacent monitoring well – MW4 (Well #7150631) that is 17.7 metres deep, having located water at a depth of 15.2 metres in the shallow aquifer. The locations of both wells are shown in the attached Figure 1. The static water level of the adjacent monitoring well – MW4 (Well #7150631) along with the water level of the Teedon production well (PW1-09, Well #7124734) are shown in Figure 5 from November, 2010 to November 2013. The water level data indicates that if pumping the Teedon production well, PW1-09 (Well #7124734) in the deep aquifer approximately 5 metres away from the shallow monitoring well has no impact on the static water level in the shallow aquifer, it would be impossible for any impact to be experienced, as reported, at the wells located far away by: Pigeon (1,750 metres), Tower (1,820 metres), Williams (1,995 metres), Irvine (995 metres), and Anderson (775 metres).

We have recently received a copy of a complaint from Mrs. Janet Irvine (that is attached) submitted to Mr. Hodgins and forwarded to me by Mr. Christopher Munro, MOECC. Mr. Dennis Simmons, as requested by MOECC, responded to Mrs. Irvine's complaint by discussing the complaint with her by phone and following up with an e-mail to her, which is attached. Mr. Simmons wrote:

> "As discussed, Ross Campbell (hydrogeologist representing Beamish) and myself would be more than happy to meet with you at your property to obtain further details on your concerns, undertake observations and take some water samples to help you establish what is causing your sediment problems. I understand through our telephone conversation that at present, you are still encountering silt problems."

No further communication with Mrs. Irvine has been received.

On May 6, 2015 I received a copy on an email (attached) from Mr. Christopher Munro, MOECC that was sent to Mr. Bob Graham, Beamish in which Mr. Munro requested the following:

> The Ministry would like all the daily records of taking under Permits to Take Water # 0503-7D4PX7; 3302-7SAMEA; and 4317-87CNZN, issued on April 18, 2008, December 14, 2009, and July 23, 2010.
>
> In addition, please provide all wash pond water levels as required under Condition 4.3 of PTTW # 0503-7D4PX7 issued April 18, 2008.

The daily water taking records are attached in a series of Tables (Tables 1 to 7). However, it is my understanding that PTTW # 0503-7D4PX7 issued April 18, 2008 was amended by PTTW # 4317-87CNZN (see attached) that states:

> Section 4.2 The permit holder shall install and maintain a continuous water level recorder within production well, PW1-09 (Well #7124734) prior to the start of any taking of water from that source. Additional water level records shall be installed and maintained in at least one on-site well of comparable depth to PW1-09 (Well #7124734) and one on-site well terminating within the shallow aquifer unit underlined the site. Data collected shall be available to ministry staff at any time upon request.

In an attempt to be cautious, AES recommended to Beamish that continuous water level recorders be installed in a total of 4 on-site wells and 3 off-site wells instead of the minimum of 3 water level recorders as stipulated in Section 4.2 as noted above; 4 of the wells including the Teedon production well, PW1-09 (Well #7124734) that we are monitoring are in the same aquifer as the Teedon production well, PW1-09 (Well #7124734), while 3 wells are in the shallower aquifer mentioned previously. One of those shallow wells (MW1 or Well #7054134) is located adjacent to the wash pond (Figure 1) and water levels in this well would be expected to reflect the wash pond water levels. A hydrograph for MW1 (Well #7054134) showing static water levels in the well from October 2010 to November 2014 is attached (Figure 6). There is a correlation between the adding of water to the wash pond from the Teedon production well, PW1-09 (Well #7124734) raising the water level in MW1 that reflects the rising water level in the wash pond.

Further we received another email from Mr. Christopher Munro dated May 7, 2015 (attached) in which he stated that:

> The Ministry has received another well complaint from #1189 Marshal Road associated with your Permit to Take Water # 4317-87CNZN for the Teedon Pit, 90 Darby Road, Tiny Township. A copy of the well compliant is attached to this email. Within the complaint is a list of other neighbours that they say are being impacted. I will ask the complainant to inform their neighbours to contact myself or the MOECC District Office with details if they have any issues. So at this moment, please address 1189 Marshal Road with this request.

Please respond to the well complaint and keep myself informed of your progress.

The complainant's comments are also attached and have been responded to in a timely fashion today with a copy of Dennis Simmons' comments attached.

Mr. Persaud, the above factual information demonstrates that there is no connection between water use at the Teedon Pit and the concerns of the four local residents. Staff at the MOECC who are familiar with the hydrogeology in the area and the monitoring data for the Teedon site are convinced that there is no connection between the issues raised by the four residents and the water use that has taken place at the Teedon site. I remind you that the MOECC staff consider the complaint as trivial and not legitimate. They have indicated to me that they will not provide comments to me in addition to those cited above. Again as Mr. Hodgins has stated, "Assuming the wells (i.e., Pigeon wells) rely totally on a free flow condition to an adjacent reservoir from which they then pump for use, long-standing Ministry policy would therefore not protect such supplies against interference. As I indicated in my previous correspondence, considering the limited zone of influence from past use of the site production well according to the off-site logger, even if the Pigeon wells and others in the vicinity were within the same aquifer unit all would likely be well beyond any potential impact zone."

Perhaps the comments of Mrs. Haggart in Table 8, whose well is located between the Pigeon wells and the subject property (Figure 1) will add some clarity here. Mrs. Haggart stated to me that the "watertable seems to be a little higher and the water seems to be a little more silty. Our well is 82 feet deep. It was drilled 25 years ago. We have had great water for 25 years. The water level is about 6 inches below the ground surface. The water system has no filtration system. Some silt is left in the sink if water is left there over night, but we've never had a real problem. We have never kept track of the silt issue. Originally the well was drilled to 40 feet, but the formation was too silty and so the driller continued on another 42 feet and got clear water. The water has been great for 25 years." This well is about 2,085 metres away from the Teedon production well, PW1-09 (Well #7124734), as shown in the attached figure (Figure 1). It appears that the local shallow aquifer complex contains fine silt, too fine for the Haggart's driller to make a well at 40 feet (12.2 metres). So he continued drilling another 42 feet (12.8 metres) and for the last 25 years they have had "great water." Without filtration on the system, the Haggarts have "some silt left in the sink if the water is left there over night, but they never had a real problem."

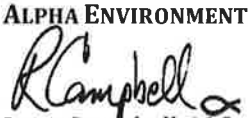
Perhaps this is the problem that the Pigeons and Towers are experiencing with their shallow wells. The shallow aquifer is silty and while it yields domestic supplies of water, the very fine nature of the aquifer material appears to result in varying amounts of silt in the water. The Lennards and the MacDonalds reported that they have some silt in their water supply, but have not complained about it. The fine silt in the shallow aquifer may also be the problem that the Irvines are experiencing with their relatively shallow well (18.9 metres deep) with a fine 14-slot screen that located water in what the driller referred to as medium to fine sand. Perhaps some additional development of this well would help remove the fine sand. Perhaps a filter on their water system is necessary to remove the fines that are getting through their well screen. This well was drilled in October, 1974, about 41 years

ago. Over this time, the screen may have developed an enlarged area that is leaking fine sand. It may be time for the Irvines to consider some well maintenance or replacement with a deeper well or a differently constructed well (e.g., a gravel-packed well) or both may be required.

As for the Anderson concern, no well record is on file for the well on this property and no information has been given by Mr. Anderson about the well. The problem here may be related to that experienced by the Irvines, the Towers and the Pigeons. In either case, the water use at the Teedon Pit is not related to these issues. The fact that no water has been pumped at the Teedon site either from the production well or the wash water pond in 21 months, and yet the complainants continue to report silty water in their well water supplies suggests that some other factor than water use at the Teedon site is contributing the silt to these water supplies.

If you have any questions or comments, please call me at your convenience.

Yours truly
ALPHA ENVIRONMENTAL SERVICES INC.



Ross Campbell, M.Sc., P.Eng.

c. Mr. Ross Hodgins, Hydrogeologist, MOECC, ross.hodgins@ene.gov.on.ca
Mr. Christopher Monro, Hydrogeologist, MOECC, Christopher.munro@ene.gov.on.ca
Mr. Dennis Simmons, DCS Development and Land Management Consulting Services, wolfsimmonsd@aol.com
Mr. Doug Leslie, K.J. Beamish Construction Co., Limited, dleslie@kjbeamish.ca
Mr. Les Selby, Planning Consultant, lescselby@sympatico.ca

From: Hodgins, Ross (MOECC) ross.hodgins@ontario.ca
Sent: Feb 27-15
To: Ross Campbell
Subject: Beamish Pit in Waverley, ON

On February 9/15, Bonnie Pigeon called me at the suggestion of the Township who advised her to lodge a "formal complaint" with MOECC. She explained that they have two rather old small diameter wells, one supplying the house and the second their barn both of which flow and have served the property since they moved in the 1980's. From her description, it appears the wells feed a cistern or reservoir from which they then pump for use and Ms. Pidgeon complained that the flow has declined in the past few years. There are no records on file for her wells given the age and construction but I expect neither is screened. Assuming the wells rely totally on a free flow condition to an adjacent reservoir from which they then pump for use, long standing Ministry policy would therefore not protect such supplies against interference. As I indicated in my previous correspondence, considering the limited zone of influence from past use of the site production well according to the off-site logger, even if the Pidgeon wells and other in that vicinity were within the same aquifer unit all would likely be well beyond any potential impact zone.

Although Ms. Pidgeon indicated that she was lodging a formal complaint to the ministry as recommended by the Township, I provided her my E mail address and asked her to provide details of her complaint in writing. While she readily agreed to do so during the telephone conversation, I have not as yet received any correspondence from her. To this date, I have not been contacted by any other area residents nor has Greg Athron, from our Barrie District Office.

Ross Hodgins

From: Janet Irvine [mailto:pinecreststables@live.com]
Sent: April-25-15 8:01 PM
To: Hodgins, Ross (MOECC)
Cc: Armstrong, Brent (MNRF)
Subject: Beamish Pit in Waverley, ON

Dear Ross Hodgins,

My husband and I live at 7062, Hwy 93, Tiny, and have been here since 2000. I am self-employed and operate my business here.

We are making a formal complaint to the Ministry of Environment, regarding the Beamish Pit in Waverley, ON. We are experiencing an adverse impact.

We have a drilled well. We have noticed, since 2010, our water quality has changed. We have been getting sediment in our hot water filter and our washing machine filter. Where as before this time, we never had this issue. We have had to replace our hot water tank and our washing machine.

We have worked really hard to establish a reputable business, this is our livelihood. We are very concerned that if this Pit continues to operate as it is, or expands, that it could decrease the value of our property.

Another concern is the quantity of water. We are concerned about operations at the Pit changing our water table.

We look forward to your response to our concerns.

Thank you,

Janet and Glenn Irvine

From: wolfsimmonsd@aol.com
Sent: May 5/2015
To: pinecreststables@live.com
Cc: ross@thecampbells.net, christopher.munro@ontario.ca, spersaud@tiny.ca, dleslie@kjbeamish.ca, rgeary@kjbeamish.ca
Subject: FW: PTTW # 4317-87CNZN - Well Complaint

Janet: Further to our telephone conversation earlier today please see attached e-mail from Christopher R. Munro, hydrogeologist, Ministry of the Environment requesting that Beamish respond to your well complaint. Bob Graham, Senior Vice President has asked me to follow up on this matter. As discussed, Ross Campbell (hydrogeologist representing Beamish) and myself would be more than happy to meet with you at your property to obtain further details on your concerns, undertake observations and take some water samples to help you establish what is causing your sediment problems. I understand through our telephone conversation that at present, you are still encountering silt problems.

The Beamish (Teedon) pit just opened up last week with some sand having been drawn from a stockpile on site. No washing of aggregate on site has taken place since 2013 and no washing will be done in the foreseeable future as Beamish no longer has a contract to provide washed sand to Atlas Block. However, in the future, washing of aggregate may take place. We are confident that pit operations (above water table extraction) at the Teedon pit has not impacted any water wells in the vicinity of the pit, however as mentioned above we would be pleased to meet with you. If you wish, we can visit the Teedon pit property with you, observe the constructed ponds, well locations and the extractive area and answer any questions you may have pertaining to past and present pit operations.

Ross Campbell can provide you details on the aggregate washing that has taken place at the pit site and provide detailed information on his ground water assessment undertaken to date.

You mentioned that you would discuss the possibility of meeting with us with your husband and get back to me. I would very much appreciate hearing back from you.

Thank You,

Dennis C. Simmons
(705) 447-1117

From: Munro, Christopher (MOECC) <Christopher.Munro@ontario.ca>
To: Bob Graham
CC: Ross Campbell
Date: May 6, 2015
Subject: Teedon Pit - Water Taking under PTTWs # 0503-7D4PX7; 3302-7SAMEA; and 4317-87CNZN

Dear Mr. Graham,

The Ministry would like all the daily records of taking under Permits to Take Water # 0503-7D4PX7; 3302-7SAMEA; and 4317-87CNZN, issued on April 18, 2008, December 14, 2009, and July 23, 2010.

In addition, please provide all wash pond water levels as required under Condition 4.3 of PTTW # 0503-7D4PX7 issued April 18, 2008.

Regards,
Christopher.

PTTW # 4317-87CNZN - Well Complaint #2
1 message

Munro, Christopher (MOECC) <Christopher.Munro@ontario.ca> 7 May 2015 at 16:00
To: "bgraham@kjbeamish.ca" <bgraham@kjbeamish.ca>
Cc: "ross@thecampbells.net" <ross@thecampbells.net>, "Mott, Ken (MNRF)" <ken.mott@ontario.ca>, "Athron, Greg (MOECC)" <Greg.Athron@ontario.ca>

Dear Mr. Graham,

The Ministry has received another well complaint from #1189 Marshal Road associated with your Permit to Take Water # 4317-87CNZN for the Teedon Pit, 90 Darby Road, Tiny Township. A copy of the well compliant is attached to this email. Within the complaint is a list of other neighbours that they say are being impacted. I will ask the complainant to inform their neighbours to contact myself or the MOECC District Office with details if they have any issues. So at this moment, please address 1189 Marshal Road with this request.

Please respond to the well complaint and keep myself informed of your progress.

Regards,

Christopher.

Christopher R. Munro, MSc.Eng, P.Eng
Hydrogeologist
Technical Support Section
Central Region
Ministry of the Environment
and Climate Change
5775 Yonge St., 8th Floor
North York, ON M2M 4J1

tel: (416) 326-3766
fax: (416) 325-6347

Complaint letter from Bonnie Pauze and Jake Pigeon

Follow up Email from our telephone conversation of Feb 9/2015 regarding the Beamish Waverley pit (Cedarhurst Quarries)

We are making a formal complaint to the Ministry of the Environment regarding the existing Beamish Pit in Waverley ON. (Cedarhurst Quarries and Crushing LTD). We are experiencing an adverse impact and the following neighbours are also experiencing an adverse impact.

- Peter and Jenny Anderson
- Kim Tower
- Glenn and Janet Irvine
- Bonita and Rick Haggart
- David Barkey
- Rick Lang

We have lived at 1189 Marshal Rd. since 1993. We have two artesian wells that are essential to our existence and to our farming operation.

The quality, quantity and clarity of our water was excellent. This was validated through extensive testing which was done by a world renown hydro geologist during the site 41 conflict. This was Dr.Bill Shotyk University of Heidelberg as Professor and Director of the Institute of Enviromental Geochemistry.

It was the spring of 2009 when there were the initial changes to our two flows .The quantity of water significantly diminished.

In June, July, August and September 2009 we had silt in our water in both flows. The water was no longer clear. It was muddy and we could no longer drink it.

In 2009, the well which is south of us, overflowed. This well belonged to our neighbor MR. Steve Ogden. Also, and in addition to this, water started to flood the ditches on Marshall Rd to such a point that the Township of Tiny had to place a culvert across Stamp Side Road to divert the excess water.

The only changed activity was the development and mining of Cedarhurst Quarry off of Darby Rd. in Tiny Township

In the winter of 2009, the amount of silt in our water diminished.

In the spring 2010 the silt returned to both artesian wells. At this point I started to collect water samples.

Summer 2010 my husband visits the Pit on Darby road and speaks to a pit worker who says they wash gravel. He calls 705 325 7447 he speaks to Rick who said he would make a note of it but they had not washed any gravel this year.

Summer 2010 called the township and complained to By law

Sept 2010 Silt continues.
Replaced two washing machine due to silt destroying the pumps.
Pressure tank needed to be replaced
Water pump all needed replacement due to the silt

October 2010 cleaned holding area for water. It had buckets of silt .
The Intake was covered. We bought a water filtration system with .005 filters

January 2011 hot water tank cleaned for two pails of silt Hydro Bill 700 dollars and we replaced two toilets damaged by silt

June 2011 silt increases in both wells
Dr. Bill Shotyk University of Heidelberg as Professor and Director of the Institute of Environmental Geochemistry, was called and he retested our water.

July 2011 replaced hot water tank
Flushed our hot water heating system and replaced radiators.

Aug 5/2011 lots of silt in both flows
I called Rick at Beamish expressing my frustration and concerns. He said he would send a man to have a look the following day but didn't feel it's his problem and they that are not having an impact on our wells. No study was done to confirm whether or not they were having an impact.
I waited all day no one appeared .

Aug 6 /2011 I called back to Beamish and left voice mail. No one returned my call.

On Aug 2011 I called the township bylaw who said they would call us when there would be a public mtg.

Spring 2012. silt in our water cleaned well reservoir
replaced another washing machine.
Pump in Jacuzzy plugged with silt
Waiting for mtg .

2013 silt in both flows

2014 received notification from Tiny Township of Beamishes request to expand and the public meeting January 26/2015.

Outcome of the Mtg. Tiny Township agrees to put Zoning approval on hold due to a lack of information and concerns addressing the issues.

Ad hoc information

Our neighbor Steve Ogden had adverse effects with Beamish regarding his water and had reported it to the MOE ,MNR, County of Simcoe, and the Township of Tiny with no positive outcome or cumulative impact study implemented

He decided to sell his property and it was purchased by Sarjeant's Paving Company. How coincidental?

Our concerns are also with Sarjeant's NEW developments where they have clear cut approximately 40 acres of old growth maples and they have permit to remove 2 million tonnes of aggregate per year. We are very concerned how this will further impact our aquifer. This area is over the very recharge zone which is referred to in Jagger Hims calibrated model report which was completed for the county of Simcoe.

Do they have a water taking permit?

Has a cumulative impact study been completed involving a three kilometer radius of this site?

At present Beamish Pit, Cedar Hurst Quarry Pit, and the Sidhorpe Pit have a permit to remove 600 thousand tonnes per year and can remove 1.2 million liters of water from the aquifer daily. This is the very aquifer that is identified in the Jagger Report, Hydro Geologist consultation, which indicates that the Waverley uplands are a recharge zone and need to be protected.

In Conclusion:

It is our understanding that when a water taking permit has been issued by the Ministry of Environment, it is the responsibility of the permit holder to address any complaints and/or concerns and the district office shall immediately be notified. Has this been done by the permit holder?

There has been a permanent adverse effect and a negative impact to our water supply since they commenced mining the Waverley Uplands.

This area has been investigated in the past. Site 41 was stopped with prudent judgement to protect the precious aquifer. There is substantial investigation and documentation that would support our

request for a cumulative impact study before any further mining occurs in this very water sensitive area.

Looking forward to your response to our concerns.

Bonnie Pauze and Jake Pigeon
Box 1262
1189 Marshall Rd
Tiny Ontario
L0L 2J0
705-322-2579

brentstore@ymail.com

Wolfsimmonsd@aol.com <Wolfsimmonsd@aol.com>
8 May 2015 at 14:05
To: brentstore@ymail.com
Cc:ross@thecampbells.net, christopher.munro@ontario.ca, ken.mott@ontario.ca, kim.benner@ontario.ca, spersaud@tiny.ca, bgraham@kjbeamish.ca, dleslie@kjbeamish.ca, rgeary@kjbeamish.ca, les.selby3@gmail.com

Bonnie: Please see attached e-mail from Christopher R. Munro, hydrogeologist, Ministry of the Environment requesting that Beamish respond to your well complaint. Bob Graham, Senior Vice President, K. J. Beamish Construction Co., has asked me to follow up on this matter. I understand that you have talked to Ross Campbell (hydrogeologist representing Beamish) on two different occasions. As per your discussions with Ross Campbell, Ross and myself would be more than happy to meet with you at your property to obtain further details on your concerns, undertake observations and take some water samples to help you establish what is causing your sediment problems. I understand through your e-mail that at present you are still encountering silt problems.

The Beamish (Teedon) pit just opened up last week with some sand having been drawn from a stockpile on the site. No washing of aggregate on site has taken place since 2013 and no washing will be done in the foreseeable future as Beamish no longer has a contract to provide washed sand to Atlas Block. However, in the future, washing of aggregate may take place. We are confident that pit operations (above water table extraction) at the Teedon pit has not impacted any water wells in the vicinity of the pit, however as mentioned above, we would be pleased to meet with you. If you wish, we can visit the Teedon pit property with you, observe the constructed ponds, well locations and the extractive area and answer any questions you may have pertaining to past and present pit operations.

Ross Campbell can provide you details on the aggregate washing that has taken place at the pit site and provide detailed information on his ground water assessment undertaken to date.

I await your reply in this regard.

Thank You,

Dennis C. Simmons
(705) 447-1117

Table 1

	Residents and Wells near Sibthorpe – Teedon Site										
	Name	Address	Phone	Comments, Nature of Water Concerns	Type of Well	Date of well Construction	Depth of Well (m)	Depth to pump (m)	Depth to Water Found (m)	Static Water Level (m)	Aquifer Material
1	Bonnie & Jake Pigeon	1189 Marshall Road, PO Box 1262, Tiny, ON L0L 2J0	705-322-2379; 705-718-2948 (Cell)	Don't want to cooperate with water sampling program until after the next public meeting; no well record available; silty water; about 2,300 metres from PW1-09	uncertain, no well record	uncertain	uncertain	uncertain	uncertain	flows	uncertain
2	Alvin & Martha Lennard	1080 Marshall Road, Tiny, ON	705-322-2948	There since 1986, no problems, some silt seen in toilets if the water is allowed to sit for a while, some sulfur smell that seems to come and go, ok to sample, about 2,828 metres from PW1-09	drilled	uncertain	39.6	22.9	uncertain	uncertain	uncertain
3	Ken & May MacDonald	_____ Carpenter Road, Tiny, ON	705-322-2641	very pleasant, call & set up time to get sample, well presently covered with snow, no problems with water, well is 35-38 ft deep, lots of water, can monitor, about 2,230 metres away from PW1-09, no well record available	uncertain, no well record	uncertain	11.6	unmertain	unertain	uncertain	uncertain
4	Christopher Williams (Well #5711301)	1119 Marshall Road, Tiny, ON L0K 2E1	705-790-9301	water is clear, tested twice before buying 18 months ago, no concerns now, 8-10 Igpm, flows, has concerns that Pigeon's problems may become his problem, wants an outline of Beamish's plan to be presented at the public meeting & will not participate in any well monitoring program until he understands what Beamish is planning to do, about 2,500 metres away from PW1-09, Well #5711301	drilled	July 6, 1961	36	30.5	35.1	13.4	coarse sand
5	David Harley	30 Darby Road, Tiny, ON L0K 2E1		about 260 metres away from PW1-09, cannot find phone number	dug	uncertain	8.53	uncertain	8.53	7.3	uncertain
6	Peter & Jeanne Anderson	6970 County Road 93, Tiny ON L0K 2E1	705-322-6657	have had a problem, fine silt in their water, replaced 4 dishwashers since 2007, last one replaced December 2014, first one replaced in Oct 2013, two more replaced in 2014, sensor clogged, easier to replace machine that the sensor, no problems in the winter, pond level has dropped, lived there since 2004, received legal advice not to let anyone on their property until after the next public meeting, about 660 metres from PW1-09	uncertain	uncertain	uncertain	uncertain	uncertain	uncertain	uncertain
7	Mark Oldfield (Well #5725307)	1149 Marshall Road, Tiny, ON L0K 2E1	705-527-7332	called Sat Feb 7/15 at 12:20 PM, no answer, about 1850 metres away from PW1-09, no issue with water quality or quantity but wants to be sure that remains the case in the future, about 1,850 metres from PW1-09	drilled	May 4, 1989	40.6	39.0	40.5	9.1	sand
8	Mark Oldfield (Well #5732307)	1150 Marshall Road, Tiny, ON L0K 2E1	705-527-7332		drilled	June 26, 1996	19.8	16.8	19.8	uncertain	sand
9	Glen Irvine (Well #5711871)	7062 Highway 93, Tiny, ON L0K 2E1, Pinecrest Stables	705-322-4509	Water problems, water filter clogged, water heater filled with sediment, call back about 3 PM, Sat Feb 7/15, about 980 metres away from PW1-09	drilled	October 11, 1974	18.9	16.8	18.9	10.4	sand
10	Kim & Rob Tower	1190 Marshall Road, Tiny, ON L0K 2E1	705-322-1156	have water problem, spring, summer, fall, silt clogs water filter, sits on toilet bottom, have a sand point, water flows to surface, lived there since 2008, well point installed in 1980 by Kim's father, water has always been good until one year ago, prior to 1980 had the farm across the road (Pigeon's place), raised the tile in late 2013 noticed the problem, a lot more in 2014, have to change water filter every 2 months in the spring, summer, and fall but every 1 months in the winter, use a jet pump, not sure how deep the sand point is, couple of years ago the well was tested for bacteria and it was fine then, wants to have the public meeting and then decide what to do about monitoring, about 2,400 metres away from PW1-09	well point	1980	uncertain	uncertain	uncertain	uncertain	uncertain (likely sand)
11	Rick & Bonita Haggart	1239 Marshall Road, Waverley, ON, L0K 2E1	705-322-6985	watertable seems to be a little higher and the water seems to be a little more silty, well is 82 feet deep, drilled 25 years ago, great water for 25 years, water level about 6 inches below surface, since Sargeant began clear cutting Ogden well had to be raised two tiles, used to have their water level measured every two months by Sargeant but that stopped when the got approval, their water system has no filtration system, some silt left in sink if water is left over night, never had a real problem, never kept track of silt issue, originally the well was drilled to 40 feet but the formation was too silty and so the driller continued on another 42 feet and got clear water, water has been great for 25 years, contact when I will be coming out to sample their water and measure water level in their well, about 2,085 metres away from PW1-09	drilled	?	25.0	?	?	0.15	sand (?)
12	Jen Desroches (Well #5704168)	248 Stump Sideroad, Elmvale, ON L0L 1P0	705-322-0967	no answer to phone call, will call again, called Feb 19/15, left message to call me if any well water concerns, about 900 metres from PW1-09	drilled	June 29, 1961	36.0	30.5	35.1	13.4	sand
13	TireBuster (Well #7171912)	7002 Highway 93, Wyebridge ON		about 780 metres from PW1-09	drilled	Aug 8 2011	24.4	20	23	12.4	sand
14	#7086 Highway 93 (Well #5740929)			about 1,190 metres from PW1-09	drilled	Nov 14 2005	22.9	20.7	7.6	13.1	sand, clay
15	Charles Pender (Well #5739944)	250 Stump Sideroad, RR#1 Wyebridge, ON		about 890 metres from PW1-09	drilled	July 19 2005	16.2	14.7	16.2	12	sand, medium
16	Gord Thompson, Stump Sideroad (Well #5725435)	284 Queen Street, Midland, ON		about 850 metres from PW1-09	drilled	Aug 31 1989	88.4	85.3	87.8	15.8	sand
17	Stump Sideroad, (Well #7208201)			about 2,050 metres from PW1-09	drilled	Aug 6 2013	15.8	7.6	15.8	2.7	Sand, stones, loose
18	Cassell (Well #17709)	___ Darby Road		57.9 metres deep (190 feet), grade elevation 257 masl, screen 57.0 to 57.9 metres or 200 to 199.1 masl, presume that the well can sampled in the spring, about 184 metres away from PW1-09	drilled	Sept 23 1981	57.9	53.3	56.4	19.8	sand
19	Former Ogden Well , Marshall Road	___ Marshall Road		about 1,920 metres from PW1-09							
20	Highway 93 (Well #5709931)			about 300 metres from PW1-09	drilled	May 4 1973	13.1	10.7	7.01	7.01	sand
21	GE Burleigh (Well #5710842)	___ Darby Road		about 200 metres from PW1-09	drilled	Feb 1 1974	16.5	13.7	10.97	7.6	sand
22	Well #25125	___ Darby Road		19.8 metres deep (65 feet), grade elevation ~255 masl, screen 10.4 to 11.6 metres or 244.6 to 243.4 masl, presume that the well can sampled in the spring, about 260 metres away from PW1-09	drilled	Aug 8 1989	19.8	9.1	11.6	0.9	sand
23	PW1-09 (Well #7124734)	___ Darby Road		67.7 metres deep (222 feet), grade elevation 262.5 masl, screen 197.9 to 194.8 masl, can sample in the spring, about 0.0 metres away from PW1-09	drilled	April 29 2009	67.7	36.6	57.9	22.3	coarse sand overlain by fine sand
24	MW4 (Well #7150631)	___ Darby Road		17.7 metres deep (58 feet), grade elevation 262.5 masl, screen 16.8 to 17.7 metres or 244.8 to 245.7 masl, can sample in the spring, about 8 metres away from PW1-09	drilled	Aug 5 2010	17.7	NA	15.2	8.8	sand, gravel some clay
25	MW1 (Well #7054134)	___ Darby Road		18.3 metres deep (60 feet), grade elevation ~263 masl, screen 15.2 to 18.3 metres or 247.8 to 244.7 m asl, can sample in the spring, about 600 metres away from PW1-09	drilled	Nov 8 2007	18.3	NA		8.22	silty clay
26	MW1-09 (Well #7124729)	___ Marshall Road		67.1 metres deep (220 feet), grade elevation 247.5 masl, screen at 181.4 to 180.4 masl, can sample in the spring, about 1,986 metres away from PW1-09	drilled	June 2 2009	67.1	NA	65.8	11.6	medium sand, some fine sand, loose
27	Sibthorpe Well (#7150632)	___ Darby Road		79.2 metres deep (260 feet), grade elevation 260 masl, screen 77.4 to 78.6 metres or 182.6 to 181.4 masl, can sample in the spring, about 315 metres away from PW1-09	drilled	Aug 1 2010	79.2	76.2	78.02	22.9	fine sand

N

--Glen Irvine, Pinecrest Stables (5711874)

--Charles Pender (5739944)

--5740929

--Jen Desroches (5704468)

--TireBuster (7171912)

Anderson

--Oldfield (5725307)

--Mark Oldfield (5732307)

--David Barkey

--5725435

--5709931

--7150632

--5725425

235

240

245

250

--5710842

--Chris Williams (5711301)

--5717709

--Alvin Lennard

--7124734

--7150631

--7054134

255

--Pigeon

--Kim & Rob Tower

Stamp Sideroad

--5716439

--Haggart

--7208201

--5716440

--Ogden

--7124729

--Ken & May MacDonald

Baseline Rd

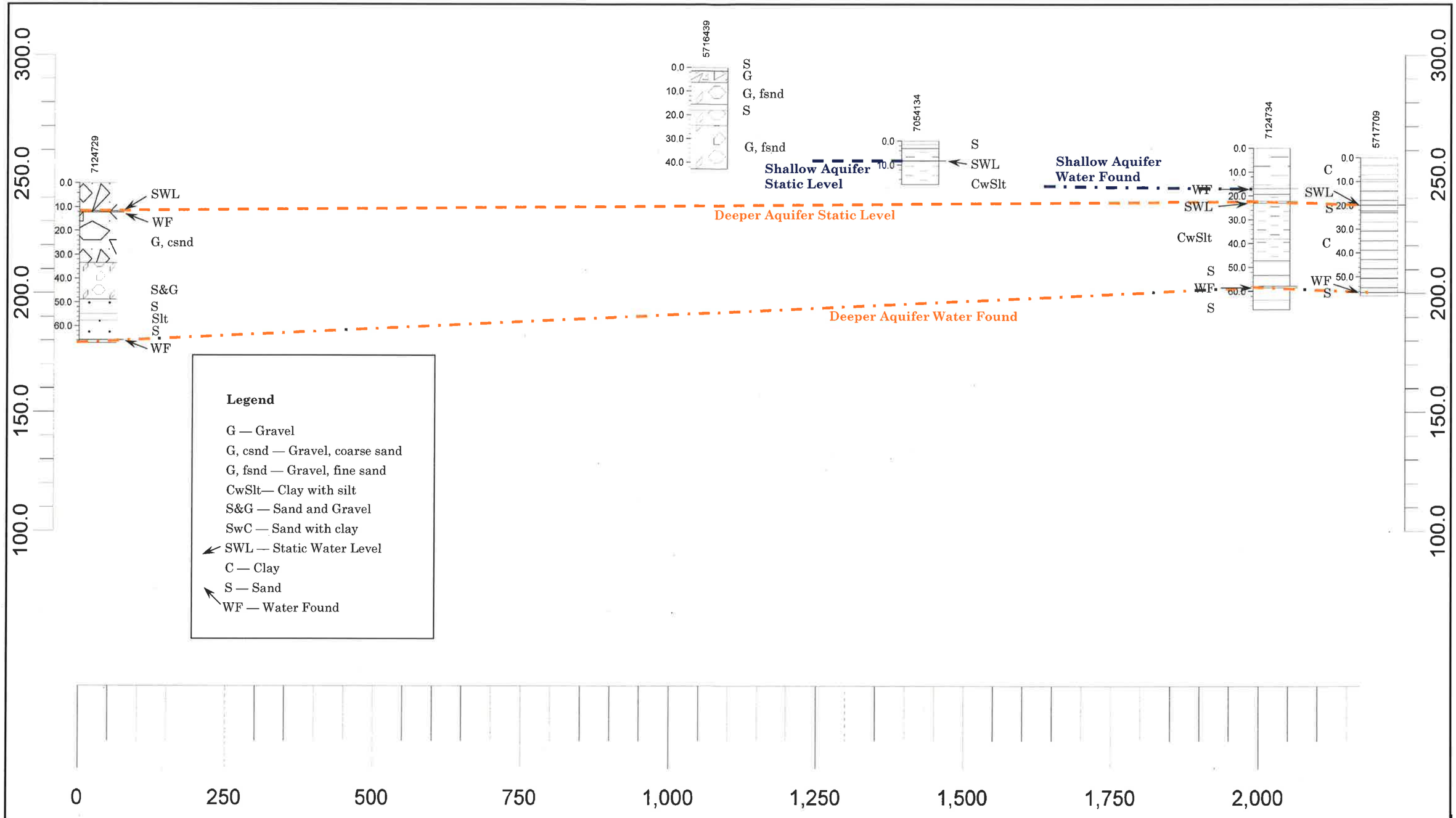
Shallow Watertable Contours

Groundwater Flow Direction in the Shallow Aquifer

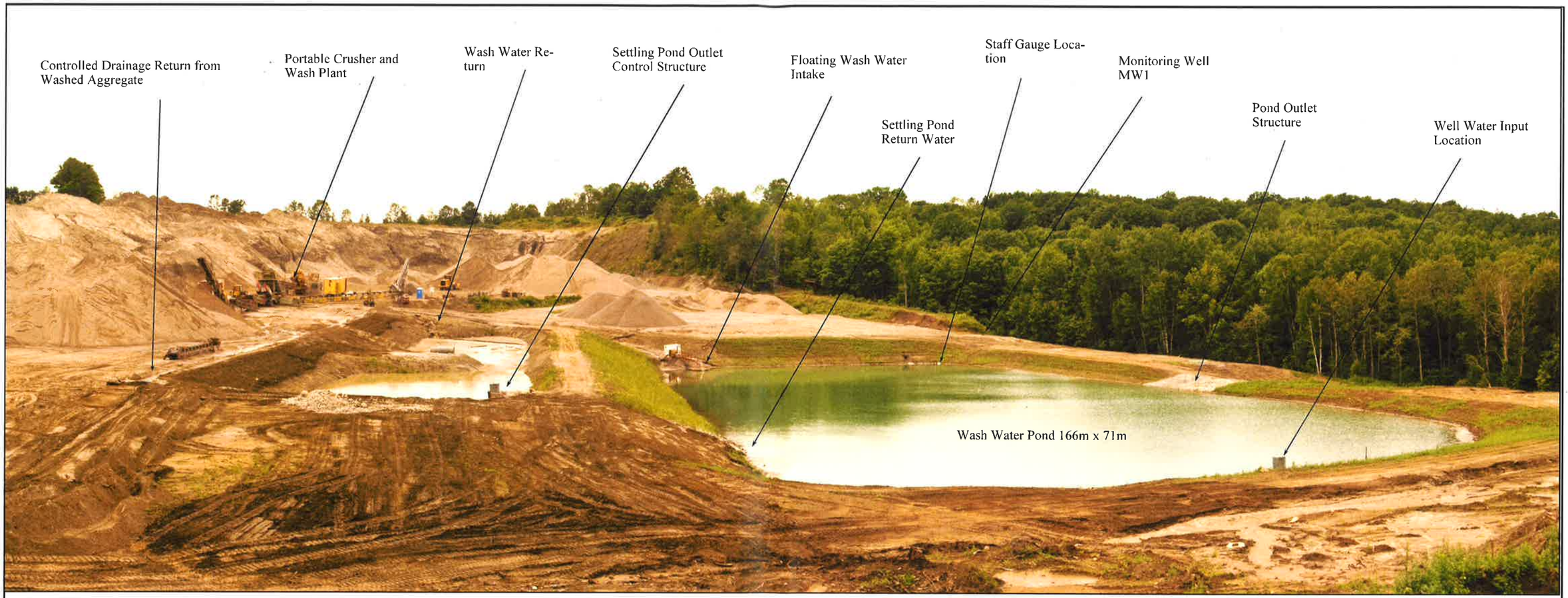
Elevation of Watertable in the Shallow Aquifer (m asl) 255

Shallow Watertable Contours & Groundwater Flow Direction in the Shallow Aquifer

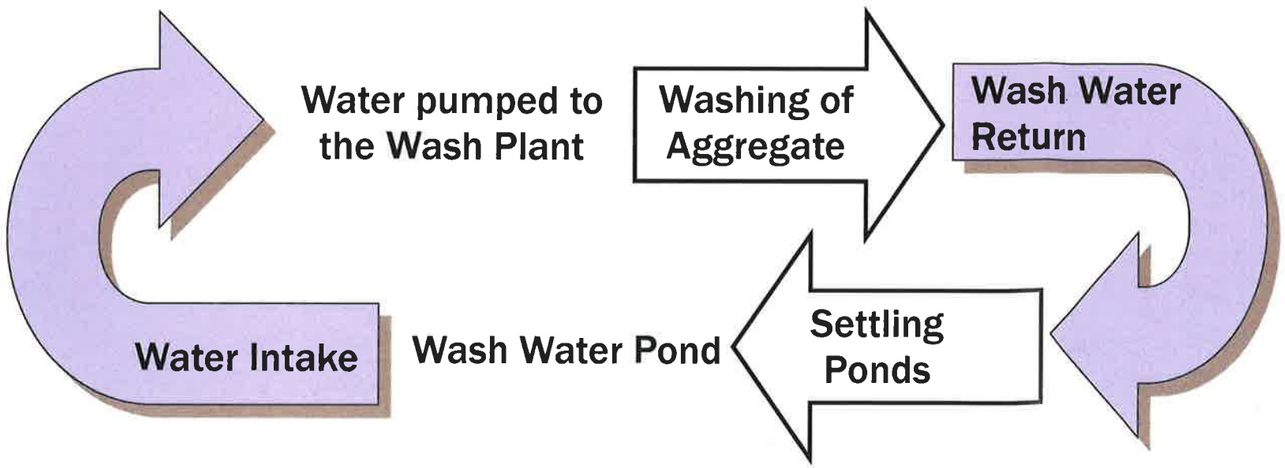
Date: February 2015	Project: AES 15-08	
Drawn: FRC	Scale: NTS	Figure 1



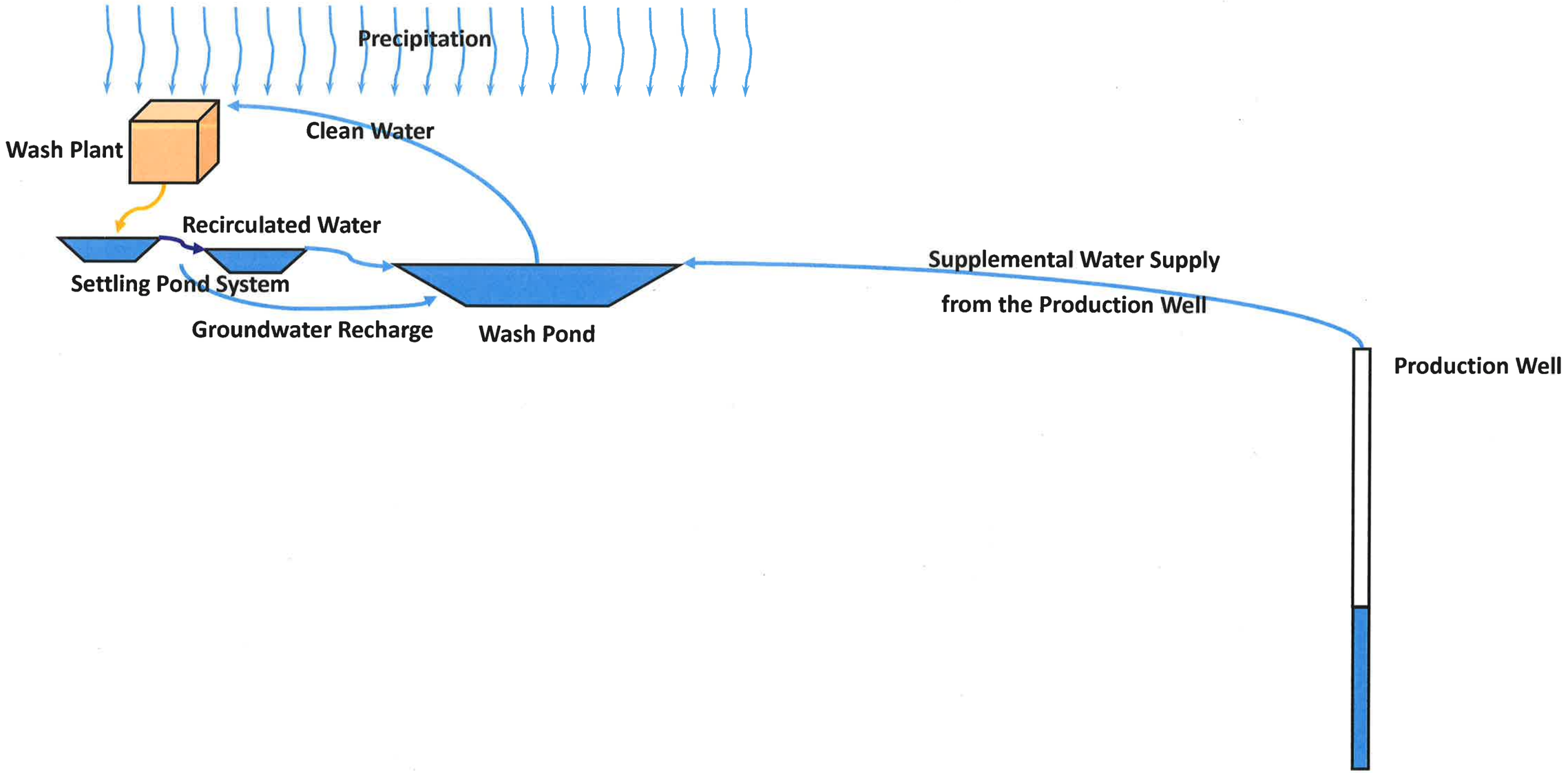
Cross-Section #1		
Date: Feb 2015	Project: AES 15-08	
Drawn: FRC	Scale: not shown	Figure 2



Closed-Loop Aggregate Washing System



Teedon Pit Washing Operation		
Date: May 2015	Project: AES 15-08	Figure 4
Drawn: FRC	Scale: NA	



Teedon Pit Washing Operation Schematic

Date: May 2015	Project: AES 15-08	Figure 7
Drawn: FRC	Scale: NA	

Table 1

	2008																							
	Wash Pond (US Gallons)												PW1-09 (Imperial Gallons)											
Day	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
30	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
31	0		0		0		0	0	0	0		0	0		0		0		0	0		0		0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total (L)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Total (L)						0												0						

Table 2

2009

Day	Wash Pond (US Gallons)												PW1-09 (Imperial Gallons)											
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	0	630,000	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	570,000	330,000	540,000	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	600,000	0	660,000	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	510,000	360,000	0	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	630,000	0	600,000	660,000	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	600,000	0	630,000	270,000	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	300,000	0	660,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	600,000	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	600,000	360,000	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	180,000	420,000	630,000	0	660,000	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	690,000	330,000	0	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	600,000	0	0	630,000	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	120,000	600,000	0	660,000	330,000	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	540,000	240,000	600,000	540,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	660,000	0	630,000	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	420,000	0	630,000	150,000	660,000	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	240,000	510,000	600,000	0	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	630,000	300,000	0	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	450,000	0	570,000	660,000	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	600,000	630,000	0	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	660,000	240,000	540,000	660,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	540,000	0	600,000	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	330,000	0	600,000	330,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	120,000	210,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	600,000	0	570,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	570,000	0	690,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	420,000	570,000	660,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0		0	0	0	0	510,000	0	690,000	630,000	0	0	0		0	0	0	0	0	0	0	0	0	0
30	0		0	0	0	0	600,000	0	480,000	540,000	0	0	0		0	0	0	0	0	0	0	0	0	0
31	0		0		0		300,000	600,000	0	0		0	0		0		0		0	0		0		0
Total	0	0	0	0	0	0	5,700,000	9,360,000	11,370,000	11,580,000	8,070,000	0	0	0	0	0	0	0	0	0	0	0	0	0
Total (L)	0	0	0	0	0	0	21,576,855	35,431,468	43,040,148	43,835,085	30,548,285	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Total (L)	174,431,841	0

Table 3

2010

Day	Wash Pond (US Gallons)												PW1-09 (Litres)											
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	798,001	0	0	0	0	0		0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,368,002	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,368,002	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	684,001	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
30	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
31	0		0		0		0	0	0	0		0	0		0		0		0	0		0		0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,218,006	0	0	0	0	0	0	0	0	0
Total (L)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19,175,443	0	0	0	0	0	0	0	0	0

Annual Total (L)	0	19,175,443

Table 4

2011

	Wash Pond (US Gallons)												PW1-09 (Imperial Gallons)											
Day	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	356,729	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	277,513	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	362,713	0	0	0	0	0	0	0	0	0	0	10,772	0	0	0	0	0
5	0	0	0	0	0	0	0	321,209	0	0	0	0	0	0	0	0	0	0	86,606	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	284,733	0	0	0	0	0
7	0	0	0	0	0	0	261,191	0	0	0	0	0	0	0	0	0	0	0	284,200	0	0	0	0	0
8	0	0	0	0	0	0	186,097	0	0	0	0	0	0	0	0	0	0	0	118,385	0	0	0	0	0
9	0	0	0	0	0	0	0	449,157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	182,312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	306,386	369,898	0	0	0	0	0	0	0	0	0	0	143,098	0	0	0	0	0
12	0	0	0	0	0	0	273,926	316,220	0	0	0	0	0	0	0	0	0	0	142,855	0	0	0	0	0
13	0	0	0	0	0	0	281,034	0	0	0	0	0	0	0	0	0	0	0	144,323	0	0	0	0	0
14	0	0	0	0	0	0	293,963	0	0	0	0	0	0	0	0	0	0	0	149,652	0	0	0	0	0
15	0	0	0	0	0	0	0	363,968	0	0	0	0	0	0	0	0	0	0	136,675	0	0	0	0	0
16	0	0	0	0	0	0	0	370,065	0	0	0	0	0	0	0	0	0	0	0	137,561	0	0	0	0
17	0	0	0	0	0	0	0	359,598	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	224,786	362,788	0	0	0	0	0	0	0	0	0	0	145,075	0	0	0	0	0
19	0	0	0	0	0	0	321,515	299,489	0	0	0	0	0	0	0	0	0	0	133,970	0	0	0	0	0
20	0	0	0	0	0	0	320,016	0	0	0	0	0	0	0	0	0	0	0	142,006	0	0	0	0	0
21	0	0	0	0	0	0	348,633	0	0	0	0	0	0	0	0	0	0	0	126,283	0	0	0	0	0
22	0	0	0	0	0	0	32,099	322,800	0	0	0	0	0	0	0	0	0	0	130,111	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	290,347	0	0	0	0	0	0	0	0	0	0	0	145,005	0	0	0	0	0
26	0	0	0	0	0	0	244,457	0	0	0	0	0	0	0	0	0	0	0	146,083	0	0	0	0	0
27	0	0	0	0	0	0	362,354	0	0	0	0	0	0	0	0	0	0	0	138,303	0	0	0	0	0
28	0	0	0	0	0	0	345,896	0	0	0	0	0	0	0	0	0	0	0	136,856	0	0	0	0	0
29	0		0	0	0	0	128,133	0	0	0	0	0	0		0	0	0	7,814	118,013	0	0	0	0	0
30	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	115,991	0	0	0	0	0	0
31	0		0		0		0	0		0		0	0		0		0		0	0		0		0
Total	0	0	0	0	0	0	4,220,833	4,714,459	0	0	0	0	0	0	0	0	0	123,805	2,863,004	137,561	0	0	0	0
Total (L)	0	0	0	0	0	0	15,977,597	17,846,175	0	0	0	0	0	0	0	0	0	562,829	13,015,480	625,365	0	0	0	0

Annual Total (L)	33,823,772	14,203,674

Table 5

2012

	Wash Pond (US Gallons)												PW1-09 (Imperial Gallons)											
Day	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	390,654	0	0	0	0	0	0	0	0	0	0	0	15,581	0	0	0	0
2	0	0	0	0	0	0	0	577,745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	20,213	0	0	0	0	0	0	0	0	0	0	284,104	14,769	0	0	0	0
4	0	0	0	0	0	0	0	0	460,635	0	0	0	0	0	0	0	0	0	282,276	190,310	0	0	0	0
5	0	0	0	0	0	0	0	0	408,330	0	0	0	0	0	0	0	0	0	282,776	0	0	0	0	0
6	0	0	0	0	0	0	0	0	240,028	0	0	0	0	0	0	0	0	0	280,387	0	0	0	0	0
7	0	0	0	0	0	0	0	236,070	353,764	0	0	0	0	0	0	0	0	0	280,100	0	0	0	0	0
8	0	0	0	0	0	0	0	357,897	0	0	0	0	0	0	0	0	0	0	280,150	0	0	0	0	0
9	0	0	0	0	0	0	0	281,860	0	0	0	0	0	0	0	0	0	0	281,150	0	0	0	0	0
10	0	0	0	0	0	0	0	351,047	0	0	0	0	0	0	0	0	0	0	285,659	190,000	0	0	0	0
11	0	0	0	0	0	0	310,666	0	0	0	0	0	0	0	0	0	0	0	279,365	0	0	0	0	0
12	0	0	0	0	0	0	343,218	0	0	0	0	0	0	0	0	0	0	0	281,810	0	0	0	0	0
13	0	0	0	0	0	0	252,707	258,950	0	0	0	0	0	0	0	0	0	0	282,700	0	0	0	0	0
14	0	0	0	0	0	0	0	354,710	0	0	0	0	0	0	0	0	0	0	0	154,950	0	0	0	0
15	0	0	0	0	0	0	0	354,000	0	0	0	0	0	0	0	0	0	0	0	161,500	0	0	0	0
16	0	0	0	0	0	0	252,710	333,212	0	0	0	0	0	0	0	0	0	0	117,036	140,842	0	0	0	0
17	0	0	0	0	0	0	346,075	281,860	0	0	0	0	0	0	0	0	0	0	280,328	100,974	0	0	0	0
18	0	0	0	0	0	0	381,431	0	0	0	0	0	0	0	0	0	0	0	279,106	0	0	0	0	0
19	0	0	0	0	0	0	368,182	0	0	0	0	0	0	0	0	0	0	0	280,083	0	0	0	0	0
20	0	0	0	0	0	0	186,036	461,424	0	0	0	0	0	0	0	0	0	0	278,295	109,740	0	0	0	0
21	0	0	0	0	0	0	0	425,188	0	0	0	0	0	0	0	0	0	0	0	150,078	0	0	0	0
22	0	0	0	0	0	0	0	425,280	0	0	0	0	0	0	0	0	0	0	0	150,604		0	0	0
23	0	0	0	0	0	0	577,745	479,635	0	0	0	0	0	0	0	0	0	0	297,440	280,040	0	0	0	0
24	0	0	0	0	0	0	5,406	479,000	0	0	0	0	0	0	0	0	0	0	282,415	202,360	0	0	0	0
25	0	0	0	0	0	0	200,213	0	0	0	0	0	0	0	0	0	0	0	277,862	0	0	0	0	0
26	0	0	0	0	0	0	337,462	0	0	0	0	0	0	0	0	0	0	0	282,998	0	0	0	0	0
27	0	0	0	0	0	0	337,782	469,035	0	0	0	0	0	0	0	0	0	0	221,911	0	0	0	0	0
28	0	0	0	0	0	0	0	479,655	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0		0	0	0	0	0	379,000	0	0	0	0	0		0	0	0	47,864	0	0	0	0	0	0
30	0		0	0	0	0	390,654	387,500	0	0	0	0	0		0	0	0	0	36,246	0	0	0	0	0
31	0		0		0		337,782	377,400	0	0		0	0		0		0		0	0		0		0
Total	0	0	0	0	0	0	4,628,069	8,161,335	1,462,757	0	0	0	0	0	0	0	0	47,864	5,734,197	1,861,748	0	0	0	0
Total (L)	0	0	0	0	0	0	17,519,153	30,894,025	2,925,514	0	0	0	0	0	0	0	0	217,594	26,068,187	8,463,678	0	0	0	0

Annual Total (L)	51,338,692		34,749,459

Table 6

2013

Day	Wash Pond (US Gallons)												PW1-09 (Imperial Gallons)											
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	387,998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	400,744	243,103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	405,968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	433,459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	202,379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	324,464	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	419,291	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	413,141	433,813	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	432,213	246,975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	439,675	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	358,339	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	867,118	0	418,423	0	0	0	0	0	0	0	0	0	271,935	0	151,423	0	0	0	0
13	0	0	0	0	0	0	0	251,379	0	0	0	0	0	0	0	0	0	281,970	0	281,113	0	0	0	0
14	0	0	0	0	0	0	0	395,560	0	0	0	0	0	0	0	0	0	136,069	0	281,241	0	0	0	0
15	0	0	0	0	0	0	0	441,117	0	0	0	0	0	0	0	0	0	0	0	7,911	0	0	0	0
16	0	0	0	0	0	0	0	368,959	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	263,111	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	432,964	0	438,373	0	0	0	0	0	0	0	0	0	279,826	0	0	0	0	0	0
20	0	0	0	0	0	518,303	0	405,128	0	0	0	0	0	0	0	0	0	281,098	0	0	0	0	0	0
21	0	0	0	0	0	242,432	0	324,841	0	0	0	0	0	0	0	0	0	157,340	0	0	0	0	0	0
22	0	0	0	0	0	0	0	436,625	0	0	0	0	0	0	0	0	0	0	0	242,456		0	0	0
23	0	0	0	0	0	0	0	368,203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	526,060	0	0	0	0	0	0	0	0	0	0	0	270,090	0	0	0	0	0	0
26	0	0	0	0	0	610,053	0	429,007	0	0	0	0	0	0	0	0	0	233,642	0	0	0	0	0	0
27	0	0	0	0	0	618,843	0	448,710	0	0	0	0	0	0	0	0	0	0	0	193,846	0	0	0	0
28	0	0	0	0	0	220,069	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	128,645	0	0	0	0	0
30	0		0	0	0	0	365,524	0	0	0	0	0	0		0	0	0	0	258,561	0	0	0	0	0
31	0		0		0		362,856	0	0	0		0	0		0		0		279,544	0		0		0
Total	0	0	0	0	0	4,833,856	3,016,284	6,781,969	0	0	0	0	0	0	0	0	0	2,175,081	666,750	1,157,990	0	0	0	0
Total (L)	0	0	0	0	0	18,298,143	11,417,881	25,672,555	0	0	0	0	0	0	0	0	0	9,888,118	3,031,107	5,264,329	0	0	0	0

Annual Total (L)	55,388,579	18,183,554

Table 7

2014

Day	Wash Pond (US Gallons)												PW1-09 (Imperial Gallons)											
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
30	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
31	0		0		0		0	0	0	0		0	0		0		0		0	0		0		0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total (L)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annual Total (L) — Wash Pond: 0 — PW1-09: 0

	Wash Pond	Litres PW1-09	% PW1-09
2008	0	0	0%
2009	174,431,841	0	0%
2010	0	19,175,443	100%
2011	33,823,772	14,203,674	30%
2012	51,338,669	34,749,459	40%
2013	55,388,579	18,183,554	25%
2014	0	0	0%
		Average (2011-2013) =	32%

Figure 5

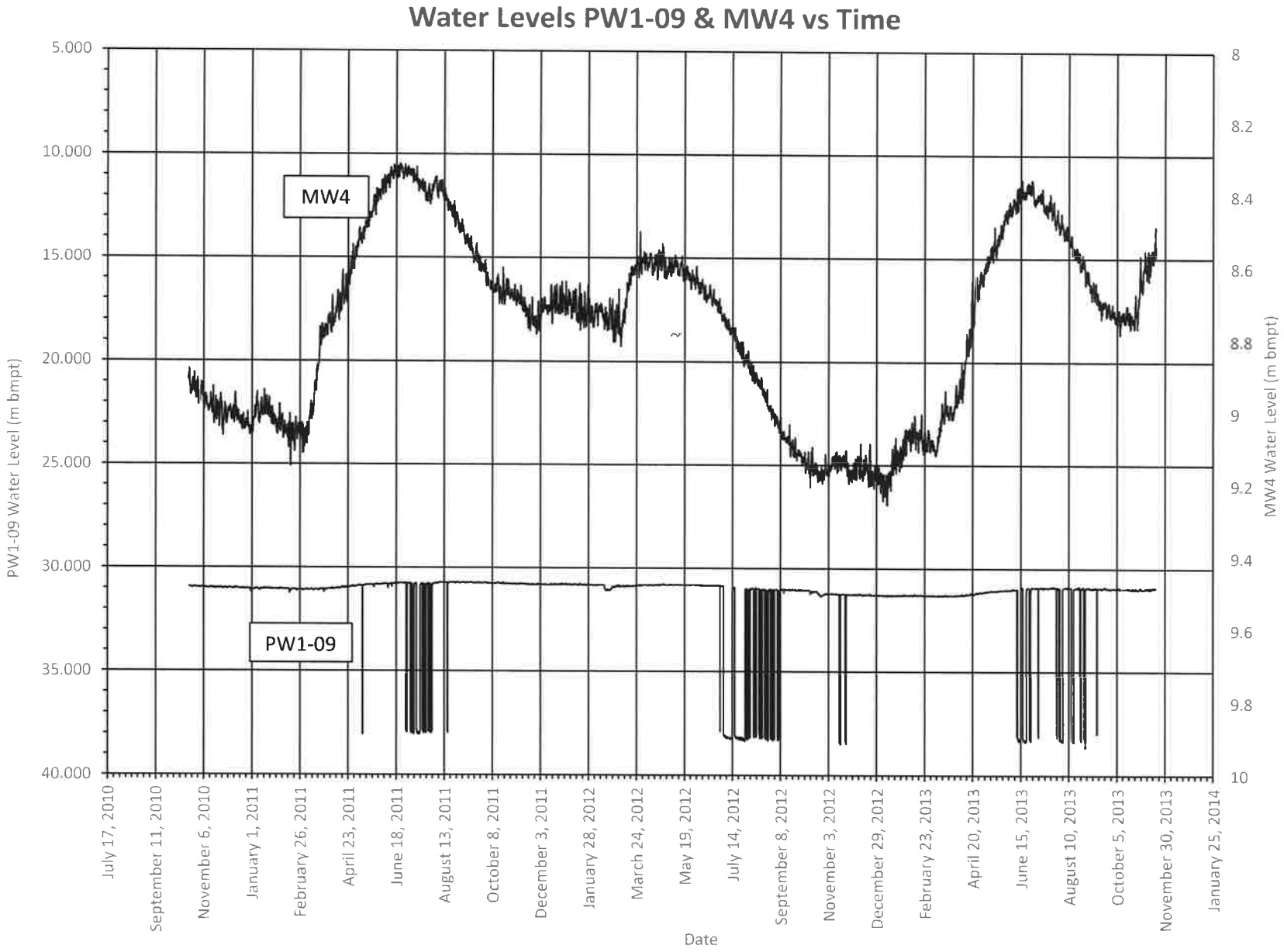
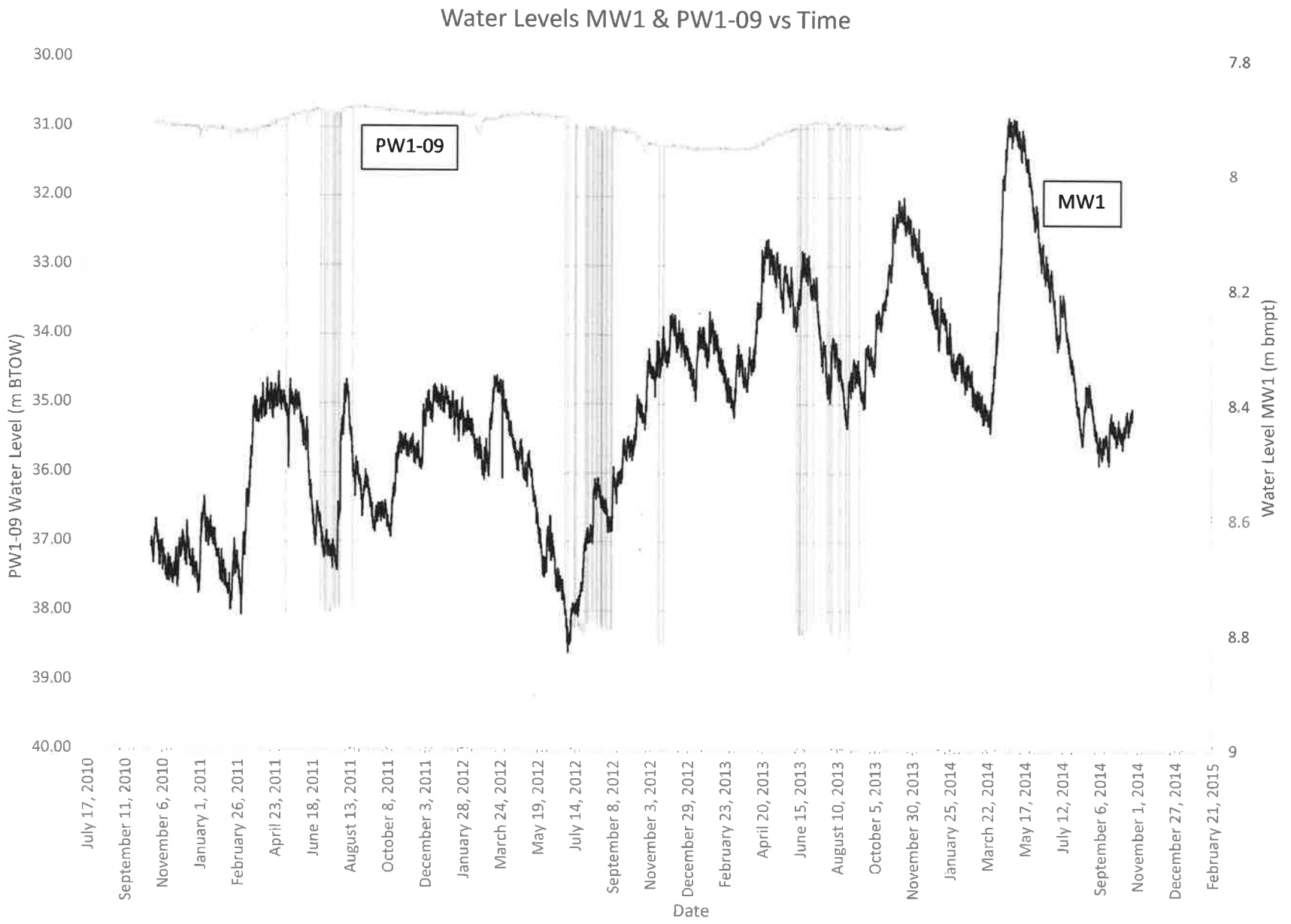

Water Levels PW1-09 & MW4 vs Time
MW4
PW1-09
PW1-09 Water Level (m bmpt)
MW4 Water Level (m bmpt)
Date
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
8
8.2
8.4
8.6
8.8
9
9.2
9.4
9.6
9.8
10
July 17, 2010
September 11, 2010
November 6, 2010
January 1, 2011
February 26, 2011
April 23, 2011
June 18, 2011
August 13, 2011
October 8, 2011
December 3, 2011
January 28, 2012
March 24, 2012
May 19, 2012
July 14, 2012
September 8, 2012
November 3, 2012
December 29, 2012
February 23, 2013
April 20, 2013
June 15, 2013
August 10, 2013
October 5, 2013
November 30, 2013
January 25, 2014

Figure 6


Water Levels MW1 & PW1-09 vs Time
PW1-09
MW1
PW1-09 Water Level (m BTOW)
Water Level MW1 (m bmpt)
30.00
31.00
32.00
33.00
34.00
35.00
36.00
37.00
38.00
39.00
40.00
7.8
8
8.2
8.4
8.6
8.8
9
July 17, 2010
September 11, 2010
November 6, 2010
January 1, 2011
February 26, 2011
April 23, 2011
June 18, 2011
August 13, 2011
October 8, 2011
December 3, 2011
January 28, 2012
March 24, 2012
May 19, 2012
July 14, 2012
September 8, 2012
November 3, 2012
December 29, 2012
February 23, 2013
April 20, 2013
June 15, 2013
August 10, 2013
October 5, 2013
November 30, 2013
January 25, 2014
March 22, 2014
May 17, 2014
July 12, 2014
September 6, 2014
November 1, 2014
December 27, 2014
February 21, 2015
Date

AGGREGATE WASH WATER SUPPLEMENTARY SUPPLY PUMPING TEST RESULTS

TEEDON PIT
WAVERLEY, ONTARIO

LOCATED IN PART LOTS 79 AND 80
CONCESSION 1 WPR
TOWNSHIP OF TINY
COUNTY OF SIMCOE

PREPARED FOR:
CEDARHURST QUARRIES AND CRUSHING LIMITED

APRIL 2010

ALPHA ENVIRONMENTAL SERVICES INC.
AES FILE: 09-06

ALPHA ENVIRONMENTAL SERVICES INC.
212 TIMPSON DRIVE
AURORA, ONTARIO, L4G 5M7
905-841-7711 (V), 905-841-6014 (F), 416-722-7545 (Cell)
ross@thecampbells.net

April 2010

Mr. Bob Graham, Senior Vice-President
K.J. Beamish Construction Co., Limited
P.O. Box 250, King City, Ontario, L7B 1B2

RE: Aggregate Wash Water Supplementary Supply Pumping Test
Teedon Pit, Part Lots 79 & 80, Concession 1 WPR
Township of Tiny, County of Simcoe, AES File 09-06

Dear Mr. Graham:

I am pleased to provide you a copy of the above noted pumping test report. The major conclusions and recommendations of this hydrogeological assessment are as follows:

1. A stable pumping level in the well (PW1-09) was reached 44 hours after pumping began at 950 L/min (251 US gpm) and was maintained for the next 30 hours.
2. The total drawdown in PW1-09 was 11.215 m while the nearest private well (#17709) experienced 0.75 m of additional drawdown or less than 2% of the available drawdown in well #17709.
3. The influence of pumping PW1-09 at 950 L/min extends about 300 metres.
4. No effect of pumping PW1-09 was observed in any other wells in the area.
5. The amount of water required to make up the water loss during aggregate washing operations can be delivered by PW1-09 with only about 0.29 m and 0.2 of additional drawdown occurring in wells #17709 and #15868. No other wells would be affected.
6. PW1-09 can deliver 1,136 L/min (300 US gpm) with an acceptable additional drawdown of 0.9 m and 0.5 m in wells #17709 and #15868. No other wells would be affected.
7. An application should be sent to the MOE along with this report to obtain the necessary PTTW to pump water to operate the on-site aggregate wash plant.
8. A monitoring program should be initiated as outlined in this report.

If you have any questions or comments, please call me at your convenience.

Yours truly
ALPHA ENVIRONMENTAL SERVICES INC.

Ross Campbell, M.Sc., P.Eng.
Hydrogeologist

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FIGURES

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APPENDICES

CONFIDENTIALITY STATEMENT AND THIRD PARTY DISCLAIMER

Alpha Environmental Services Inc. ("AES") prepared this report for the benefit of the client to whom it is addressed. The information and data contained herein represent AES's professional opinion in light of the knowledge and information available to AES at the time of preparation. Where AES has presented information, analyses, and/or conclusions provided by others, AES does not guarantee the accuracy and reliability of this information.

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EXECUTIVE SUMMARY

Cedarhurst Quarries and Crushing Limited owns and operates an aggregate extraction pit located in Part of Lots 79 and 80, Concession 1 WPR, Township of Tiny, County of Simcoe. This report outlines the results of a pumping test to determine the long-term safe yield of an on-site well (PW1-09) as a supplementary source of make-up wash water for an on-site aggregate washing plant. The primary source of water for the washing plant is a pond constructed on site.

A pumping test on PW1-09 was begun on March 22, 2010 at 10:00 AM at a rate of 950 L/min (251 US gpm) and it continued until 12:00 PM March 25, 2010. A stable pumping level was reached at 6:00 AM March 24, 2010 and maintained for the next 30 hours. The total drawdown in PW1-09 was 11.215 m. The nearest private well (Cassell well, #17709) experienced a total additional drawdown of 0.75 m, an amount less than 2% of the total available drawdown. The relationship between the distance and the drawdown in PW1-09 and #17709 suggests that the influence of the pumping PW1-09 at 251 US gpm extends about 300 m. No effect of pumping PW1-09 during the test was observed in any other wells in the area.

About 523,700 L/day would be required to make up the water loss during the aggregate washing operation at a rate of 364 L/min (96 US gpm). This amount of water can be delivered by PW1-09 with only about 0.29 m and 0.2 m of additional drawdown occurring in wells #17709 and #15868, respectively. No other private wells would be affected. If PW1-09 had to be pumped at 1,136 L/min (300 US gpm), the drawdown would be about 13.4 m, 0.9 m and 0.5 m in PW1-09, #17709, and #15868, respectively. The cone of influence would extend about 300 m. The impact wells #17709, and #15868 would be acceptable and no other wells would be affected.

It is recommended that an application should be sent to the MOE along with this report to obtain the necessary Permit to Take Water to pump sufficient water from the well and the wash pond to operate the wash plant. A monitoring program should be initiated as outlined in this report.

1.0 INTRODUCTION

1.1 GENERAL

Cedarhurst Quarries and Crushing Limited (Cedarhurst) retained Alpha Environmental Services Inc. (AES) to conduct a pumping test on a well (PW1-09) constructed on a site known as the Teedon Pit. The pit, from which sand and gravel are extracted, is located in Part of Lots 79 and 80, Concession 1 WPR, Township of Tiny, County of Simcoe, about 1.4 kilometres northwest of the community of Waverley along Darby Road (Figure 1). The goal of the pumping test was to determine the long-term safe yield of the well as a supplementary source of make-up wash water for an aggregate washing plant on the site. The primary source of water for the washing plant is a pond constructed on site (Figures 2 and 3) for which a Permit to Take Water (PTTW, Number 0503-7D4PX7) exists and is provided in Appendix B. The test was undertaken to determine if sufficient water was available from the well (PW1-09, located in Figure 2) to supplement the water supply available from the pond for the aggregate washing operation without affecting local private well water supplies.

Cedarhurst has installed an aggregate washing plant on site that operates 6 to 7 months of the year. Water used in the plant comes from a pond that has been constructed in the floor of the pit, as shown in Figures 2 and 3. Surface water and shallow groundwater are collected in the pond. The water is pumped to the washing plant and circulated back to the wash pond after passing through a settling pond, as shown in Figure 3. Typically, wash plants of the type proposed may pump water at rates up to 6,800 L/min for 6 to 8 hours per day. The only water that may be lost in such a closed loop system would be through evaporation, run-off drainage from a stock pile, and perhaps some drainage from trucks hauling wet product from the site.

Water is generally considered to be lost from such an operation at a rate of 10% of the pumping rate, or in this case at rates up to about 680 L/min. The make-up water comes from surface water and shallow groundwater recharge to the

wash pond. A PTTW from the Ministry of the Environment (MOE) is required to pump the water required to supply this wash plant. In 2007 Waterloo Geoscience Consultants Ltd. (WGC) submitted a report that is provided in Appendix E to the MOE to support an application for a PTTW for the wash plant. In April 2008, the MOE issued PTTW #0503-7D4PX7 (Appendix B) that permits the plant to pump up to 5,237,280 L/day for a maximum of 120 days/year until April 1, 2018.

Cedarhurst retained Canadian Well Drilling to construct a well on site (PW1-09, Figure 2) to provide water to supplement the wash pond water supply to ensure sufficient wash water availability to meet the future contract demands. Cedarhurst in the Spring of 2009 requested that AES analyze their water supply potential with the following result:

1. The proposed water use, as outlined in the PTTW, is 5,237,280 L/day, which by using an industry standard of 10% loss, indicates a required make-up water supply of 523,728 L/day.
2. The pond volume is 47,106 m^3 with a maximum water depth of 6.9 m. However, there was only about 2 m of water in the pond in the Spring of 2009 and the settling pond was virtually dry.
3. Assuming that at least one metre of water is left in the wash pond at all times would allow only one meter or about 5,027 m^3 of water to be pumped from the pond.
4. Using the 523,728 L/day loss estimate would indicate about 9.6 days of wash water would be available in the pond.
5. Given that an additional 50,000 L/day can be pumped into the pond from the well on site without a PTTW, another 0.9 days of washing would be available, resulting in a total of 10.5 days of washing available in the system in the Spring of 2009.

6. Canadian Well Drilling reported that the well on site is 67.7 m deep and that the well has been pumped at approximately 1,136 L/min, resulting in a drawdown from the static water level of 22.3 m to a pumping level of 29.9 m, or a total of 7.6 m. The length of the pumping time is unknown. The pump was set at 38.1 m below grade. It would appear that the well has the capability of meeting the wash water loss demand by pumping at the above noted rate for 7.7 hours per day. To pump at this rate requires a PTTW.

To ensure that the taking of water from the well would meet the make-up water demand of the wash plant while not affecting local water users, AES completed a pumping test while monitoring any impact on representative local wells. This report summarizes the results of the pumping test to support an application for a PTTW to operate the wash water system.

1.2 METHODOLOGY

An initial hydrogeological evaluation of the site was completed by AES based on a review of relevant existing local soil, geologic, hydrologic, and hydrogeologic data. This included a review of water well record information from the MOE. A computer printout of water well records for the study area is presented in Table 1. The locations of selected wells relevant to this pumping test, based on UTM coordinates (from the well record data), are shown in Figures 2 and 4. The data presented in these figures reflects our best understanding of well locations in the study area that might be affected by pumping water from well PW1-09. While some wells may be misplotted and others may not be included, the data are considered sufficient to define the local hydrogeologic conditions for this test.

Fieldwork undertaken as a part of this study included:

- a site visit to the pit to determine the water levels and the depths of the wells on site;
- the construction of a monitoring well known as MW1-09 (Table 1) at the location shown in Figure 2 to a depth of 67.10 m (180.4 m asl), terminating at approximately the same depth and elevation as PW1-09 (67.6 m, 191.4 m asl), and
- the identification of local private wells that could be used to monitor any impact from the pumping of water from PW1-09.

An application for a temporary PTTW was submitted to the MOE on May 8, 2009 (Appendix C). The MOE responded on July 23, 2009 with a request for additional information (Appendix D), which was provided by AES on July 30, 2009 (Appendix D). After meetings with MOE staff, and the submission of information regarding the proposed pumping test to and negotiations with the local First Nations and Métis representatives, all parties were satisfied that the pumping test should proceed. As a result, on December 14, 2009, the MOE issued a PTTW (#3302-7SAMEA, Appendix B) that allowed for the pumping test to proceed at rates up to 1,364 L/min for one non-recurring seven day period of water taking between the day of issuance and May 31, 2010.

To satisfy the conditions of the PTTW, the following steps were undertaken:

1. All wells within the area of the anticipated potential cone of influence were identified, as shown in Figure 4.

2. On March 18, 2009 written notification (Appendix B) was provided to the owners of the wells identified within the potential cone of influence.

3. To establish baseline conditions, well depths and depths to water levels for identified representative wells in the area of the water taking were recorded. In addition, Leveloggers were installed in these representative

wells shown in Figure 2: MW1-09, MW1, PW1-09, #25425, and #17709. A Barologger was installed in MW1-09 to record atmospheric pressure changes during the test to allow the Levelogger data to be corrected for changes in atmospheric pressure.

4. Water level data was also recorded manually at PW1-09 (Table 3) and the flow rate from PW1-09 during the test was monitored using a monometer and valve system as shown in Figures 3 and 8. The water was pumped into a 1000 gallon tank and then pumped to the wash water pond using a secondary pump, capable of pumping at 984 L/min (260 US gpm).

5. A step test was conducted on March 19, 2010 to determine the optimum pumping rate for the continuous rate pumping test. PW1-09 was pumped at steps of 397, 568, 750, and 950 L/min (105, 150, 198 and 251 US gpm) for one hour and allowed to recover to 90% of the original static water level. The drawdown at each step was 4.44, 6.66, 8.33, and 10.76 m, respectively. The secondary pump proved to be the limiting factor and so the continuous rate for the longer term pumping test was chosen to be 251 US gpm (950 L/min).

6. The continuous rate test was started on March 22, 2010 at 10:00 AM and continued until 12:00 PM March 25, 2010. The pumping level reached a stable level of 34.65 m below the measuring point at 6:00 AM March 24, 2010 and that level was maintained for the next 30 hours. As predetermined with Ross Hodgins, Senior Environmental Officer, Central Region, MOE, the pumping test was terminated after 74 hours of continuous pumping since more than 24 hours with a stable pumping level was achieved.

7. The total drawdown in PW1-09 during the test was 11.215 m (Table 3). According to the PTTW, water levels in the monitored wells were monitored beyond the water taking period until at least 85% recovery was achieved. The water level in PW1-09 recovered 10.30 m in the first minute

after pumping stopped, or 92% of the total drawdown. The Leveloggers in the monitored wells were downloaded on March 30, 2010, 5 days after the pumping of PW1-09 was stopped. The hydrographs of the water level data vs. time for each of these wells are presented in Figures 9 to 13, while the monitoring data is presented in Appendix G.

1.3 SCOPE

This report summarizes and assesses issues of hydrogeological concern related to the proposed use of supplementary supplies of water from PW1-09 in the aggregate washing operation including:

1. the geological and hydrogeological conditions of the site;
2. the impact on the shallow groundwater system as well as on existing well and surface water uses; and
3. the potential effect on the local hydrogeologically sensitive features or on related hydrogeological functions.

1.4 BACKGROUND

Cedarhurst Quarries & Crushing Limited is an affiliate of K.J. Beamish Construction Co., Limited, a family business that began operations on February 3, 1946 with a business focus on the “road oiling” treatment of the numerous gravel roads of the day. Now 64 years later, the company and its affiliates are involved on many road building projects throughout central Ontario. The company’s services include:

(1) **Road Construction and Paving** with a full compliment of specialized equipment and trained paving crews, they have the capacity to handle any size of project from parking lots to several kilometres of highway.

(2) **Summer and Winter Maintenance Programs** that include a range of maintenance programs including crack sealing, asphalt patching, paving, winter salting, and snow clearing.

(3) **Aggregate Material** where their pits and quarries crush and supply the raw materials needed by all their divisions and their asphalt plants. This is the affiliation in which Cedarhurst Quarries & Crushing Limited is located. Their gravel crushing division can produce in excess of one million tonnes of aggregate a year. The quarries also produce many custom stone products for their clients and the industry.

(4) **Seeding and Mulching** where they utilize specialized equipment to apply both seed and mulch to the landscape portion of highways in Ontario as well as on municipal and private projects.

(5) **Surface Treatment** which involves the application of sprayed asphalt emulsion covered by uniformly sized aggregate which may be applied in several layers. This process is used on low traffic volume roads.

(6) **Waste Management and Recycling** – Garbage collection and recycling have been added to the line of services that they offer to their customers.

(7) **Haulage** – Their trucking division currently provides transportation for a wide variety of gravel and asphalt products. Specialized equipment carries liquid products for their customers throughout Ontario and into the United States.

(8) **Quality Assurance** – They operate a certified laboratory in which their laboratory personnel design high quality, economical asphalt products which withstand the rigours of our Canadian weather and provide exceptional service life.

(9) **Environmental Protection and Rehabilitation** – Careful consideration to the effect on the environment is given within all of their operations and projects. They are committed to land restoration and rehabilitation and

to developing new methods and products that meet environmental standards.

MNR Licence

On August 4, 2004 Cedarhurst Quarries & Crushing Limited received a class "A" licence (Pit Licence Reference No. 3670) to operate a 85.45 hectare gravel pit at Lots 79 & 80, Concession 1 WPR Township of Tiny, County of Simcoe (Appendix F). This licence was an amendment to the previously existing licence to deal with the address change for the operation. The licence was "Pursuant to the Aggregate Resources Act and Regulations thereunder, and subject to the limitations and to the conditions of the licence and the requirements of the site plan". The one condition of Schedule "A" of the licence was that no more than 600,000 tonnes of aggregate be removed in any one calendar year. A copy of the Existing Features plan is provided in Figure 7 as is a copy of the licence in Appendix F.

Extraction Operations at the Site

The site has been owned by Cedarhurst Quarries & Crushing Limited since 1987 (see attached Transfer/Dead of Land, Appendix F), but extraction only began in 2003. The seasonal and annual amounts of extraction are outlined in the Table below:

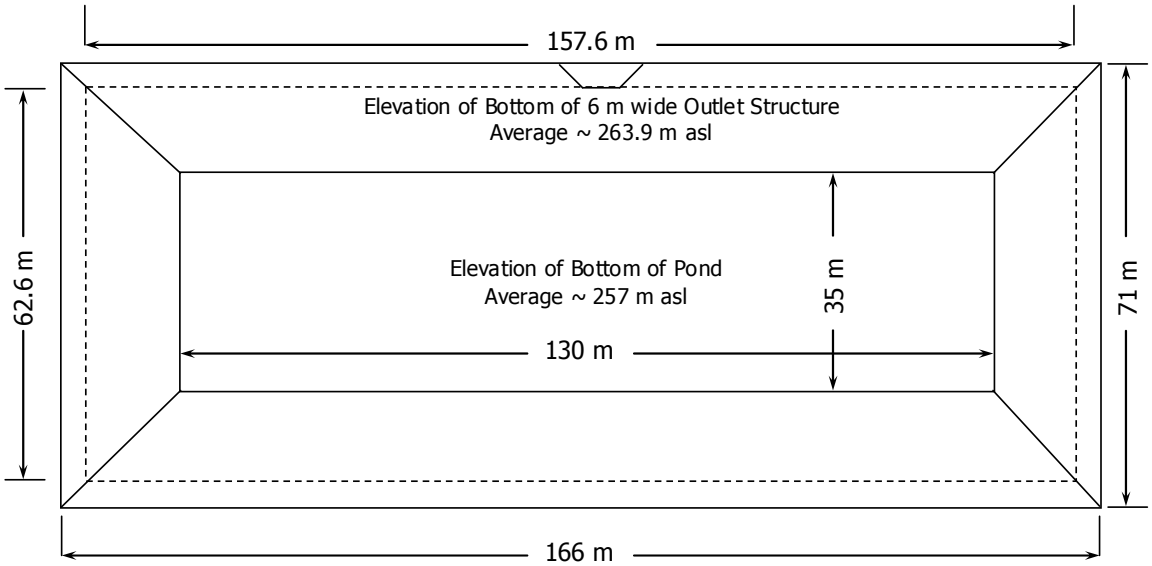
Month	2003	2004	2005	2006	2007	2008	2009
January	-	-	-	-	-	-	
February	-	-	-	-	-	-	
March	-	-	-	-	-	-	
April	-	-	-	-	-	-	
May	-	-	2,212.51	876.97	130.96	6,893.76	
June	-	8,375.49	1,318.92	3,310.16	13,227.91	-	
July	-	-	2,949.78	5,693.12	6,118.64	-	
August	-	-	2,740.72	4,193.49	38,966.85	-	
September	39,333.74	13,439.18	2,382.18	10,236.69	17,199.85	-	
October	-	-	13,669.05	3,098.96	25,540.14	-	
November	-	1,558.42	-	-	12,659.72	-	
December	-	-	-	-	1,522.54	-	
Total	39,333.74	23,373.09	25,273.16	27,409.39	115,366.61	6,893.76	138,702.14

The aggregate that has been extracted at the site has recently been used for the following purposes:

1. M.T.O. 400 Highway reconstruction north of Barrie (54,024 tonnes)
2. M.T.O. Highway 93 reconstruction
3. M.T.O. Highway 12 reconstruction
4. Site 41 landfill site construction (27,456 tonnes)
5. Orillia Sand and Gravel (6,943 tonnes) – asphalt sand for plant
6. Simcoe County (20,000 tonnes)
7. Atlas Sand and Gravel (50,000 tonnes)
8. ½" and 1" clear stone for asphalt and drainage stone, respectively

Pond Construction and Wash Plant Operation

The wash pond on site was constructed during the winter of 2008-2009. The location of the wash pond is shown in Figures 2 and 3. The approximate as-built wash pond dimensions are provided in following sketch:



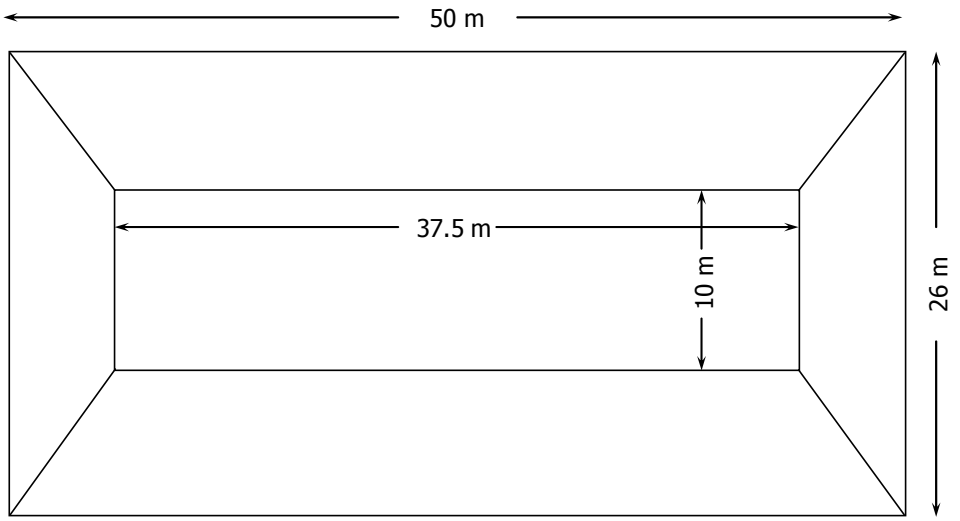
The wash pond total volume is about 47,106 m^3. When it is full there are about 24,400 m^3 of available water. The PTTW (No. 0503-7D4PX7) that was issued on April 18, 2008 allows for a maximum water taking rate of 7,274 L/min for a maximum of 12 hours per day resulting in a maximum taking of 5,237,280 L/day. A copy of the PTTW is attached in Appendix B.

The wash water is drawn from the wash pond through a floating intake located about one metre below the pond surface (Figure 3). The water is pumped through the wash plant where it is used to wash aggregate. The water is then recycled back to the settling pond where the fines are allowed to settle before the water is discharged by gravity back to the wash pond through a weir and pipe system (Figure 3). The wash plant system therefore is being operated as a closed loop system circulating all the water through the wash pond, the wash plant, and the settling pond. The losses of water are expected to be through

evaporation, groundwater recharge, and moisture remaining on the aggregate following washing. The rule of thumb used in the aggregate industry is a loss of about 10% of the wash water that must be made up from other sources, whether it be from natural recharge to the wash pond and/or supplementation of the water loss through a well or surface water supply. The expected maximum amount of daily loss of wash water from the system is 523,728 L.

The maximum surface area of the wash pond is 9,866 m^2. Without natural recharge and/or supplementation of the water loss, the water level in the wash pond would drop about 0.05 m with a loss of 523,728 L.

The settling pond, also constructed in the winter of 2008-2009 (Figures 2 and 3), has the following approximate as-built dimensions:



Washing began on July 10, 2009 and continued as noted in Table 4. The rate of taking is estimated to be 900 to 1000 US gpm based on the pump capacity. The time of taking has varied from 3.5 to 11 hours per day. A meter to record the water use was installed and the recorded water-use data is provided in Table 4. For a portion of the time in which washing took place, the water meter was not installed. For another period of time, the meter actually failed and had to be

repaired while washing continued. Therefore, an estimate of the water use for 2009 is provided that ranges from 41,472,000 to 46,080,000 US gallons.

1.5 WATER REQUIREMENTS

The theoretical water balance completed by WGC (Appendix E) and revised by AES is summarized in Appendix D. AES concluded that 523.7 m^3/day would be required to make up the water loss during the aggregate washing operation. Assuming a worst case scenario, i.e., drought conditions with no surface water or shallow groundwater recharge to the wash pond, the make-up water would have to come from the deeper aquifer via PW1-09 at a rate of 364 L/min (96 US gpm) on a continuous basis.

To ensure that the pumping of water from PW1-09 does not impact local water users, AES proposed that a pumping test be completed on the well at the highest rate feasible, but not to exceed 1,135 L/min (300 US gpm). During the pumping test, AES proposed that the three on-site wells and two private off-site wells shown in Figure 2 be monitored with Leveloggers recording water levels every 5 minutes for at least two weeks prior to, during, and two weeks following the test to identify the extent of the impact of pumping PW1-09.

1.6 SITE LOCATION AND DESCRIPTION

The Teedon Pit, owned and operated by Cedarhurst Quarries and Crushing Limited, is located in Part of Lots 79 and 80, Concession 1 WPR, Township of Tiny, County of Simcoe, about 1.4 kilometres northwest of the community of Waverley along Darby Road (Figure 1). Figures 2 and 4 show the study area including the site boundary and private wells. Schedule A – Land Use for the Township of Tiny (Appendix A) identifies the site as being zoned for Mineral Resources I extraction. Schedule B – Natural Features for the Township of Tiny (Appendix A) identifies part of the site as having Significant Woodland. The licensed area is 85.39 hectares (ha) with 76.89 ha to be extracted (Figure 6). The

maximum extraction is limited to about 41.2 m below ground surface with the pit floor remaining at least 1.5 m above the watertable.

In the operation of the wash plant, water is pumped from the wash pond (Figures 2 and 3) through the wash plant to the settling pond (Figures 2 and 3) from which it drains back to the wash pond. Water naturally enters the wash pond by intersecting the shallow groundwater system and collecting surface water runoff.

The small unnamed pond located along the north-western property boundary of the site is the nearest surface water body located about 385 m from PW1-09 (Figure 4). An unnamed stream shown in Figure 4 north of the pond, identified on the OBM about 495 m from PW1-09, could not be located in the field. This stream is shown to drain in a northerly direction toward a wetland complex about one kilometre away.

The central portion of the site is relatively flat with elevations rising to about 303 m asl at the central-south-eastern property boundary (Figure 6). The topography drops sharply about 30 m over the shore cliff located near the western property boundary (Figures 6 and 14) to an elevation of about 247 m asl at the western property boundary (Figure 6). The elevation at the entrance to the site along Darby Road at the eastern extreme of the site is about 255 m asl. (Figure 6)

The proposed Simcoe County Landfill Site 41 (Figure 18) is located about 4.4 km west of well PW1-09. The site is located on the North Side of Concession 2 of Tiny Township just east of Dawsons Side Road. The site is licensed to receive waste from the local municipalities of Tiny Township, Tay Township and the Towns of Midland and Penetanguishene. The presence of this controversial landfill, even though it is over 4 km away from the Teedon Pit, has caused representatives of local residents, First Nations and Métis groups along with the

MOE to carefully scrutinize the water taking at the pit, both from surface water and groundwater.

2.0 GEOLOGY

2.1 QUATERNARY GEOLOGY

Chapman and Putnam (1984) identify the site as lying on the Simcoe Uplands, a physiographic unit consisting of broad rolling till plains and moraines that are sometimes overlain by or interstratified with ice-contact deposits (Figure 14). Burwasser and Boyd (1974) identify the deposit on site as primarily an ice-contact deposit consisting of substratified to stratified gravel and sand including incorporated till. The OGS (1994) has identified the on-site deposit as undifferentiated ice-contact stratified drift comprised of less than 35% gravel with an average thickness greater than 6 m yielding greater than 106,000 tonnes per hectare, having no known quality limitations present (Figure 15). The steep scarp identified in Section 1.6 that is located along the western and eastern sides of the site is comprised of beach ridges, spits, and near shore bars of previous stages of glacial Lake Algonquin. At the base of this scarp, the deposits have been winnowed by subsequent lacustrine action producing boulder pavement (Chapman and Putnam, 1984, Figure 14) or boulder lag at the surface (Burwasser & Boyd, 1974). The drift thickness under the site is estimated by Burwasser & Boyd (1974) to range from about 90 m (300 feet) in the western extreme of the site to 175 m (575 feet) in the central highland of the site (Figure 16).

2.2 PALEOZOIC GEOLOGY

The Palaeozoic Geology of the area comprises Middle Ordovician carbonates of Bobcaygeon Formations of the Simcoe Group (Liberty, 1969). The Bobcaygeon Formation is a lithogenetic unit lying between the lithographic limestone of the underlying Gull River Formation and the equally distinctive interbedded

limestone and shale of the overlying Verulam Formation. For the most part, the Bobcaygeon Formation is massive- to thin-bedded fine-crystalline limestone with numerous shaly partings in the middle member. It varies in thickness from 24 to 87 m. Only one local well (MOE #8473) found in Lot 90, Concession 1 PRW, Tiny Township, reported encountering limestone bedrock at a depth of 146 m (479 ft) at an elevation of about 124 m asl (407 ft asl) (Table 1).

2.3 GEOLOGICAL CROSS-SECTIONS

Selected wells are located in Figure 4 based on the well record data obtained from the MOE summarized in Table 1. Cross-section A-A' located in Figure 4 along Darby Road and shown in Figure 5, identifies a clay till core in the high lands south of the subject property. This till core overlies a sandy unit with gravel and clay that in turn overlies another predominately clay unit. Underlying this deeper clay unit is a sand unit that is interpreted as broadly underlying the entire subject area. It is within this broadly lying sand unit that wells PW1-09 and #17709 obtain their water supply. The upper clay core gives way to sand and sand and gravel units at surface north and south of the clay core, respectively. It is within this upper sand unit that well #25425 obtains its water supply. This upper unit is interpreted to be separated by the underlying clay unit from the sandy aquifer that yields water to wells PW1-09 and #17709.

Cross-section B-B', located in Figure 17, shows that the sandy aquifer yielding water to PW1-09 appears to extend to MW1-09 with water being located at approximately the same elevation in MW1-09, PW1-09 and #17709. The static water elevations in all three wells are at approximately the same elevation suggesting that the same aquifer extends to all three wells.

3.0 HYDROGEOLOGY

3.1 GENERAL

There are several aquifer systems in the vicinity of the pit site ranging from the shallow aquifer that feeds the wash pond at an elevation of about 256 m asl to the deeper system that feeds the production well PW1-09 at the site, found at an elevation of about 202 m asl. Additional deeper aquifer systems are also found in the area as outlined below.

3.2 LOCAL WELLS

Local hydrogeological conditions were determined by a review of previous studies for the area and an examination of MOE water well records. Although the water well data (50 wells) may not include all of the wells drilled in the study area, the data are sufficient to give a generalized picture of the local geology and hydrogeology. No detailed field checking of well locations was carried out. There is sufficient local well information that the mislocation of a few wells would not significantly influence the interpretation of local hydrogeologic conditions.

Selected well locations, based on the UTM coordinates provided in the well records in Table 1, are shown in Figure 4. Overall, the well record data indicates that a large number of aquifer zones exist in the study area consisting of water bearing sands and gravels. A summary of the elevations where water was found in the surrounding wells is presented in Table 2. An examination of the well records in Tables 1 and 2 indicates that the water bearing zones in the study area are found at depths ranging from 10.7 to 129.8 m (35 to 426 feet). The elevation of these water bearing zones range from 116.7 to 242.4 m asl (382.9 to 795.3 feet asl).

3.3 LOCAL GROUNDWATER MOVEMENT

Groundwater flow is a three-dimensional process dependent on precipitation, topography and surface and subsurface material characteristics. The interrelationships of these characteristics are variable throughout the study area, producing intricate and complex patterns of groundwater movement that are difficult to define. Using water level data from test pits excavated on site, WGC (2007, Appendix E) found that the shallow groundwater flow underlying the site is generally in a northeast direction following the local topography. Jagger Hims Limited (2007) prepared a regional groundwater flow map in support of the proposed landfill facility know as Site 41 that later was modified by WGC (2007) as shown in Figure 18. WGC reviewed this map and determined that a groundwater divide bisects the Teedon Pit in roughly a north to south direction, as shown in Figure 18. West of the divide, WGC interpreted the shallow groundwater flow to be in a west to northwest direction. Shallow groundwater originating east of the divide flows in an east northeast direction and is not part of the groundwater system interacting with Site 41 (WGC, 2007).

Based on the information presented in the cross-section A-A' (Figure 5) there appear to be three distinct water bearing zones located by the wells drilled along Darby Road. Water is found in wells #9931, #25425 and PW1-09 at elevations ranging from about 249 to 242 m asl. This sandy aquifer represents the shallowest water bearing zone in the area with groundwater flow tending to be in a northerly direction. The next deepest aquifer zone was found by wells #9481 and #4467 at elevations of 235.3 and 223.3 m asl, respectively with static water elevations of 244.7 and 230.9 m asl, respectively. Groundwater flow in this aquifer is from well #9481 south toward well #4467. The deepest aquifer zone reached along Darby Road is found by PW1-09, #17709, and #37555 at elevations of 202.1, 199.6, and 204.8 m asl, respectively. The static water elevation in these three wells was 237.7, 236.2, and 269.4 m asl, respectively suggesting that groundwater flow in this aquifer tended to be from well #37555 toward PW1-09 and well #17709 in a northerly direction.

Cross-section B-B' (Figure 17), which includes MW1-09, PW1-09 and well #17709 shows that water was found in these three wells at 181.4, 202.1, and 199.6 m asl. The static water elevations in these three wells were 236.0, 237.7, and 236.2 m asl, respectively. The lack of elevation difference in the static water levels in these wells suggests that there is little potential groundwater movement between these wells.

3.4 SURFACE WATER

There are two known natural surface water bodies on or near the site that could potentially be affected by pumping water from PW1-09. The first is a small unnamed pond located along the north-western property boundary of the site shown in Figure 4. The pond is about 385 m from PW1-09. The second is an unnamed stream located north of the pond shown in Figure 4. The stream is about 495 m from PW1-09. A substantial clay layer was identified in the well log of PW1-09 (Figure 5) that appears to limit the interconnection between the surface water system and the aquifer from which PW1-09 obtains water, as demonstrated during the pumping test discussed below. The stream and the pond are also beyond the cone of influence of PW1-09, as outlined below.

4.0 PUMPING TEST ANALYSIS

As outlined in Section 1.2 Methodology:

1. To establish baseline conditions, well depths and depths to water levels for identified representative wells in the area of the water taking were recorded. In addition, Leveloggers were installed in these representative wells shown in Figure 2: MW1-09, MW1, PW1-09, #25425, and #17709. A Barologger was installed in MW1-09 to record atmospheric pressure changes during the test to allow the Levelogger data to be corrected for changes in atmospheric pressure.

2. During the pumping test water level data was also recorded manually at PW1-09 (Table 3) and the flow rate from PW1-09 was monitored using a monometer and valve system as shown in Figures 3 and 8. The water from PW1-09 was pumped into a 1000 gallon tank and then pumped to the wash water pond using a secondary pump, capable of pumping at 260 US gpm.

3. A step test was conducted on March 19, 2010 to determine the optimum pumping rate for the continuous rate pumping test. PW1-09 was pumped at 105, 150, 198 and 251 US gpm (397, 568, 750, and 950 L/min) for one hour and allowed to recover to 90% of the original static water level. The drawdown was 4.44, 6.66, 8.33, and 10.76 m, respectively. The secondary pump proved to be the limiting factor in the pumping setup so the continuous rate for the longer term pumping test was chosen to be 251 US gpm (950 L/min).

4. The continuous rate pumping test was started on March 22, 2010 at 10:00 AM and continued until 12:00 PM March 25, 2010. The pumping level reached a stable level of 34.65 m below the measuring point at 6:00 AM March 24, 2010 and maintained that level for the next 30 hours. As predetermined with Ross Hodgins, Senior Environmental Officer, Central Region, MOE, the pumping test was terminated at that point since more than 24 hours with a stable pumping level was achieved.

5. The total drawdown in PW1-09 during the test was 11.215 m. According to the PTTW, water levels in the monitored wells were measured beyond the water taking period until at least 85% recovery was achieved. The water level in PW1-09 recovered 10.30 m in the first minute after pumping stopped, or 92% of the total drawdown. The Leveloggers in the monitored wells were downloaded on March 30, 2010, five days after the pumping of PW1-09 was stopped. The hydrographs of the water level data vs. time for each of the monitored wells are presented in Figures 9 to 13, while the monitoring data is presented in Appendix G.

A review of the pumping test data presented in Figures 9 to 13 and Appendix G demonstrates the following:

1. Approximately 91% of the total drawdown experienced in PW1-09 took place in the first minute of pumping at 950 L/min or 251 US gpm (Figure 9, Appendix G).

2. With the top of the screen in PW1-09 at 64.62 m btc, a total of about 41 m of available drawdown exists in the well (Figure 9). Of this amount of available drawdown only about 27% was used during the pumping test suggesting that the well has a theoretical yield in excess of 3400 L/min or 900 US gpm.

3. Recovery of the water level in PW1-09 to greater than 90% took place within one minute of the stopping of the pumping (Figure 9). Full recovery to the original static level of 23.446 m btc took an additional 38.7 hours (Appendix G).

4. The Cassell well (#17709, Figures 2, 4, 5, and 17, Appendix G) is located on Darby Road approximately 175 metres east of PW1-09. This well obtains water from the same aquifer as PW1-09 at a depth of 56.4 m or at an elevation of 199.6 m asl compared to a depth of 57.9 m and an elevation of 202.1 m asl for PW1-09 (Table 2). The Cassell well is the closest private well to PW1-09.

5. The affect of pumping PW1-09 was noticed in the Cassell well approximately 5 minutes after pumping began (Figure 10, Appendix G).

6. At the end of the pumping test, a total of 0.75 m of additional drawdown was observed in the Cassell well. This compares to a maximum observed drawdown during the testing period of 3.42 m due to normal use of the well. With the screen in the well set at 57 m below grade (Table 1), the total available drawdown in the well is 37.6 m suggesting that the well is capable of easily meeting its domestic use requirements and that the

amount of interference observed in the well is less than 2% of the total available drawdown, an insignificant amount.

7. Recovery of the water level in the Cassell well upon the completion of pumping PW1-09 was virtually instantaneous (Figure 10). However, with continuous domestic use of the well during the hours following the end of the pumping of PW1-09, 90% recovery of the original static water level was not achieved until 9 hours after pumping of PW1-09 stopped (Figure 10, Appendix G).

8. No effect of pumping PW1-09 during the test was observed in well #25425 (Figures 2, 4, 5 and 11, Appendix G) which is located on Darby Road about 260 m northeast of PW1-09. This well obtains water from a much shallower aquifer compared to PW1-09, at a depth of 11.6 m or at an elevation of 242.4 m asl compared to a depth of 57.9 m and an elevation of 202.1 m asl for PW1-09 (Table 2). The aquifer utilized at well #25425 is separated a 28 m thick clay layer from the deeper aquifer that yields water to PW1-09 (Figure 5, Table 1). This clay layer effectively isolates the upper aquifer from the lower aquifer so that no pumping effect in the deeper aquifer is felt in the shallower aquifer. Under normal domestic use, the drawdown in this well was observed to be up to about 2 m (Figure 11), utilizing about 30% of the available drawdown in the well. If a connection existed at this location between the shallow and deep aquifer, according to the distance-drawdown data in Figure 19 approximately 0.25 m of additional drawdown would be expected with PW1-09 pumping at 950 L/min (251 US gpm). This would be an acceptable amount of additional drawdown that uses less than 4% of the available drawdown in this well.

9. Similarly, no effect of pumping PW1-09 during the test was observed in MW1-09 (Figures 2, 12 and 17, Appendix G) which is located off Marshall Road about 2000 m southwest of PW1-09. In fact during the pumping test the water level in MW1-09 rose about 0.03 metres. However, unlike well

#25425, MW1-09 obtains water from the same aquifer as PW1-09. The relationship between the distance and the drawdown in wells PW1-09 and #17709 shown in Figure 19 suggests that the influence of pumping PW1-09 at 950 L/min or 251 US gpm extends about 300 m from PW1-09. This is about 15% of the distance from PW1-09 to MW1-09, so no drawdown effect would be expected at MW1-09.

10. Finally, no effect of pumping PW1-09 during the test was observed in MW1 (Figures 2, 3, and 13, Appendix G) which is located northwest of the wash pond about 587 m northwest of PW1-09. This well obtains water from a much shallower aquifer compared to PW1-09, at a depth of 21.4 m or at an elevation of 241.6 m asl compared to a depth of 57.9 m and an elevation of 202.1 m asl for PW1-09 (Table 2). Insufficient information is available to determine if the clay layer identified in the log of PW1-09 extends to MW1 (Figure 17) to separate the upper and lower aquifer zones as shown in Figure 5. However, based on the distance drawdown information shown in Figure 19, the influence of pumping PW1-09 at 950 L/min or 251 US gpm extends about 300 m from PW1-09. This is about 51% of the distance from PW1-09 to MW1, so no drawdown effect would be expected at MW1. In fact, as with MW1-09, the water level in MW1 rose about 0.03 metres during the pumping test. This may be related to the rise in the water level in the wash pond during the pumping test. The water pumped from PW1-09 was discharged to the wash pond during the pumping test.

11. Two wells that obtain water from the same aquifer as PW1-09 are within the approximately 300 m cone of influence of PW1-09. These wells, #17709 and#15868, are the only wells that could be affected by the pumping of PW1-09 at 950 L/min or 251 US gpm.

12. Both the stream and the pond shown on Figure 4 are beyond the cone of influence of PW1-09 and therefore could not be affected by the pumping of the well at 950 L/min or 251 US gpm.

5.0 POTENTIAL OF THE POND AND PW1-09 TO SUPPLY THE REQUIRED WASH WATER

As outlined in Table 4, the aggregate washing plant operated for 88 days in 2009 for a total of 768.0 hours or and average of 8.73 hours/day. In 2009, the plant on site pumped between 41,472,000 and 46,080,000 Litres at a rate between 3,400 and 3,785 L/min. The estimate is used because for part of the pumping time a water meter was either not on the system or was not working. Typically, wash plants of the type used on site pump water at rates up to 6,800 L/min for 6 to 8 hours per day. Water is generally considered lost from such an operation at a rate of 10% of the pumping rate, or in this case at rates up to about 680 L/min. This water would be made up from surface water runoff and shallow groundwater discharge captured in the wash pond as well as from make up water pumped from PW1-09.

The theoretical water balance completed by WGC (Appendix E) and revised by AES is summarized in Appendix D. AES concluded that 523,700 L/day would be required to make up the water loss during the aggregate washing operation. Assuming a scenario in which there were drought conditions with no surface water or shallow groundwater recharge to the wash pond, the make-up water would have to come entirely from the deeper aquifer via PW1-09 at a rate of 96 US gpm or 364 L/min on a continuous basis. This amount of water could easily be delivered by PW1-09 with only about 0.29 m and 0.2 m of additional drawdown occurring in the wells #17709 and #15868, respectively. No other wells would be affected.

If the wash pond and settling pond were dry to begin a washing season and had to be filled with water pumped from PW1-09, then 24,400,000 L and 8,100,000 L of water would be required to fill the wash pond and settling pond, respectively. This assumes that no exfiltration losses occur in either pond. If a twenty day lead time was available to fill the ponds before washing began, then PW1-09 would have to provide approximately 1136 L/min (300 US gpm) on a continuous basis for 20 days. Under these circumstances, the drawdown in PW1-09 would

be about 13.4 m, 0.9 m and 0.5 m in PW1-09, #17709 and #15868, respectively. The cone of influence would extend about 300 m from PW1-09 (Figure 19). Therefore the impacts on wells #17709 and #15868 would be acceptable. No other wells would be affected.

6.0 SUMMARY AND CONCLUSIONS

1. Cedarhurst Quarries and Crushing Limited retained Alpha Environmental Services Inc. to conduct a pumping test on a well (PW1-09) constructed on a site known as the Teedon Pit. The pit, from which sand and gravel are extracted, is located in Part of Lots 79 and 80, Concession 1 WPR, Township of Tiny, County of Simcoe, about 1.4 kilometres northwest of the community of Waverley along Darby Road. The goal of the pumping test was to determine the long-term safe yield of the well as a supplementary source of make-up wash water for an aggregate washing plant on the site. The primary source of water for the washing plant is a pond constructed on site for which the MOE issued a permit allowing the plant to pump up to 5,237,280 L/day for a maximum of 120 days/year until April 1, 2018.

2. To establish baseline conditions, well depths and depths to water levels for identified representative wells in the area of the water taking were recorded. In addition, Leveloggers were installed in four representative wells along with the pumping well. A Barologger was installed in one well to record atmospheric pressure changes during the test to allow the Levelogger data to be corrected for changes in atmospheric pressure.

3. Water level data was recorded manually in the pumping well and the flow rate during the test was monitored using a monometer and valve system. The water was pumped into a 1000 gallon tank and then pumped to the wash water pond using a secondary pump, capable of pumping at 260 US gpm.

4. A step test was undertaken on the pumping well on March 19, 2010 to determine the optimum pumping rate for the continuous rate pumping test. However, the secondary pump proved to be the limiting factor and so the continuous rate for the longer term pumping test was chosen to be 950 L/min (251 US gpm).

5. The continuous rate test was started on March 22, 2010 at 10:00 AM and continued until 12:00 PM March 25, 2010. The pumping level reached a stable level of 34.65 m below the measuring point at 6:00 AM March 24, 2010 and maintained that level for the next 30 hours.

6. Approximately 91% of the total drawdown experienced in the pumping well took place in the first minute of pumping at 950 L/min (251 US gpm). The total drawdown in PW1-09 during the test was 11.215 m. The water levels in the monitored wells were recorded beyond the water taking period until at least 85% recovery was achieved. The water level in the pumping well recovered 10.30 m in the first minute after pumping stopped, or 92% of the total drawdown. The Leveloggers in the monitored wells were downloaded on March 30, 2010, five days after the pumping was stopped.

7. The closest well to the pumping well experienced a total of 0.75 m of additional drawdown compared to a maximum observed drawdown during the testing period of 3.42 m due to normal use of the well. With the screen in this well set at 57 m below grade, the total available drawdown in the well is 37.6 m suggesting that the well is capable of easily meeting its domestic use requirements and that the amount of interference observed in the well is less than 2% of the total available drawdown, an insignificant amount. Recovery of the water level in the well upon the completion of pumping test was virtually instantaneous.

8. The relationship between the distance and the drawdown in the pumping well and the nearest observation well suggests that the influence of the pumping well at 950 L/min (251 US gpm) extends about 300 m.

9. No effect of pumping the well during the test was observed in any other wells in the area.

10. It is concluded that 523,700 L/day would be required to make up the water loss during the aggregate washing operation. Assuming a scenario in which there were drought conditions with no surface water or shallow groundwater recharge to the wash pond, the make-up water would have to come entirely from the deeper aquifer via PW1-09 at a rate of 364 L/min (96 US gpm) on a continuous basis. This amount of water can be delivered by PW1-09 with only about 0.29 m and 0.2 m of additional drawdown occurring in the two nearest private wells. No other private wells would be affected.

11. Under more stressful conditions, if the well had to be pumped at rates up to 1,136 L/min (300 US gpm) the drawdown in PW1-09 would be about 13.4 m. About 0.9 m and 0.5 m of additional drawdown would occur in the two nearest private wells. The cone of influence again would extend about 300 m. This impact on the two nearest private wells would be acceptable. No other private wells would be affected.

12. No hydrogeologically sensitive features or functions, surface water uses, shallow groundwater uses or existing private wells (other than wells #17709 and #15868) would be affected by pumping PW1-09 at rates up to 1,136 L/min (300 US gpm).

7.0 RECOMMENDATIONS

1. An application for a PTTW should be completed and sent to the MOE along with this report to obtain the necessary PTTW to pump sufficient water from the well to supplement the water from the wash pond operate the wash plant.
2. In order to ensure that impacts from the long-term taking at the site were adequately determined during the hydrogeological assessment a monitoring

program should be initiated at the pit that should be comprised of the following:

a. Leveloggers should be installed in the wells monitored during the pumping test to record water levels on an hourly basis during the operation of the wash plant. A Barologger should be installed in one of the constructed on-site monitoring wells to permit data correction for atmospheric pressure changes.

b. The water levels in the wash pond, the private off-site wells, and the on-site wells should be measured manually prior to the beginning of the washing season, during the washing season and after the washing season is over and the Leveloggers and Barologger should be downloaded at the same time.

c. The water level data and the logger data should be assessed immediately to determine if any impact from the operation of the pit has been recorded.

d. Should any impact be observed, the MOE should be notified immediately and the appropriate contingency plan should be initiated.

e. If no impact is observed, an annual summary report should be prepared for the MOE that outlines the results of the monitoring program for the past 12 months and provides any recommendations for future monitoring on site and in the surrounding area.

8.0 REFERENCES

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Appendix C.3
Excerpts from Published Reports for Regional Geology/Hydrogeology and Regional Groundwater Geochemistry

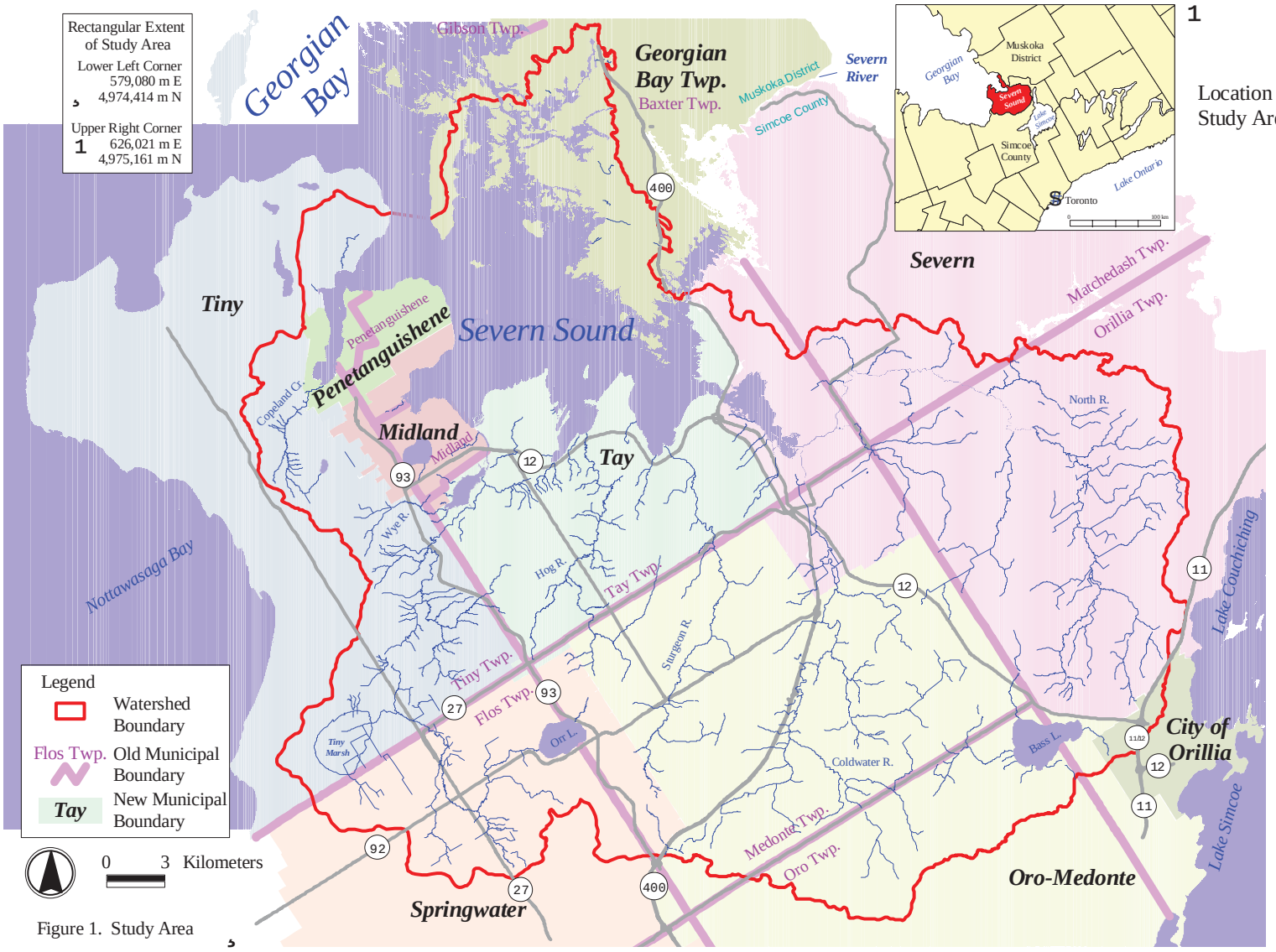


Figure 1. Study Area

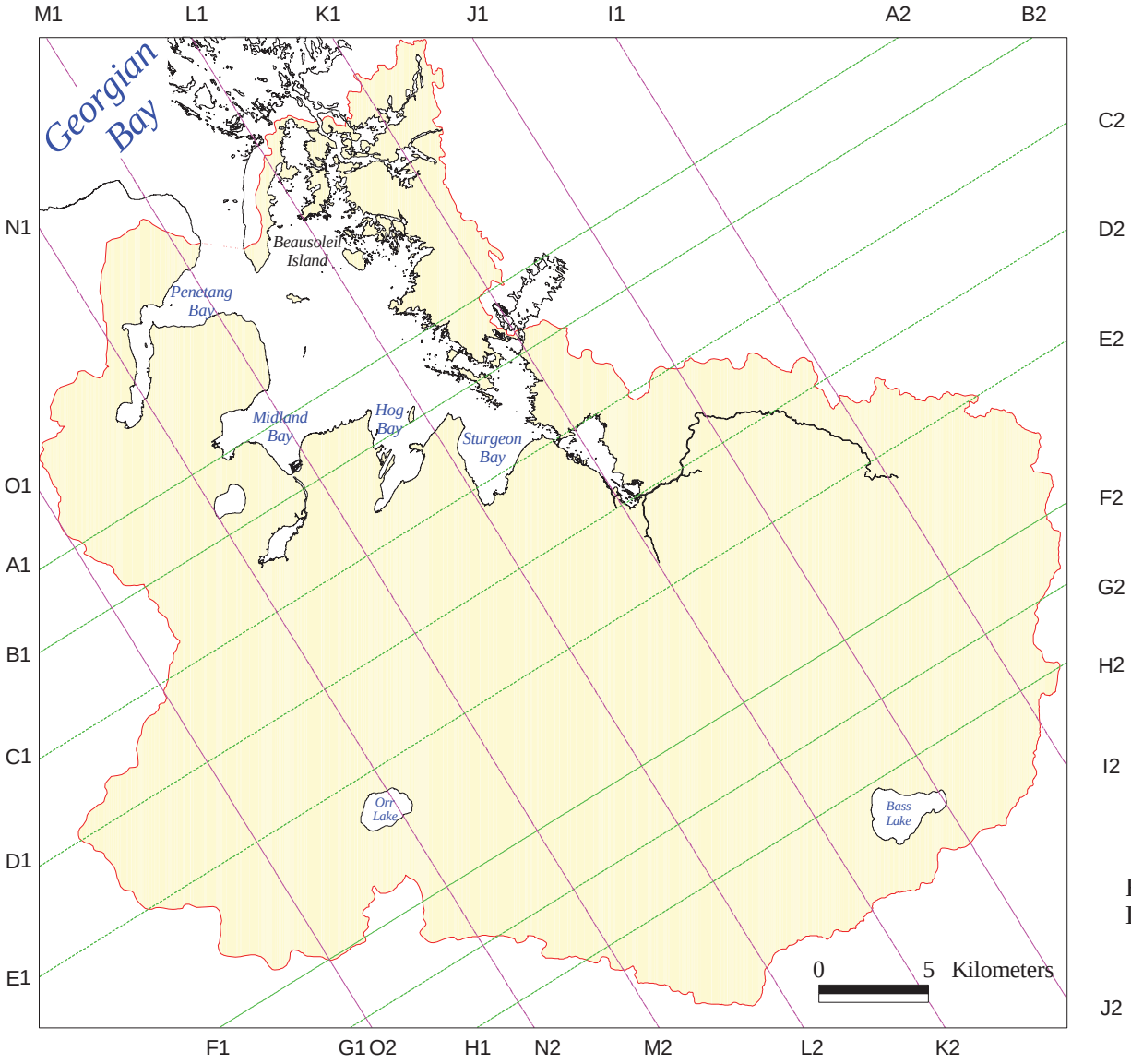


Figure 28.
Location of cross-sections.

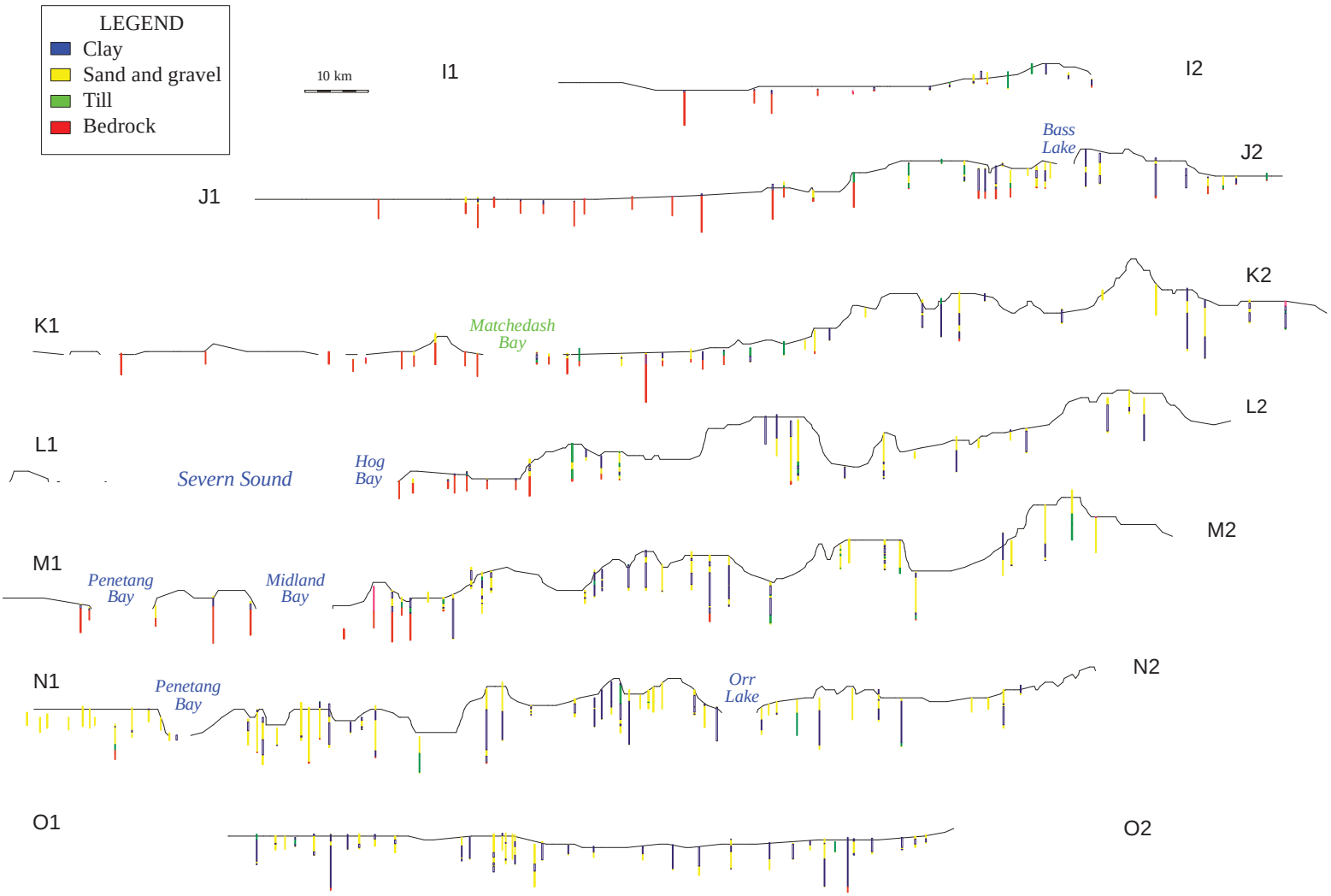


Figure 30. North-south cross-sections.

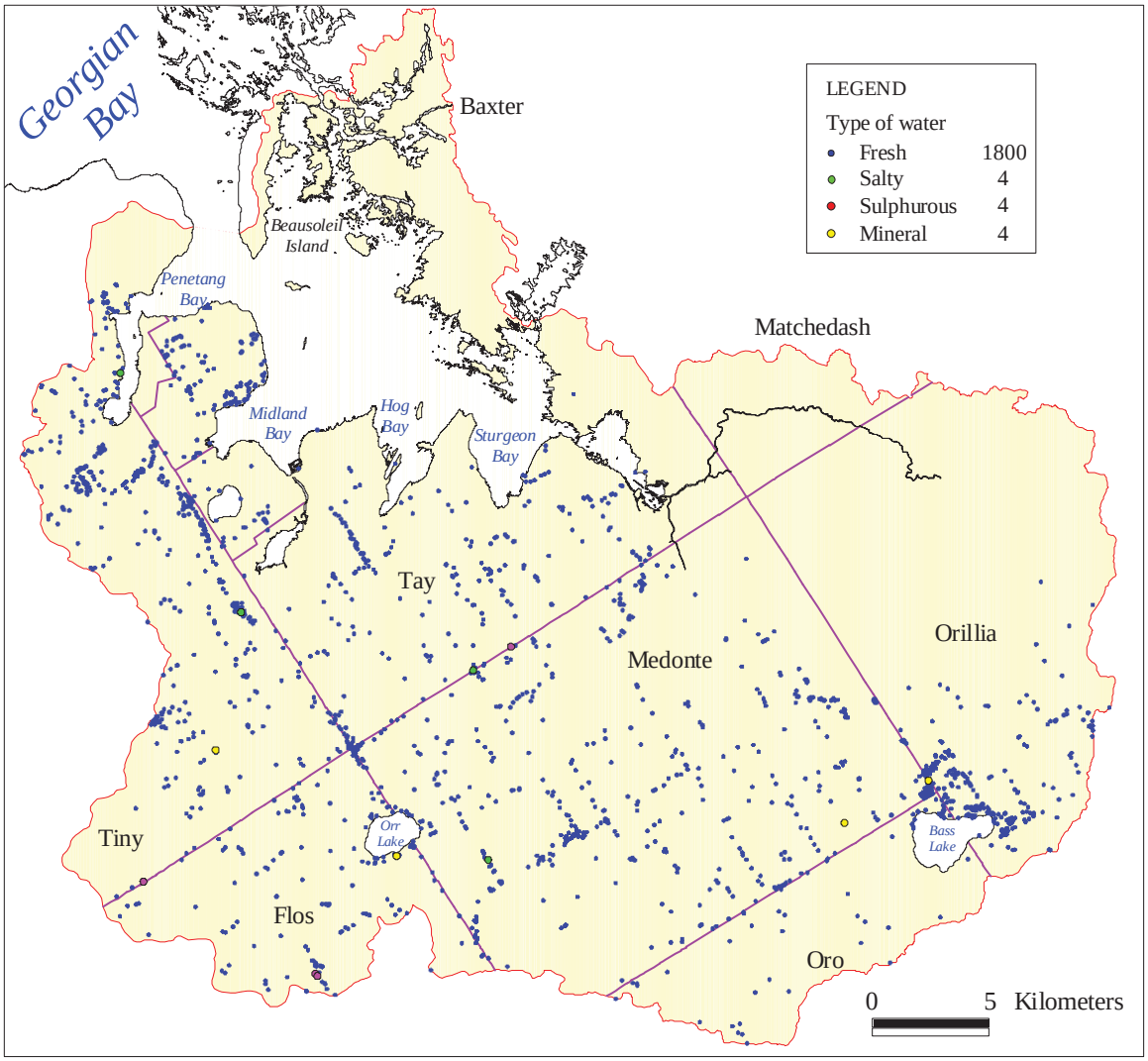


Figure 58. Water quality of overburden wells based on well records.

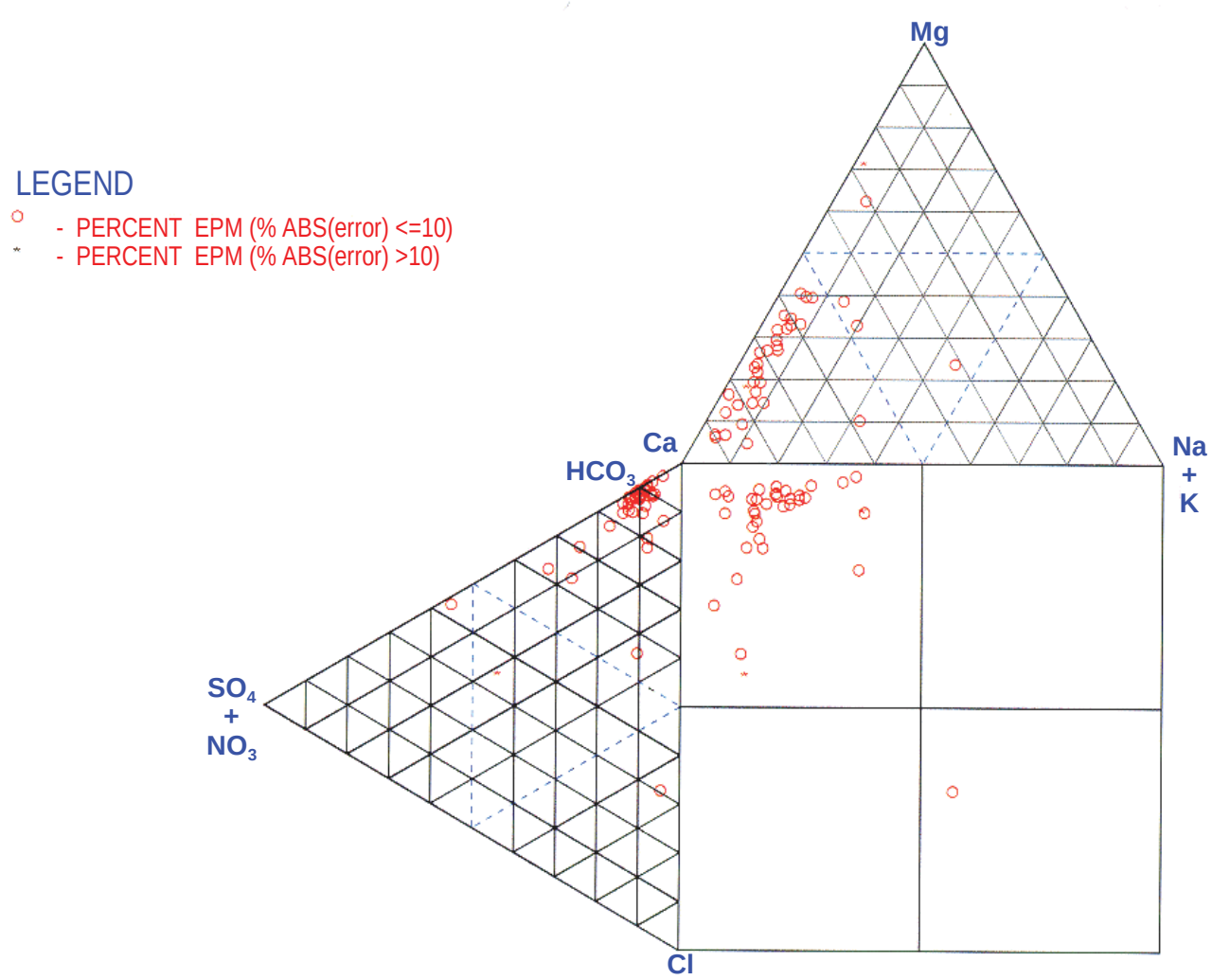


Figure 59. Chemical composition of water in shallow overburden wells.

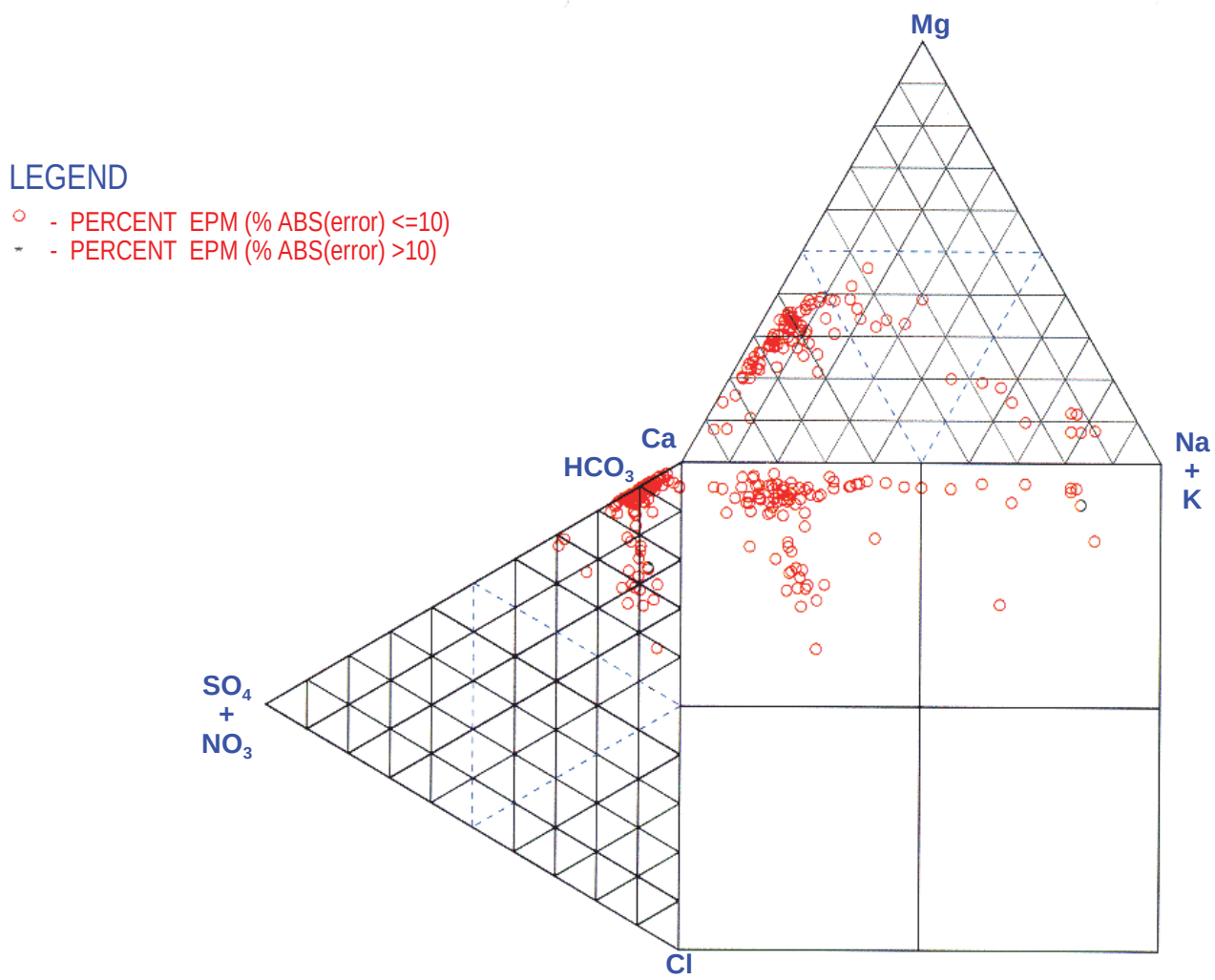


Figure 60. Chemical composition of water in deep overburden wells.

Appendix C.4
2017 Residential Well Survey

Well Data Collection – Preliminary Assessment of Supply and Usage

PROPERTY INFORMATION

Name	NA	Phone #	NA
Address	6790 Highway 93	Other Phone #	
Do you own this property?	Yes	If no, Owner Name:	
		Owner Phone #:	

CURRENT WATER USE

Person living in house	Yes	Phone	
		Email	
# of people in home	2	# of wells on property:	1

Is the well (or wells) shared with adjacent properties? no

If yes, indicate address:

Location of well	Left side of house towards back	Location of septic	Front Yard
Access to well	Sealed	Type of pump	

Do you currently treat your well water? (Indicated water treatment equipment below)

☐ UV	☐ Softener	☐ Iron removal	☐ Carbon filtration
☐ Chlorine	☐ Sulphur	☐ Reverse osmosis	☐ Other (please specify)

none

Is the well (or wells) used for purposes other than residential (e.g.: commercial, livestock)?

If yes, describe uses: Livestock - Horses & Cattle

Do you currently have an additional water supply that is not a well (e.g.: cistern, municipal)?

☐ Cistern	☐ Municipal	☐ Other (please specify)

If cistern, please indicate size & who fills cistern:

WELL HISTORY

Have you experienced water quality issues in the past?

If yes, describe issue(s): Silt in water

Have you experienced water quantity issues in the past?

If yes, describe issue(s):

Are you currently satisfied with your water supply?

Other comments:

WELL MEASUREMENTS

Do you want a licensed well contractor to complete an inventory of your well (i.e. depth of water)?

☐ Yes ☐ No

If yes, please indicate approx. days & times of the week that would be most convenient:

Well Data Collection – Preliminary Assessment of Supply and Usage

PROPERTY INFORMATION

Name	NA	Phone #	NA
Address	30 Darby Rd	Other Phone #	
Do you own this property?	Yes	If no, Owner Name:	
		Owner Phone #:	

CURRENT WATER USE

Person living in house	Yes	Phone	
		Email	NA
# of people in home	4	# of wells on property:	1

Is the well (or wells) shared with adjacent properties? no

If yes, indicate address:

Location of well	Backyard (concrete circle)	Location of septic	Right side of house under pots
Access to well	Covered by conc. Block	Type of pump	deep well jet pump

Do you currently treat your well water? (Indicated water treatment equipment below)

☐ UV	☐ Softener	☐ Iron removal	☐ Carbon filtration
☐ Chlorine	☐ Sulphur	☐ Reverse osmosis	☐ Other (please specify)
			no - test bacteria 1-2 times/yr

Is the well (or wells) used for purposes other than residential (e.g.: commercial, livestock)?

If yes, describe uses:

Do you currently have an additional water supply that is not a well (e.g.: cistern, municipal)?

☐ Cistern	☐ Municipal	☐ Other (please specify)

If cistern, please indicate size & who fills cistern:

WELL HISTORY

Have you experienced water quality issues in the past?

If yes, describe issue(s): sediment in summer - overall says he has good quality

Have you experienced water quantity issues in the past?

If yes, describe issue(s): no - says he drained well and was fully recharged in 6 hours

Are you currently satisfied with your water supply?

Other comments: yes

Concerned with losing his Water Table (as pit expansion is right by his backyard)

WELL MEASUREMENTS

Do you want a licensed well contractor to complete an inventory of your well (i.e. depth of water)?

☐ Yes ☐ No

If yes, please indicate approx. days & times of the week that would be most convenient:

Well Data Collection – Preliminary Assessment of Supply and Usage

PROPERTY INFORMATION

Name	NA	Phone #	NA
Address	7062 Highway 93	Other Phone #	
Do you own this property?	Yes	If no, Owner Name:	
		Owner Phone #:	

CURRENT WATER USE

Person living in house	Yes	Phone	
		Email	
# of people in home	2	# of wells on property:	1

Is the well (or wells) shared with adjacent properties? no

If yes, indicate address:

Location of well	Left side of property, by horses	Location of septic	Right side of house
Access to well	Easy	Type of pump	Submersible

Do you currently treat your well water? (Indicated water treatment equipment below)

☐ UV	☐ Softener	☐ Iron removal	☐ Carbon filtration
☐ Chlorine	☐ Sulphur	☐ Reverse osmosis	☐ Other (please specify)

no

Is the well (or wells) used for purposes other than residential (e.g.: commercial, livestock)?

If yes, describe uses: livestock - horses

Do you currently have an additional water supply that is not a well (e.g.: cistern, municipal)?

☐ Cistern ☐ Municipal ☐ Other (please specify)

If cistern, please indicate size & who fills cistern:

WELL HISTORY

Have you experienced water quality issues in the past? yes

If yes, describe issue(s): Sediment - in toilet, glasses of water

Have you experienced water quantity issues in the past? no

If yes, describe issue(s):

Are you currently satisfied with your water supply? yes

Other comments:

WELL MEASUREMENTS

Do you want a licensed well contractor to complete an inventory of your well (i.e. depth of water)?

☐ Yes ☐ No

If yes, please indicate approx. days & times of the week that would be most convenient:

Well Data Collection – Preliminary Assessment of Supply and Usage

PROPERTY INFORMATION

Name	NA	Phone #	NA
Address	20 Darby Road	Other Phone #	
Do you own this property?	Yes	If no, Owner Name:	
		Owner Phone #:	

CURRENT WATER USE

Person living in house	Yes	Phone	
		Email	
# of people in home	3	# of wells on property:	1

Is the well (or wells) shared with adjacent properties? no

If yes, indicate address:

Location of well	Front yard, left side	Location of septic	Backyard
Access to well	Sealed	Type of pump	Submersible - 4 wire

Do you currently treat your well water? (Indicated water treatment equipment below)

☐ UV	☑ Softener	☐ Iron removal	☐ Carbon filtration
☐ Chlorine	☐ Sulphur	☐ Reverse osmosis	☐ Other (please specify)

Is the well (or wells) used for purposes other than residential (e.g.: commercial, livestock)?

If yes, describe uses: no

Do you currently have an additional water supply that is not a well (e.g.: cistern, municipal)?

☐ Cistern	☐ Municipal	☐ Other (please specify)

If cistern, please indicate size & who fills cistern:

WELL HISTORY

Have you experienced water quality issues in the past?

If yes, describe issue(s): Sediment in toilet tank, dishwasher

Have you experienced water quantity issues in the past?

If yes, describe issue(s):

Are you currently satisfied with your water supply?

Other comments:

WELL MEASUREMENTS

Do you want a licensed well contractor to complete an inventory of your well (i.e. depth of water)?

☐ Yes ☐ No

If yes, please indicate approx. days & times of the week that would be most convenient:

Well Data Collection – Preliminary Assessment of Supply and Usage

PROPERTY INFORMATION

Name	NA	Phone #	
Address	1189 Marshall Rd	Other Phone #	
Do you own this property?	Yes	If no, Owner Name:	
		Owner Phone #:	

CURRENT WATER USE

Person living in house	yes	Phone	NA
		Email	NA
# of people in home	3	# of wells on property:	2

Is the well (or wells) shared with adjacent properties? no

If yes, indicate address:

Location of well	1 by house; 1 at back of property by horses	Location of septic	Back of Property
Access to well	See Notes	Type of pump	Jet pump - 15L/min

Do you currently treat your well water? (Indicated water treatment equipment below)

☐ UV	☐ Softener	☐ Iron removal	☐ Carbon filtration
☐ Chlorine	☐ Sulphur	☐ Reverse osmosis	☐ Other (please specify)
			0.0003 filtration system

Is the well (or wells) used for purposes other than residential (e.g.: commercial, livestock)?

If yes, describe uses: Livestock - Horses on property

Do you currently have an additional water supply that is not a well (e.g.: cistern, municipal)?

☐ Cistern	☐ Municipal	☐ Other (please specify)	

If cistern, please indicate size & who fills cistern:

WELL HISTORY

Have you experienced water quality issues in the past? yes

If yes, describe issue(s): sludge in horse troughs, silt in water of washing machine, jacuzzi, hot water tank, etc
Silt resulting in pumps being blown out due to build up

Have you experienced water quantity issues in the past? yes

If yes, describe issue(s): Less water all year round

Are you currently satisfied with your water supply? no

Other comments:

WELL MEASUREMENTS

Do you want a licensed well contractor to complete an inventory of your well (i.e. depth of water)?

☐ Yes ☐ No

If yes, please indicate approx. days & times of the week that would be most convenient:

Appendix D
Current and Approved Site Plans (January 6, 2017) and Articles of Incorporation

1045 - 1

DECLARATION OF PURPOSE

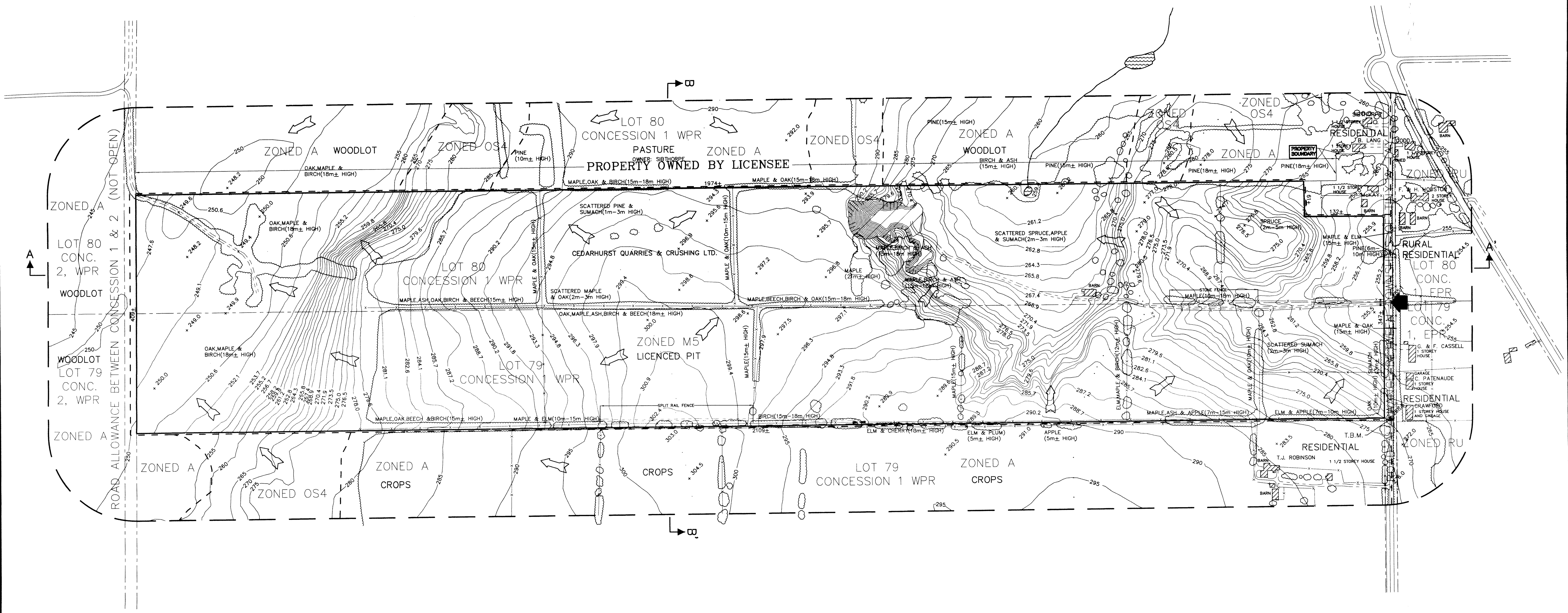
THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES IN CONJUNCTION WITH AN APPLICATION FOR A CLASS 'A' LICENCE UNDER THE AGGREGATE RESOURCES ACT AND REGULATIONS.

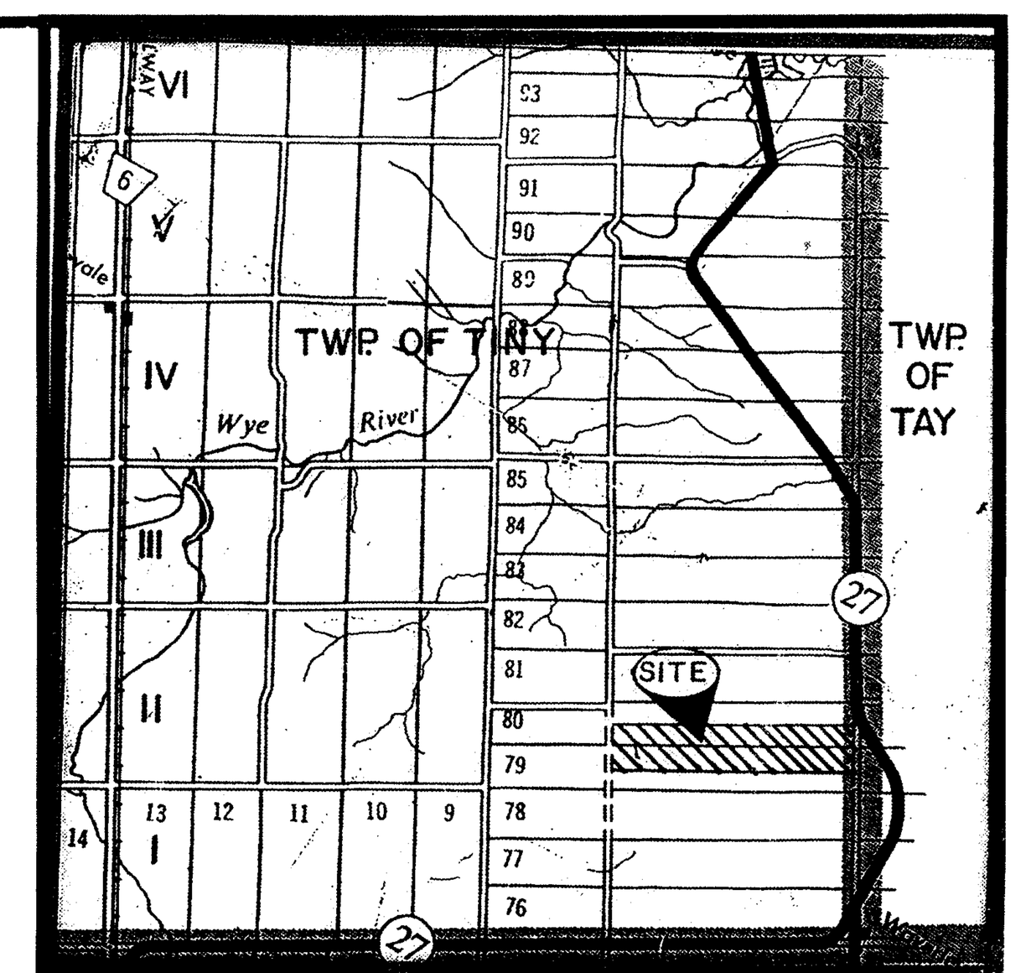
THIS SITE PLAN HAS BEEN PREPARED TO COMPLY WITH THE PROVISIONS OF SECTION 69 OF THE AGGREGATE RESOURCES ACT AND REPLACES THE SITE PLAN ORIGINALLY SUBMITTED AS PART OF A LICENCE APPLICATION UNDER THE PITS AND QUARRIES CONTROL ACT AND REGULATIONS.

PART OF LOTS 79 & 80, CONCESSION 1, WPR TOWNSHIP OF TINY COUNTY OF SIMCOE

50 0 50 100 150 200 250 metres
SCALE 1:3000

SITE PLANS APPROVED BY THE MINISTRY OF NATURAL RESOURCES
SIGNATURE DATE





KEY MAP

1267 0 1267 2534 3801 metres
SCALE 1:63,360

LEGEND

- LICENCED BOUNDARY
- PROPERTY BOUNDARY
- TOWNSHIP LOT AND/OR CONCESSION LINE
- LINE INDICATING ALL POINTS WITHIN 150m (MIN.) OF LICENCED BOUNDARY.
- ZONING BOUNDARY
- POST & WIRE FENCE UNLESS OTHERWISE NOTED
- PUBLIC ROAD
- INTERNAL ROAD/DRIVEWAY
- TRAIL
- STREAM AND/OR INTERMITTENT WATER COURSE
- STRUCTURES AND BUILDINGS(TO SCALE)
- CONTOURS & SPOT ELEVATIONS
- GENERAL DIRECTION OF DRAINAGE
- PIT ENTRANCE/EXIT
- TREES/BUSH
- OVERHEAD HYDRO LINE
- UNDERGROUND BELL LINE
- UNDERGROUND GAS LINE
- GATE
- POND
- EXCAVATION FACE
- DISTURBED AREA
- APPROXIMATE DRAINAGE DIVIDE
- SECTION ARROWS
- TEMPORARY BENCHMARK

A. GENERAL

1. THE LANDS TO BE LICENCED ARE OWNED BY CEDARHURST QUARRIES & CRUSHING LTD.

2. THE CONTOUR MAPPING OF THE LICENCED PROPERTY WAS PREPARED BY SKELTON, BRUMWELL & ASSOCIATES INC. BY SCANNING AND DIGITIZING THE EXISTING SITE PLAN PREPARED BY JAMES W. NICHOLSON LIMITED, O.L.S. IN APRIL OF 1976. CONTOURS ARE AT APPROXIMATELY 1.5 METRE INTERVALS. ELEVATIONS HAVE BEEN CONVERTED TO METRIC VALUES AND ADJUSTED BY 2.2 METRES TO CORRESPOND TO ONTARIO BASE MAPPING.

   CONTOUR INFORMATION OUTSIDE OF THE LICENCED BOUNDARY IS FROM OBM BASED ON 1984 AERIAL PHOTOGRAPHY.

3. ELEVATIONS INDICATED RELATE TO THE BENCHMARK SHOWN ON THE DRAWING (GEODETIC).

   DESCRIPTION:

   CENTRELINE OF ROAD OPPOSITE THE SOUTH PROPERTY LINE. ELEVATION DERIVED FROM OBM MAPPING.

   ELEVATION: 268.9 METRES

4. PROPERTY BOUNDARY AND CORRESPONDING INFORMATION WAS DERIVED FROM THE EXISTING SITE PLAN PREPARED BY JAMES W. NICHOLSON LIMITED, O.L.S., DATED APRIL 13, 1976.

5. LANDOWNER'S NAMES WERE OBTAINED FROM FIELD SURVEY BY SKELTON, BRUMWELL & ASSOCIATES INC. IN DECEMBER, 1992.

6. THE ENTRANCE TO THE SITE HAS BEEN IN PLACE SINCE PRIOR TO THE LICENCING OF THE SITE UNDER THE PITS AND QUARRIES CONTROL ACT IN 1976.

B. SITE DESCRIPTION

1.	LICENCED AREA	85.39 HA
2.	DISTURBED AREA	1.0 HA±
3.	AREA TO BE EXTRACTED	50.5 HA

C. DRAINAGE

1. DRAINAGE OF THE SITE IS BOTH NATURAL INFILTRATION AND SURFICIAL RUNOFF FOLLOWING THE CONTOURS AS INDICATED BY THE ARROWS ON THE SITE PLAN.

2. BASED ON A HYDROGEOLOGICAL ASSESSMENT PREPARED BY ALPHA ENVIRONMENTAL SERVICES INC. (DATED NOVEMBER 30, 2010) THE WATER TABLE IS ESTIMATED TO VARY FROM 236m ASL IN THE WEST PORTION OF THE SITE TO 254.8 MASL IN THE CENTER TO 252.2 MASL IN THE EAST PORTION OF THE SITE.

D. CROSS SECTIONS & WELL DATA

1. FOR CROSS SECTIONS SHOWING EXISTING TOPOGRAPHY AND THE WATER TABLE REFER TO DRAWING NO. 901045-4.

2. INFORMATION PERTAINING TO WELLS WAS OBTAINED FROM THE MINISTRY OF THE ENVIRONMENT WELL RECORDS, AND MONITORING PROGRAM PREPARED BY ALPHA ENVIRONMENTAL SERVICES INC. (FOR PERMIT TO TAKE WATER)

SCHEDULE OF REVISIONS–PRE–LICENCING

NO.	DATE	DESCRIPTION	CHECKED

SCHEDULE OF AMENDMENTS–POST LICENCING

NO.	DATE	DESCRIPTION	CHECKED
1	DEC. 6/16	MINOR NOTE CHANGES	BM Jan 5, 2017
2	DEC. 6/16	IDENTIFY UNLICENSED LAND OWNED BY LICENSEE	BM Jan 5, 2017

Mar 1/93

D. B. SKELTON

CEDARHURST QUARRIES & CRUSHING LTD.
K.J. BEAMISH CONSTRUCTION CO. LIMITED
PER .... VICE-PRES.
DEC. 6 2016 RICK GEARY, VICE PRESIDENT

REVISED SITE PLANS PREPARED BY C.T. STRONGMAN SURVEYING LIMITED JULY 10, 2014

DEC. 6 2016 J. C. STANTON O.L.S., C.L.S.

SEAL — ASSOCIATION OF ONTARIO LAND SURVEYORS J.C. STANTON 1570

C.T. STRONGMAN SURVEYING LTD.
Ontario Land Surveyors
4145 Burnside Line
R.R. No. 4, Orillia, L3V-6H4
Telephone (705) 329-0765
Fax (705) 329-0424
email-info@ctssurveys.ca
ORILLIA – ONTARIO
AC14 File: 9257-1 JAN 5 2015 R-228-1

TEEDON PIT
TOWNSHIP OF TINY

APPLICANT: CEDARHURST QUARRIES & CRUSHING LTD.
R.R.#1, P.O. BOX 250
KING CITY, ONTARIO
LOG 1K0

EXISTING FEATURES

PROJECT NO. 90–1045 | DRWG. NO. 901045–1 of 4
DATE: FEBRUARY 24, 1993 | SCALE: 1:3000
DRAWN: BDD | CHECKED: | APPROVED:

skelton, brumwell & associates inc.
CONSULTING ENGINEERS & PLANNERS
151 FERRIS LANE, SUITE 300 BARRIE, ONTARIO L4M 6C1

Z:\0-PIT PLANS\9257 BEAMISH TEEDON PIT\9257-1 JAN 5 2015.dwg
1/12/2015 3:23 PM

1045 - 2

DECLARATION OF PURPOSE

THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES IN CONJUNCTION WITH AN APPLICATION FOR A CLASS 'A' LICENCE UNDER THE AGGREGATE RESOURCES ACT AND REGULATIONS.

THIS SITE PLAN HAS BEEN PREPARED TO COMPLY WITH THE PROVISIONS OF SECTION 69 OF THE AGGREGATE RESOURCES ACT AND REPLACES THE SITE PLAN ORIGINALLY SUBMITTED AS PART OF A LICENCE APPLICATION UNDER THE PITS AND QUARRIES CONTROL ACT AND REGULATIONS.

PART OF LOTS 79 & 80, CONCESSION 1, WPR TOWNSHIP OF TINY COUNTY OF SIMCOE

50 0 50 100 150 200 250 metres

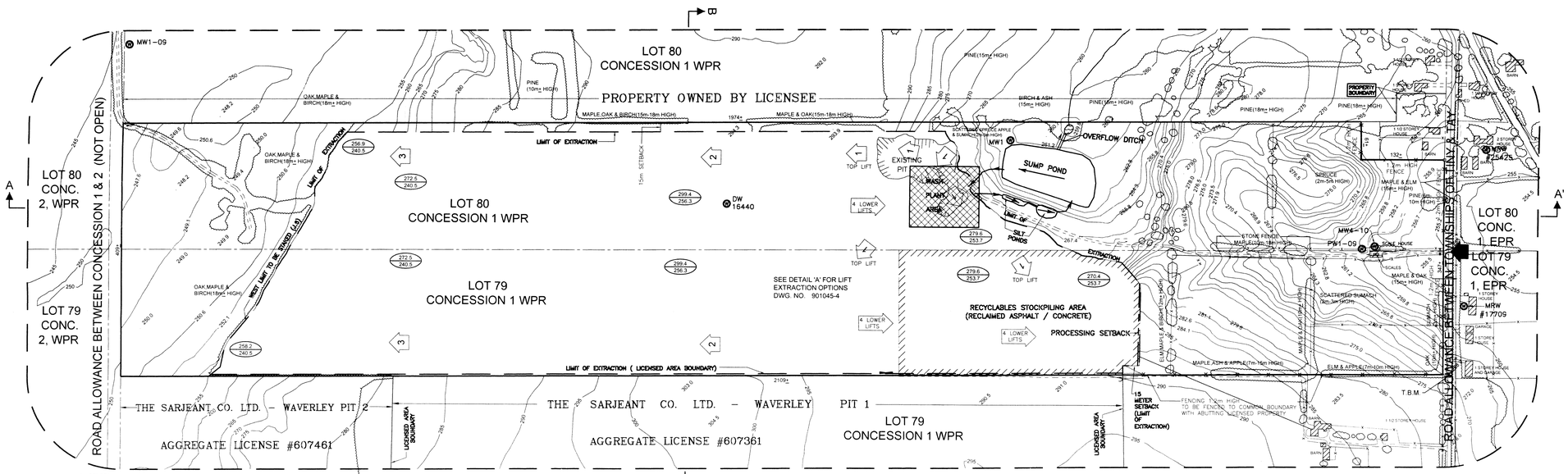
SCALE 1:3000

WELL DATA (PROVIDED BY ALPHA ENVIRONMENTAL SERVICES INC.)

Well #	Easting	Northing	Nature of Well	Ground Elevation (m asl)	Static Water Elevation (m asl)	Water Found Elevation (m asl)	Well Bottom Elevation (m asl)
MW1-09	590513	4944298	MW	247.5	236.0	235.9	180.4
16440	591461	4944573	DW	295.0	Dry	Dry	252.3
MW1	591776	4944932	MW	263.0	254.8	?	245.0
MW4-10	592350	4945080	MW	260.0	252.2	244.8	242.3
25425	592435	4945324	MRW	254.0	252.2	242.4	234.2
PW1-09	592343	4945072	PW	260.0	237.7	202.1	191.4
17709	592539	4945093	MRW	256.0	236.2	199.6	198.0
Silotowne	592282	4945366	MRW	260.5	253.0	244.8	242.3
			MW	Monitoring Well			
			PW	Monitored Production Well			
			MRW	Monitored Residential Well			
			DW	Decommissioned Well			

SITE PLANS APPROVED BY THE MINISTRY OF NATURAL RESOURCES

SIGNATURE — DATE 07/03/03



LEGEND

- LICENCED AREA
- PROPERTY BOUNDARY
- TOWNSHIP LOT AND/OR CONCESSION LINE
- LINE INDICATING ALL POINTS WITHIN 150m (MIN.) OF LICENCED BOUNDARY.
- 1.2m HIGH (MIN.) POST & WIRE FENCE UNLESS OTHERWISE NOTED
- PUBLIC ROAD
- INTERNAL ROAD/DRIVEWAY
- TRAIL
- STREAM AND/OR INTERMITTENT WATER COURSE
- STRUCTURES AND BUILDINGS(TO SCALE)
- CONTOURS & SPOT ELEVATIONS
- GENERAL DIRECTION OF DRAINAGE
- PIT ENTRANCE/EXIT
- TREES/BUSH
- OVERHEAD HYDRO LINE
- UNDERGROUND BELL LINE
- UNDERGROUND GAS LINE
- GATE
- POND
- EXCAVATION FACE
- HIGHEST ELEVATION WITHIN THE LIMIT OF EXTRACTION
- LIMIT OF EXTRACTION
- SECTION ARROWS
- DIRECTION/SEQUENCE OF MINING
- WATER WELL NUMBER/LOCATION
- EXISTING ELEVATION / LIMIT OF EXCAVATION
- BOUNDARY OF RECALIMED ASPHALT / CONCRETE STOCKPILE AREA
- TEMPORARY BENCHMARK
- PROCESSING SETBACK

SCHEDULE OF REVISIONS-PRE-LICENCING

NO.	DATE	DESCRIPTION	CHECKED

SCHEDULE OF AMENDMENTS-POST LICENCING

NO.	DATE	DESCRIPTION	CHECKED
1	JAN. 6/17	INCREASED DEPTH OF EXTRACTION	DSH Jan 13,2017
2	JAN. 6/17	REDUCED FENCING REQUIREMENTS	BA Jan 13,2017
3	JAN. 6/17	ELIMINATION OF SETBACK ALONG SOUTH BOUNDARY	BA Jan 13,2017
4	JAN. 6/17	RECYCLING OF RECLAIMED ASPHALT AND RECLAIMED CONCRETE	BA Jan 13,2017
5	JAN. 6/17	IMPORTATION OF MATERIAL FOR SITE REHABILITATION	BA Jan 13,2017
6	JAN. 6/17	REMOVAL OF PROCESSING SETBACK	BA Jan 13,2017
7	JAN. 6/17	STOCKPILE LIMITS	BA Jan 13,2017
8	JAN. 6/17	CHANGES TO NOTES / SCHEMATICS	BA Jan 13,2017
9	JAN. 6/17	REVISED WELL DATA BASED ON HYDROGEOLOGICAL ASSESSMENT UNDERTAKEN BY ALPHA ENVIRONMENTAL SERVICES INC.	BA Jan 13,2017
10	JAN. 6/17	ILLUSTRATION OF WASH PLANT AREA AND RELATED SILT PONDS / SUMP POND	BA Jan 13,2017

MAR 1/93

CEDARHURST QUARRIES & CRUSHING LTD.
K.J. BEAMISH CONSTRUCTION CO. LIMITED
PER: Rick Geary VICE-PRES.
JAN 6, 2017 RICK GEARY, VICE PRESIDENT

REVISED SITE PLANS PREPARED BY C.T. STRONGMAN SURVEYING LIMITED JULY 10, 2014

JAN 6, 2017 J. C. STANTON O.L.S., C.L.S.

SEAL

C.T. STRONGMAN SURVEYING LTD.
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Fax (705) 329-0424
E-mail: info@ctstrongman.com
ORILLIA – ONTARIO
AC15 File: 9257-2 JAN 5, 2017 R-228-2

TEEDON PIT
TOWNSHIP OF TINY

APPLICANT: CEDARHURST QUARRIES & CRUSHING LTD.
R.R.#1, P.O. BOX 250
KING CITY, ONTARIO
L0G 1K0

OPERATIONAL PLAN

PROJECT NO. 90 - 1045 | DRWG. NO. 90 1045 - 2

DATE: FEBRUARY 24, 1993 | SCALE: 1:3000

DRAWN: BDD | CHECKED: | APPROVED:

skelton, brumwell & associates inc.
CONSULTING ENGINEERS & PLANNERS
151 FERRIS LANE , SUITE 300 BARRIE , ONTARIO L4M 6C1

Z:\0-PIT PLANS\9257 BEAMISH TEEDON PIT\9257-2 JAN 6 2017.dwg
Friday, January 6, 2017 10:22:45 AM

A. GENERAL

1. FOR GENERAL REFERENCES REFER TO DRAWING NO. 901045-1.
2. FOR INFORMATION PERTAINING TO CROSS SECTIONS AND WELL DATA REFER TO DRAWING NOS. 901045-4 AND 901045-2

B. SITE DESCRIPTION

1. AREA TO BE LICENSED 85.39 HA
   AREA TO BE EXTRACTED 50.5 HA

C. DRAINAGE & SILTATION

1. BASED ON A HYDROGEOLOGICAL ASSESSMENT PREPARED BY ALPHA ENVIRONMENTAL SERVICES INC. (DATED NOVEMBER 30, 2010) THE WATER TABLE IS ESTIMATED TO VARY FROM 236m ASL IN THE WEST PORTION OF THE SITE TO 254.8 MASL IN THE CENTRE TO 252.2 MASL IN THE EAST PORTION OF THE SITE.
2. ALL SURFACE DRAINAGE OF UNDISTURBED AREAS WILL CONTINUE AS SHOWN ON DRAWING NO. 901045-1. ALL SURFACE DRAINAGE OF DISTURBED AREAS WILL BE CONTAINED ON SITE AND WILL INFILTRATE INTO THE PIT FLOOR. (EXCEPT AS PROVIDED BY NOTE C.3).
3. A TEMPORARY INTERCEPTOR DITCH MAY BE CONSTRUCTED PRIOR TO AND DOWNGRADIENT OF STRIPPING OPERATIONS IN PHASES 2 AND 3 (IF REQUIRED). RUNOFF COLLECTED IN THE DITCH WILL BE DIRECTED TOWARD THE EXCAVATED AREA. THE TEMPORARY DITCHING WILL BE INSPECTED AND CLEANED AS REQUIRED AFTER STORM EVENTS. THE DITCHING WILL BE REMOVED ONCE THE STRIPPED AREAS ARE EXCAVATED BELOW THE DOWNGRADE SLOPES AND NO LONGER CONTRIBUTE RUNOFF.

D. TREE SCREENS

1. EXISTING VEGETATION WILL BE LEFT UNDISTURBED WITHIN ALL SETBACKS.
2. EXISTING TREE SCREENS WILL BE MAINTAINED AND REPLACED AS NECESSARY THROUGHOUT THE LIFE OF THE PIT.

E. FENCING & GATES

1. THE EAST LICENSED AREA BOUNDARY WILL BE FENCED TO A MINIMUM HEIGHT OF 1.2 METERS (SEE ON SITE PLAN) AND MAINTAINED AS SAME FOR THE DURATION OF THE AGGREGATE LICENCE. A PORTION OF THE EAST HALF OF THE SOUTH LICENSED AREA BOUNDARY WILL BE FENCED (SEE ON SITE PLAN) TO A MINIMUM HEIGHT OF 1.2 METERS AND MAINTAINED AS SAME FOR THE DURATION OF THE AGGREGATE LICENCE.
2. THE NORTH LICENSED AREA BOUNDARY WILL NOT BE FENCED(WITH EXCEPTION OF THE NORTHEAST CORNER ADJACENT TO ANOTHER LANDOWNER) AS LAND ABUTTING TO THE NORTH IS OWNED BY THE LICENSEE (UNDER AGGREGATE LICENCE APPLICATION) WITH PERIMETER FENCING TO BE MAINTAINED TO PROVINCIAL STANDARDS (WEST, NORTH & EAST BOUNDARIES). THE SOUTH LICENSED AREA BOUNDARY ABUTTING THE LICENSED AREA TO THE SOUTH WILL NOT BE FENCED AND THE PORTION OF THE SOUTH BOUNDARY WEST OF THE COMMON LICENSED BOUNDARY WILL NOT BE FENCED AS IT IS FORESTED. THE WEST LICENSED AREA BOUNDARY WILL NOT BE FENCED AS IT IS FORESTED.
3. ALL UNFENCED LICENSED AREA BOUNDARIES ARE TO BE STAKED WITH STEEL T-BAR (PAINTED ORANGE) AT MINIMUM 30 METER INTERVALS.
4. A GATE WITH LOCKING DEVICE IS IN PLACE AT THE PIT ENTRANCE. THE GATE WILL BE KEPT LOCKED.

F. STOCKPILES

1. TOPSOIL AND OVERBURDEN WILL BE STRIPPED SEPARATELY AND USED FOR PROGRESSIVE REHABILITATION OR TEMPORARILY STOCKPILED. ALL TOPSOIL/OVERBURDEN STOCKPILES WILL BE SEEDED, MAINTAINED AND RESEEDED AS NECESSARY THROUGHOUT THE LIFE OF THE PIT.
2. TOPSOIL/OVERBURDEN STOCKPILES WILL NOT EXCEED 15 METRES IN HEIGHT.
3. TEMPORARY PRODUCT STOCKPILES WILL BE LOCATED IN CLOSE PROXIMITY TO EXTRACTIVE FACES. THE MAXIMUM HEIGHT OF THE PRODUCT STOCKPILES SHALL BE 15 METRES.
4. NO STOCKPILES WILL BE LOCATED WITHIN 30 METRES OF THE LICENSED BOUNDARY OR WITHIN 90 METRES OF THE LICENSED BOUNDARY WHERE IT ABUTS LANDS IN USE FOR RESIDENTIAL PURPOSES, WITH EXCEPTION OF THAT IDENTIFIED IN - M. OVERRIDE OF REGULATIONS.

G. PROCESSING EQUIPMENT

1. PORTABLE EQUIPMENT WILL BE USED FOR PROCESSING AND MINING AND WILL MOVE IN PROXIMITY TO EXTRACTIVE FACES.
2. PROCESSING AND MINING EQUIPMENT TO BE USED ON SITE MAY INCLUDE, BUT WILL NOT BE LIMITED TO:
   - LOADERS
   - TRUCKS
   - DOZERS
   - SCRAPERS
   - EXCAVATORS
   - SCREENING PLANT
   - POWER PLANT
   - FEED BIN
   - CRUSHING PLANT
   - WASH PLANT
   - CONVEYORS
   - TOOL TRAILER
3. WASHING OF AGGREGATE ON SITE IS SUBJECT TO THE PERMIT TO TAKE WATER ISSUED BY THE MINISTRY OF THE ENVIRONMENT. THE PLANT AND ASSOCIATED FACILITIES SHALL BE LOCATED AS ILLUSTRATED ON THIS SITE PLAN.
4. FOR EXTRACTION TECHNIQUES REFER TO DETAIL "A" ON DRAWING NO. 901045-4

H. FUEL STORAGE AND SERVICING

1. STORAGE OF DIESEL AND GASOLINE FUEL WILL BE IN ABOVE GROUND TANKS LOCATED IN THE SCALE HOUSE. STORAGE FUELS SHALL BE IN ACCORDANCE WITH PROVINCIAL REGULATIONS.
2. MINOR SERVICING OF MOBILE EQUIPMENT SUCH AS OIL CHANGES, LUBRICATION OR MINOR REPAIRS MAY TAKE PLACE ON SITE. MAJOR SERVICING REQUIREMENTS OF SUCH EQUIPMENT WILL TAKE PLACE OFF SITE.
3. ALL PETROLEUM WASTE PRODUCTS WILL BE COLLECTED AND DISPOSED OF BY A MOE APPROVED AGENT.
4. EMERGENCY RESPONSE BY THE OPERATOR TO AN ACCIDENTAL SPILL WILL BE IN ACCORDANCE WITH THE ENVIRONMENTAL PROTECTION ACT.

I. SCRAP

1. THERE WILL BE NO SCRAP STORED ON-SITE WITH THE EXCEPTION OF STUMPS AND BRUSH NATIVE TO THE PROPERTY WHICH WILL BE TEMPORARILY STORED WITHIN THE AREA OF EXTRACTIVE AS NEEDED BE.
2. STUMPS AND BRUSH WILL BE TEMPORARILY SURFACE STORED UNTIL THEY MAY BE CHIPPED FOR IMMEDIATE USE AS A SURFACE MULCH. THE MULCH WILL BE APPLIED ON-SITE DURING PROGRESSIVE REHABILITATION.
3. STUMPS AND BRUSH WILL BE PILED NO CLOSER THAN 30 METRES TO THE LICENSED BOUNDARY.
4. STUMPS AND BRUSH WILL BE STORED A MINIMUM OF 2.0 METRES ABOVE THE HIGH GROUND WATER TABLE.
5. ALL SURFACE DRAINAGE OF STORAGE AREAS WILL BE CONTAINED ON SITE.
6. STUMPS AND BRUSH WILL BE STORED NO CLOSER THAN 30 METRES TO A WATER COURSE OR WATER BODY.

J. MINING SEQUENCE

1. THE OPERATION SEQUENCE MAY VARY DUE TO QUALITY OF MATERIAL, SITE HYDROLOGY, SITE HYDROGEOLOGY OR MARKET DEMAND UPON PRIOR APPROVAL FROM THE MINISTRY OF NATURAL RESOURCES.
2. THE FINAL LIMITS OF EXTRACTION AND FINAL DEPTHS OF EXCAVATION WILL NOT EXCEED THOSE ILLUSTRATED. HOWEVER, THESE LIMITS ARE SCHEMATIC ONLY AND MAY BE REDUCED DEPENDING ON THE QUALITY OF MATERIAL AND MARKET DEMAND.
3. STRIPPING OF TOPSOIL AND OVERBURDEN WILL COMMENCE AT THE EXISTING PIT FACE IN THE NORTH HALF OF THE SITE. PROCEEDING SOUTHEAST, SOUTH AND SOUTHWEST.
4. MINING WILL COMMENCE FROM THE EXISTING PIT PROCEEDING SOUTHEAST, SOUTH AND SOUTHWEST TO THE SOUTH AND SOUTHEASTERLY LIMITS OF EXTRACTION.
5. MINING WILL THEN CONTINUE TO MOVE WEST TO THE CENTRE OF SITE ALONG THE ENTIRE WIDTH OF THE SITE.
6. THE WEST AREA WILL BE MINED TO THE STAKED WEST LIMIT OF EXTRACTION.
7. AS MINING NEARS THE LIMIT OF EXTRACTION, THE OPERATOR INTENDS TO GRADUATE THE EXTRACTION TO ACCOMMODATE THE 3:1 SLOPE, OR, EXTRACT TO THE LIMIT OF EXTRACTION AND BACKFILL WITH LOWER GRADE MATERIAL FROM THE SITE OR IMPORTED CLEAN MATERIALS TO A 3:1 SLOPE DEPENDING ON THE QUALITY OF MATERIAL AND MARKET DEMAND.
8. EACH SEQUENCE WILL BE MINED AND PROGRESSIVELY REHABILITATED TO IT'S FULL EXTENT BEFORE PROCEEDING WITH THE SECOND LIFT OF THE NEXT SEQUENCE.
9. SEQUENCE #1 WILL INVOLVE ONLY THE TOP LIFT. SEQUENCE #4 REPRESENTS REMOVAL OF THE REMAINING LIFTS IN THE WEST PORTION OF THE EXTRACTIVE AREA. THIS AREA WILL BE MINED LAST, DUE TO THE LOCATION OF THE WASH PLANT AREA AND RECYCLABLES STOCKPILING AREA.
10. PROGRESSIVELY REHABILITATED AREAS WILL BE MAINTAINED AND RE-SEEDED AS NECESSARY THROUGHOUT THE LIFE OF THE PIT.
11. THE HIGHEST EXISTING ELEVATION WITHIN THE LIMIT OF EXTRACTION OF 302.4 METRES, MINED TO A PIT FLOOR ELEVATION OF 256.3 METRES, ESTABLISHES AN APPROXIMATE MAXIMUM EXCAVATION DEPTH OF 46.1 METRES. THERE WILL BE A MAXIMUM OF 7 LIFTS AND LIFT HEIGHTS SHALL CONCUR WITH MINISTRY OF LABOUR REGULATIONS.

    FOLLOWING EACH LIFT IN EACH OF THE 3 SEQUENCE AREAS A MINIMUM OF 3 TEST HOLES WILL BE DUG PRIOR TO THE COMMENCEMENT OF THE NEXT LIFT, TO PROBE FOR THE WATER TABLE AND ENSURE TH-AT GROUND WATER WILL NOT BE ENCOUNTERED AT AN UNEXPECTED ELEVATION. SHOULD THE WATER TABLE VARY UPWARDS NO EXTRACTION SHALL OCCUR WITHIN 1.5 METRES OF THE WATER TABLE.
12. THERE IS AN INTERNAL ROAD ON SITE FROM THE PIT ENTRANCE TO THE SCALES. FROM THIS POINT, ROADS WILL BE TEMPORARY AND WILL RADIATE TO AREAS OF EXTRACTION.
13. NO EXCAVATION WILL TAKE PLACE ANY DEEPER THAN 1.5 METRES ABOVE THE WATER TABLE.

K. IMPORTATION OF MATERIAL

1. RECLAIMED ASPHALT, RECLAIMED CONCRETE, PROCESSED AGGREGATE AND TOPSOIL / FILL MAY BE IMPORTED ONTO THE LICENSED PROPERTY FOR TRANSFER OR PROCESSING. STORAGE OF THESE MATERIALS WILL BE TEMPORARY AS THE MATERIAL WILL BE SOLD AND / OR USED FOR CONSTRUCTION PROJECTS.
   - RECYCLING OF ASPHALT AND RECLAIMED CONCRETE IS PERMITTED ON THIS SITE.
   - RECYCLABLE ASPHALT MATERIALS WILL NOT BE STOCKPILED WITHIN 30 METERS OF ANY WATER BODY OR MAN MADE POND AND MUST BE AT LEAST 2 METERS ABOVE THE SURFACE OF THE ESTABLISHED WATER TABLE.
   - ANY REBAR AND OTHER STRUCTURAL METAL MUST BE REMOVED FROM THE RECYCLED MATERIAL DURING PROCESSING AND PLACED IN A DESIGNATED SCRAP PILE ON SITE WHICH WILL BE REMOVED ON AN ON-GOINING BASIS.
   - REMOVAL OF RECYCLED AGGREGATE AND OTHER IMPORTED MATERIALS AS MENTIONED ABOVE IS TO BE ON-GOINING.
   - ONCE THE AGGREGATE ON SITE HAS BEEN DEPLETED THERE WILL BE NO FURTHER IMPORTATION OF MATERIAL NOT USED FOR REHABILITATION.
   - ONCE FINAL REHABILITATION HAS BEEN COMPLETED AND APPROVED IN ACCORDANCE WITH THE SITE PLAN, ALL IMPORTATION AND RECYCLING OPERATIONS MUST CEASE.
   - CLEAN TOPSOIL / FILL BROUGHT ONTO THE SITE FOR TRANSFER OR PROCESSING SHALL BE TESTED AT THE SOURCE BEFORE IT IS DEPOSITED ON SITE. TO ENSURE THAT THE MATERIAL MEETS THE MINISTRY OF THE ENVIRONMENTS CRITERIA UNDER TABLE 1 OF THE MINISTRY OF THE ENVIRONMENT'S SOILS, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT. SAMPLING RESULTS WILL BE PROVIDED TO THE MINISTRY OF NATURAL RESOURCES AND / OR THE MINISTRY OF THE ENVIRONMENT UPON REQUEST.

    NOTWITHSTANDING CONDITION 1, WHERE THE IMPORTED MATERIAL IS NOT BEING PLACED WITHIN 1.5 METERS OF THE SURFACE, THE CRITERIA UNDER TABLE 1 FOR SODIUM ABSORPTION RATIO AND ELECTRICAL CONDUCTIVITY DO NOT HAVE TO BE MET.
2. CLEAN INERT FILL / TOPSOIL MAY BE IMPORTED TO FACILITATE THE ESTABLISHMENT OF 3:1 (HORIZONTAL:VERTICAL) SLOPES ON THE FINAL PIT FACES. THE LICENSEE MUST ENSURE THAT THE MATERIAL IS TESTED AT THE SOURCE, BEFORE IT IS DEPOSITED ON SITE, TO ENSURE THAT THE MATERIAL MEETS THE MINISTRY OF THE ENVIRONMENTS CRITERIA UNDER TABLE 1 OF THE MINISTRY OF THE ENVIRONMENT'S SOILS, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT. SAMPLING RESULTS WILL BE PROVIDED TO THE MINISTRY OF NATURAL RESOURCES AND / OR THE MINISTRY OF THE ENVIRONMENT UPON REQUEST.

    NOTWITHSTANDING THE ABOVE (B) WHERE THE IMPORTED MATERIAL IS NOT BEING PLACED WITHIN 1.5 METERS OF THE SURFACE, THE CRITERIA UNDER TABLE 1 FOR SODIUM ABSORPTION RATIO AND ELECTRICAL CONDUCTIVITY DO NOT HAVE TO BE MET.

L. ONTARIO MINISTRY OF THE ENVIRONMENT INFORMATION

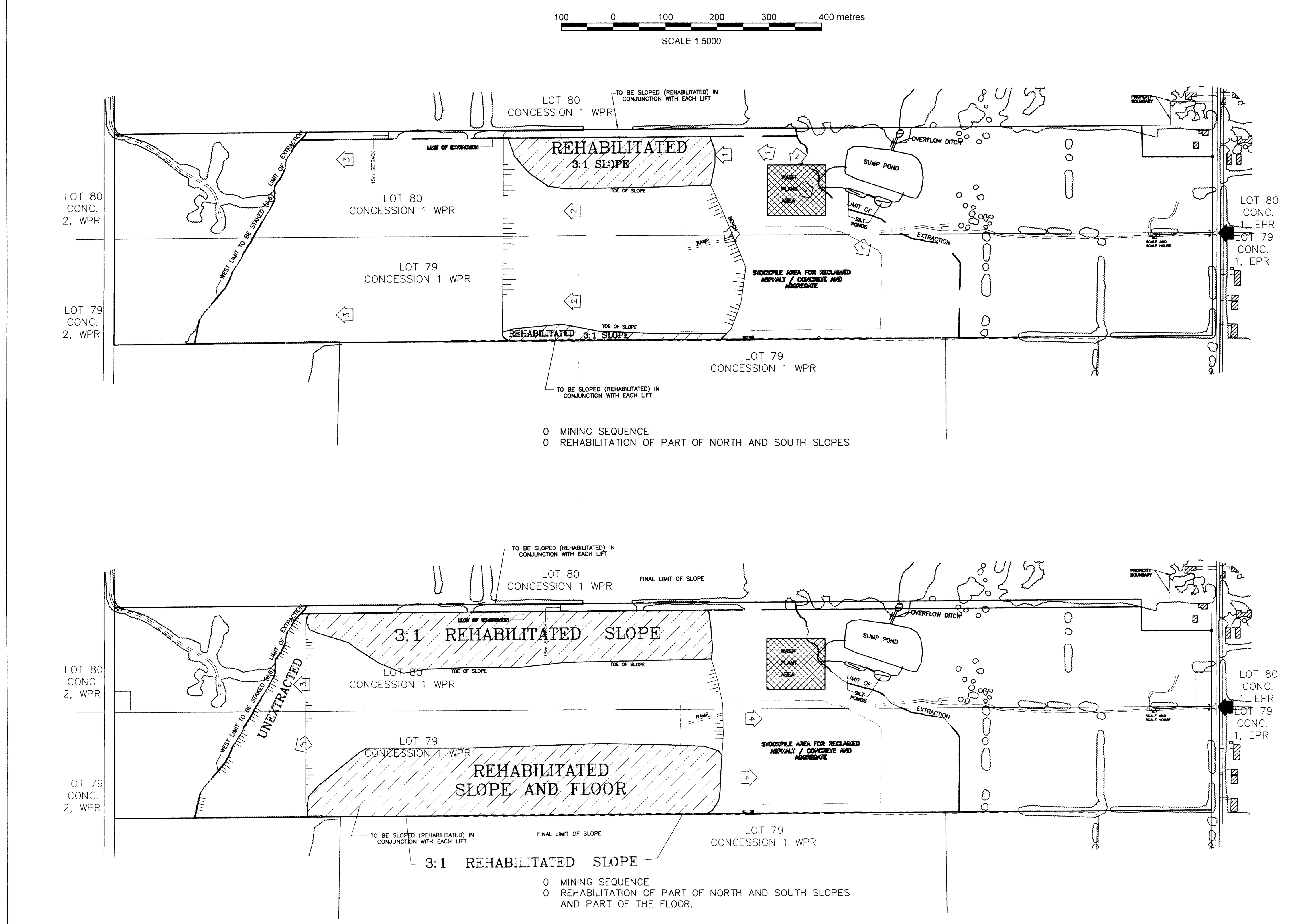
1. IT IS THE OBLIGATION OF THE OPERATOR TO MAINTAIN NOISE LEVELS TO WITHIN ALLOWABLE AND ACCEPTABLE LIMITS. TO ENSURE NOISE LEVELS ARE ACCEPTABLE THE OPERATOR SHALL:
   a) PROCESSING SHALL NOT OCCUR WITHIN 300 METRES OF ANY RESIDENCE SHOWN ON DRAWING NO. 901045-1.
   b) CONDUCT MINING AND PROCESSING OPERATIONS AS MUCH AS POSSIBLE AT THE PIT FLOOR ELEVATION, OR AT LOCATIONS SUCH THAT NOISE LEVEL VIOLATIONS UNDER THE ENVIRONMENTAL PROTECTION ACT DO NOT OCCUR
   c) WHERE NECESSARY, MAINTAIN STOCKPILES AND/OR THE EXTRACTIVE FACE BETWEEN OPERATIONS AND THE ADJACENT RESIDENCES, TO ENSURE THAT NOISE LEVEL VIOLATIONS UNDER THE ENVIRONMENTAL PROTECTION ACT DO NOT OCCUR.
   d) RESPOND TO OBJECTIONS RELATING TO NOISE BY RESIDENTS OR THE M.O.E. IF DEEMED APPROPRIATE BY THE M.O.E., MITIGATE AND MONITOR NOISE IMPACTS OF THE OPERATIONS.
   e) SHOULD IT BE DETERMINED THAT NOISE LEVEL VIOLATIONS UNDER THE ENVIRONMENTAL PROTECTION ACT OCCUR, THE OPERATOR SHALL IMPLEMENT FURTHER MITIGATION MEASURES TO BE DETERMINED BY A NOISE STUDY.
   f) THE OPERATOR ACKNOWLEDGES THE MODEL MUNICIPAL NOISE CONTROL BY-LAW AND RELEVANT PUBLICATIONS AND WILL OPERATE IN COMPLIANCE THEREWITH.
2. NO BLASTING WILL TAKE PLACE ON-SITE.
3. IT IS THE OBLIGATION OF THE OPERATOR TO MAINTAIN DUST EMISSION LEVELS TO WITHIN ALLOWABLE AND ACCEPTABLE LIMITS. TO ENSURE DUST LEVELS ARE ACCEPTABLE THE OPERATOR SHALL:
   a) PROCESSING SHALL NOT OCCUR WITHIN 300 METRES OF ANY RESIDENCE ON DRAWING NO. 901045-1.
   b) CONDUCT MINING AND PROCESSING OPERATIONS AS MUCH AS POSSIBLE AT THE PIT FLOOR ELEVATION, OR AT LOCATIONS SUCH THAT DUST EMISSION LEVEL VIOLATIONS UNDER THE ENVIRONMENTAL PROTECTION ACT DO NOT OCCUR.
   c) LIMIT STOCKPILES TO HEIGHTS IDENTIFIED IN NOTES F2 AND F3.
   d) APPLY WATER ON M.O.E. APPROVED DUST SUPPRESSANTS ON SITE ROADS.
   e) WHERE NECESSARY, MAINTAIN STOCKPILES AND/OR THE EXTRACTIVE FACE BETWEEN OPERATIONS AND THE ADJACENT RESIDENCES, TO ENSURE THAT DUST EMISSION LEVEL VIOLATIONS UNDER THE ENVIRONMENTAL PROTECTION ACT DO NOT OCCUR.
   f) RESPOND TO OBJECTIONS RELATING TO DUST BY RESIDENTS OR THE MOE. IF DEEMED APPROPRIATE BY THE MOE, MITIGATE AND MONITOR DUST IMPACTS OF THE OPERATIONS.
   g) SHOULD IT BE DETERMINED THAT EXCESSIVE DUST EMISSION LEVELS OCCUR, THE OPERATOR SHALL IMPLEMENT FURTHER MITIGATION MEASURES TO BE DETERMINED BY A DUST STUDY.
4. THE OPERATOR IS AWARE THAT NOISE AND DUST CAN RESULT FROM THIS TYPE OF OPERATION AND WILL MAINTAIN LEVELS WITHIN REQUIREMENTS OF THE ENVIRONMENTAL PROTECTION ACT. VIOLATIONS OF THESE REQUIREMENTS MAY RESULT IN PROSECUTION UNDER THE ENVIRONMENTAL PROTECTION ACT.
5. THERE WILL BE NO MINING BELOW THE WATER TABLE. THEREFORE, NO HYDROGEOLOGICAL REPORT IS REQUIRED OR PROVIDED.
6. ALL PERMITS OR CERTIFICATES OF APPROVAL AS REQUIRED BY MOE WILL BE OBTAINED PRIOR TO OPERATION OF THE EQUIPMENT ON-SITE.
7. STOCKPILES OF IMPORTED MATERIALS MUST COMPLY WITH ALL APPLICABLE PROVINCIAL REGULATIONS.

M. OVERRIDE OF REGULATIONS 702/89

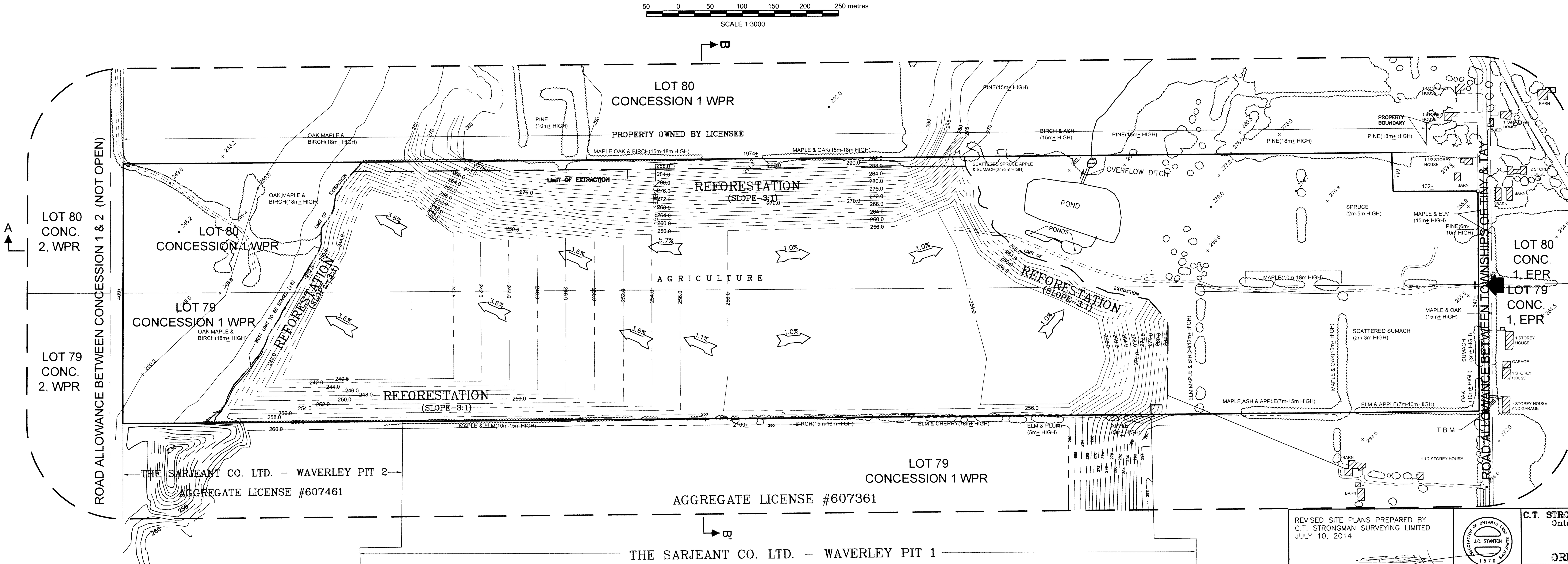
NO.	DESCRIPTION	REFERENCE TO REGS.	COMMENTS
1.	No fencing on north licensed area boundary (except northeast corner); west licensed area boundary and section of the south licensed area boundary		The adjacent property to the north is owned by the licensee and is fenced to Provincial Standards (shall be maintained). The property to the west is heavily forested and old entrance is grown over. A section of adjacent property to the south is licensed pit properties (2) and heavily forested.
2.	No setback along section of south licensed area boundary.		South section of licensed area boundary is adjacent to two licensed pit properties (common boundary) with extraction agreement in place.
3.	Stockpiling may be undertaken along the north and south licensed area boundaries in the area of extraction (no setback)		The property to the north is owned by the licensee and the property to the south is two licensed pit properties.

1045 – 3

CONCEPTUAL PROGRESSIVE REHABILITATION SCHEMATICS



FINAL REHABILITATION



PART OF LOTS 79 & 80,
CONCESSION 1, WPR
TOWNSHIP OF TINY
COUNTY OF SIMCOE

SITE PLANS APPROVED BY THE MINISTRY OF NATURAL RESOURCES

SIGNATURE — DATE

A. GENERAL REFERENCES

1. FOR GENERAL REFERENCES REFER TO DRAWING NO. 901045-1.
2. FOR INFORMATION PERTAINING TO CROSS SECTIONS AND WELL DATA, REFER TO DRAWING NOS. 901045-4 AND 901045-2.
3. AREA TO BE REHABILITATED - 50.5 HA.

B. PROGRESSIVE REHABILITATION

1. STAGING OF PROGRESSIVE AND FINAL REHABILITATION WILL FOLLOW THE DIRECTION AND SEQUENCE OF MINING AS ILLUSTRATED ON DRAWING NO. 901045-2.
2. AS MINING NEARS THE LIMIT OF EXTRACTION, THE OPERATOR INTENDS TO GRADUATE THE EXTRACTION TO ACCOMMODATE THE 3:1 SLOPE OR EXTRACT TO THE LIMIT OF EXTRACTION AND BACKFILL WITH LOWER GRADE MATERIAL FROM THE SITE OR IMPORTED MATERIAL TO A 3:1 SLOPE DEPENDING ON THE QUALITY OF MATERIAL AND MARKET DEMAND AND AS ILLUSTRATED ON DETAIL "A" ON DRAWING 901045-4.
3. OVERBURDEN OBTAINED FROM TEMPORARY STOCKPILES OR STRIPPED AREAS WILL BE USED FOR BACKFILLING AND FINAL CONTOURING OF SLOPES AND THE PIT FLOOR.
4. PROGRESSIVE REHABILITATION OF THE PIT FLOOR AND REHABILITATED SLOPES WILL INCLUDE APPLICATION OF A MINIMUM OF 100 MM OF TOPSOIL, MIXED GRASS (SUCH AS CREEPING RED FESCUE, BROME GRASS, ANNUAL RYE GRASS) OR LEGUME (SUCH AS WHITE CLOVER OR BIRDSFOOT TREFOIL) SEED AND MULCH.

C. DRAINAGE

1. DURING EXCAVATION AND PROGRESSIVE REHABILITATION, ALL RUNOFF FROM DISTURBED AREAS WILL BE CONTAINED ON SITE USING SILT FENCES WHERE NECESSARY TO PREVENT SEDIMENTS FROM LEAVING THE SITE.
2. ONCE VEGETATION IS ESTABLISHED ON THE SLOPES AND PIT FLOOR, RUNOFF WILL FOLLOW THE GENERAL PATTERNS DICTATED BY FINAL CONTOURS.

D. FENCING

1. ALL REQUIRED FENCING WILL REMAIN ON SITE.

E. STOCKPILES

1. TOPSOIL AND OVERBURDEN STOCKPILES WILL BE REMOVED AND USED IN PROGRESSIVE AND FINAL REHABILITATION.

G. FINAL REHABILITATION

1. THE FINAL LIMITS OF EXTRACTION AND FINAL DEPTHS OF EXCAVATION WILL NOT EXCEED THOSE ILLUSTRATED. HOWEVER, THESE LIMITS ARE SCHEMATIC ONLY AND MAY BE REDUCED DEPENDING ON THE QUALITY OF MATERIAL AND MARKET DEMAND.
2. ALL SLOPES WILL BE PLANTED WITH SCATTERED CLUMPS OF NATIVE SPECIES SUCH AS SUMACH, CHOKE CHERRY, TREMBLING ASPEN OR SUGAR MAPLE SEEDLINGS.
3. THE PIT FLOOR WILL BE PREPARED FOR AN AGRICULTURAL END USE. THE SEED BED PREPARATION WILL UTILIZE, BUT WILL NOT BE RESTRICTED TO RIPPING, TILLING, FERTILIZING AND STONE PICKING, AS REQUIRED.
4. ALL THE EQUIPMENT AND BUILDINGS USED ON SITE DURING EXCAVATION AND REHABILITATION WILL BE REMOVED.
5. THE PONDS REMAINING ON SITE WILL PROVIDE A DIVERSE WILDLIFE HABITAT (WATER FOWL, ETC.)

DECLARATION OF PURPOSE

THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES IN CONJUNCTION WITH AN APPLICATION FOR A CLASS 'A' LICENCE UNDER THE AGGREGATE RESOURCES ACT AND REGULATIONS.

THIS SITE PLAN HAS BEEN PREPARED TO COMPLY WITH THE PROVISIONS OF SECTION 59 OF THE AGGREGATE RESOURCES ACT AND REPLACES THE SITE PLAN ORIGINALLY SUBMITTED AS PART OF A LICENCE APPLICATION UNDER THE PITS AND QUARRIES CONTROL ACT AND REGULATIONS.

LEGEND

- LICENCED BOUNDARY
- TOWNSHIP LOT AND/OR CONCESSION LINE
- 1.2m HIGH (MIN.) POST & WIRE FENCE UNLESS OTHERWISE NOTED
- PUBLIC ROAD
- INTERNAL ROAD/DRIVEWAY
- TRAIL
- STREAM AND/OR INTERMITTENT WATER COURSE
- STRUCTURES AND BUILDINGS (TO SCALE)
- CONTOURS & SPOT ELEVATIONS
- GENERAL DIRECTION OF DRAINAGE
- PIT ENTRANCE/EXIT
- TREES AND WOODLAND
- OVERHEAD HYDRO LINE
- UNDERGROUND BELL LINE
- UNDERGROUND GAS LINE
- GATE
- POND
- REHABILITATED AREA
- LIMIT OF EXTRACTION
- APPROXIMATE DRAINAGE DIVIDE
- SECTION ARROWS
- ACTIVE EXCAVATION FACE
- DIRECTION/SEQUENCE OF MINING
- TEMPORARY BENCH MARK
- PHASE BOUNDARY
- 150m INFORMATION ZONE

CEDARHURST QUARRIES & CRUSHING LTD.
K.J. BEAMISH CONSTRUCTION CO. LIMITED
PER. .... VICE-PRES.
JAN 6, 2017 — RICK GEARY, VICE PRESIDENT

SCHEDULE OF REVISIONS-PRE-LICENCING

NO.	DATE	DESCRIPTION	CHECKED

SCHEDULE OF AMENDMENTS-POST LICENCING

NO.	DATE	DESCRIPTION	CHECKED
1	JAN. 6/17	CHANGES TO NOTES AND SCHEMATICS	BA Jan 13, 2017

Mar 1/93

D. B. SKELTON — PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

TEEDON PIT

TOWNSHIP OF TINY

APPLICANT: CEDARHURST QUARRIES & CRUSHING LTD.
R.R.#1, P.O. BOX 250
KING CITY, ONTARIO
L0G 1K0

PROGRESSIVE AND FINAL REHABILITATION PLAN

PROJECT NO. 90 - 1045	DRWG. NO. 90 1045 - 3 of 4	
DATE: FEBRUARY 24, 1993	SCALE: 1:3000	
DRAWN: BDD	CHECKED:	APPROVED:

skelton, brumwell & associates inc.
CONSULTING ENGINEERS & PLANNERS
151 FERRIS LANE, SUITE 300 BARRIE, ONTARIO L4M 6C1

REVISED SITE PLANS PREPARED BY C.T. STRONGMAN SURVEYING LIMITED JULY 10, 2014

JAN 6, 2017 — J. C. STANTON O.L.S., C.L.S.

SEAL — ASSOCIATION OF ONTARIO LAND SURVEYORS — J.C. STANTON — 1570

C.T. STRONGMAN SURVEYING LTD.
Ontario Land Surveyors
4145 Burnside Line
R.R. No. 4, Orillia, L3V-6H4
Telephone (705) 329-0765
Fax (705) 329-0424
email-info@ctssurveys.ca
ORILLIA – ONTARIO

AC16 File: 9257-3 JAN 6 2017 — R-228-3

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Friday, January 6, 2017 10:33:17 AM

1045 - 4

DECLARATION OF PURPOSE

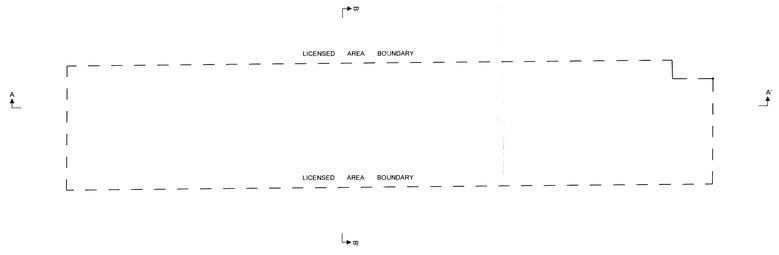
THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES IN CONJUNCTION WITH AN APPLICATION FOR A CLASS 'A' LICENCE UNDER THE AGGREGATE RESOURCES ACT AND REGULATIONS.

THIS SITE PLAN HAS BEEN PREPARED TO COMPLY WITH THE PROVISIONS OF SECTION 69 OF THE AGGREGATE RESOURCES ACT AND REPLACES THE SITE PLAN ORIGINALLY SUBMITTED AS PART OF A LICENCE APPLICATION UNDER THE PITS AND QUARRIES CONTROL ACT AND REGULATIONS.

PART OF LOTS 79 & 80, CONCESSION 1, WPR TOWNSHIP OF TINY COUNTY OF SIMCOE

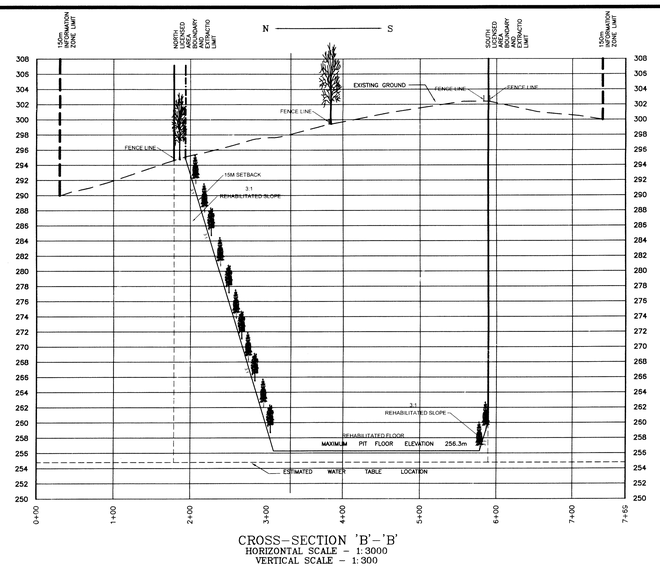
50 0 50 100 150 200 250 metres

SCALE 1:3000



CROSS SECTION LOCATION SCHEMATIC

SCALE 1:7500

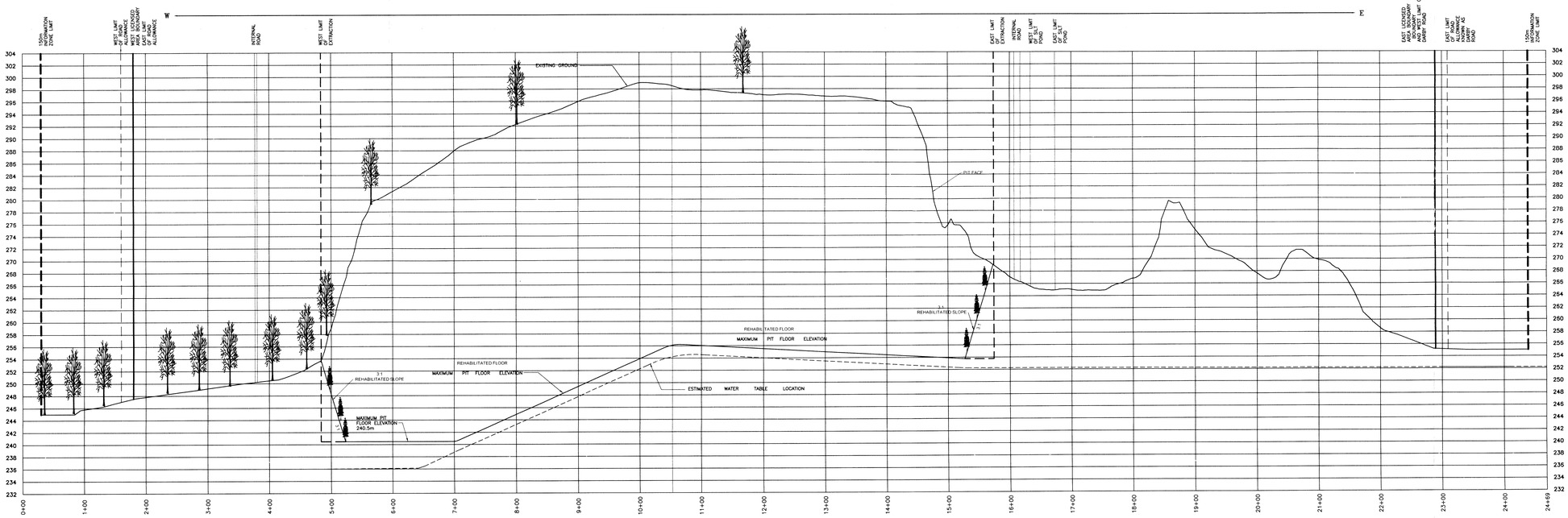


CROSS-SECTION 'B'-'B'
HORIZONTAL SCALE - 1:3000
VERTICAL SCALE - 1:300

SITE PLANS APPROVED BY THE MINISTRY OF NATURAL RESOURCES

SIGNATURE

07/03/93
DATE



CROSS-SECTION 'A'-'A'
HORIZONTAL SCALE - 1:3000
VERTICAL SCALE - 1:300

DETAIL A - LIFT EXTRACTION OPTIONS

MINING OPTIONS

OPTION 1:

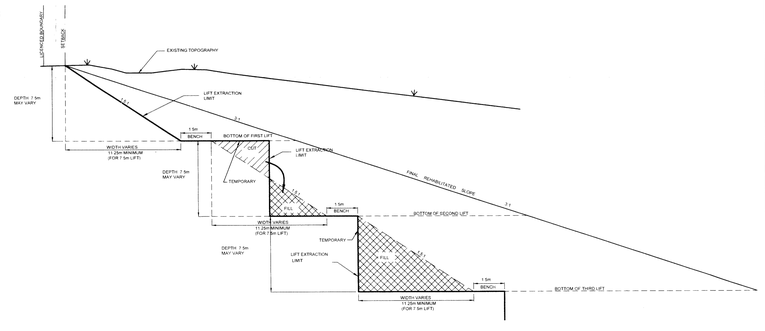
MINING TO A 1.5:1 SLOPE

OPTION 2:

CUT AND FILL

OPTION 3:

BACKFILL BEYOND A 1.5:1 SLOPE - SEE NOTE 2



DETAIL A - LIFT EXTRACTION OPTION

1) The operator intends to mine with a maximum of 7 lifts and to a 1.5:1 slope (on each lift) by means of one or more of the options illustrated, either individually or in combination. However, the operator will take necessary measures, including the reduction of slopes, to safely accommodate unusual site conditions and/or circumstances (ie groundwater, unstable materials, operational problems, etc.), if encountered.

2) On any given lift, should the operator choose to extract beyond the 1.5:1 slope and backfill (see option 3), the operator will ensure the following:

a) That once the lift extraction limit is reached, the slope will be backfilled to a temporary 1.5:1 slope and final rehabilitation at 3:1 slope.

b) That all Occupational Health and Safety Act regulations are adhered to.

SCHEDULE OF REVISIONS-PRE-LICENCING

NO.	DATE	DESCRIPTION	CHECKED

SCHEDULE OF AMENDMENTS-POST LICENCING

NO.	DATE	DESCRIPTION	CHECKED
1	DEC. 6/16	CHANGES TO NOTES AND SCHEMATICS	BR Jan 13, 2017

Mar 1/93

J. R. SKELTON 1957

CEDARHURST QUARRIES & CRUSHING LTD.
KJ BEAMISH CONSTRUCTION CO. LIMITED
PER.
JAN 6, 2017 RICK GEARY, VICE-PRESIDENT

REVISED SITE PLANS PREPARED BY C.T. STRONGMAN SURVEYING LIMITED JULY 10, 2014

JAN 6, 2017 J. C. STANTON O.L.S., C.L.S.

PROVINCE OF ONTARIO LAND SURVEYOR J. C. STANTON 1570

SEAL

C.T. STRONGMAN SURVEYING LTD.
Ontario Land Surveyors
1140 Bayridge Unit
R.R. No. 4, Orillia, L3V-6H4
Telephone (705) 329-0755
Fax (705) 329-0424
email-info@ctsurveys.ca
ORILLIA - ONTARIO

AC14 File: 9257-4 JAN 5 2015 | R-228-4

TEEDON PIT
TOWNSHIP OF TINY

APPLICANT: CEDARHURST QUARRIES & CRUSHING LTD.
RR#1, P.O. BOX 250
KING CITY, ONTARIO
L0G 1K0

CROSS SECTIONS

PROJECT NO. 90 - 1045	DRWG. NO. 90 1045 - 4 of 4
DATE: FEBRUARY 17, 1993	SCALE: AS SHOWN
DRAWN: BDD	CHECKED:
	APPROVED:

skelton, brumwell & associates inc.

CONSULTING ENGINEERS & PLANNERS
151 FERRIS LANE, SUITE 300 BARRIE, ONTARIO L4M 6C1

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12/01/2015 3:37:04 PM

Certificat de fusion

Loi sur les sociétés par actions (RLRQ, chapitre S-31.1)

J'atteste que les sociétés mentionnées dans les statuts de fusion ont fusionné en vertu de la Loi sur les sociétés par actions le 01 janvier 2016 en une seule société par actions sous le nom

GROUPE CRH CANADA INC.

et sa version

CRH CANADA GROUP INC.

Déposé au registre le 30 décembre 2015 sous le numéro d'entreprise du Québec 1171462923.

Registraire des entreprises

Registraire des entreprises Québec

RE-501 (2012-07)
Page 1

Statuts de fusion

Pour les statuts de fusion simplifiée seulement.

Numéro d'entreprise du Québec
NEQ 1 1 7 1 4 6 2 9 2 3

Cochez la case appropriée ☐ Fusion ordinaire ☑ Fusion simplifiée

Loi sur les sociétés par actions, L.R.Q., c. S-31.1

1 Nom de la société par actions

GROUPE CRH CANADA INC.

Version(s) du nom de la société dans une autre langue que le français, s'il y a lieu

CRH CANADA GROUP INC.

☐ Désignation numérique pour tenir lieu d'un nom

2 Capital-actions

See Schedule 1

3 Modalités de conversion et de paiement des actions des sociétés fusionnantes, s'il y a lieu

N/A

4 Restrictions sur le transfert des titres ou des actions, s'il y a lieu

See Schedule 2

5 Nombre d'administrateurs

Nombre fixe _____ **ou** Nombre minimal 1

Nombre maximal 10

Signez et retournez ce formulaire accompagné des documents exigés et du paiement requis. Ne pas télécopier.

Réservé à l'administration

10TC ZZ 49488467

Revenu Québec

6 **Limites imposées aux activités**, s'il y a lieu

N/A

7 **Autres dispositions**, s'il y a lieu

See Schedule 3

8 **Date et heure à attribuer au certificat**, s'il y a lieu

Date 2016 01 01 Heure ____ ____ (heures minutes)

9 **Sociétés fusionnantes**

Nom de la société	Numéro d'entreprise du Québec (NEQ)	Nom de l'administrateur ou du dirigeant autorisé	Signature de l'administrateur ou du dirigeant autorisé
GESTION OLDCASTLE CANADA INC. - OLDCASTLE CANADA HOLDINGS INC.	1 1 7 1 4 6 2 9 2 3	Jennifer Good	
GROUPE CRH CANADA INC. - CRH CANADA GROUP INC.	1 1 6 4 6 3 4 6 1 1	Jennifer Good	
	1 1		
	1 1		
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Si l'espace prévu est insuffisant, joignez une annexe, indiquez la section et numérotez les pages, s'il y a lieu.

SCHEDULE 1

SHARE CAPITAL

The Corporation is authorized to issue an unlimited number of common shares, without par value, carrying the following rights:

1. Voting Right. The holders of common shares are entitled to receive notice of, attend and vote at any meeting of shareholders of the Corporation, each common share conferring the right to cast one (1) vote.

2. Dividend. The holders of common shares are entitled to receive any dividend declared by the Corporation.

3. Remaining Property. Upon the liquidation or dissolution of the Corporation, the holders of common shares shall be entitled to share the remaining property of the Corporation.

SCHEDULE 2

RESTRICTIONS ON THE TRANSFER OF INSTRUMENTS OR SHARES

1. RESTRICTIONS ON TRANSFER OF SHARES

No share of the share capital of the Corporation shall be transferred without the approval of the directors evidenced by a resolution of the board, which approval may be given after such transfer.

2. RESTRICTIONS ON TRANSFER OF SECURITIES

As long as the Corporation qualifies as a "private issuer" within the meaning of *Regulation 45-106 respecting Prospectus Exemptions*, as amended, supplemented, restated or replaced from time to time, any transfer of securities (other than shares and non-convertible debt securities) of the Corporation, shall be subject to the approval of the directors evidenced by a resolution of the board (which approval may be given after such transfer) or, as the case may be, to restrictions that are contained in any security holders' agreements.

SCHEDULE 3

OTHER PROVISIONS

1. MEETINGS OF SHAREHOLDERS

The annual meeting of shareholders of the Corporation may be held outside of the Province of Quebec.

AFFIDAVIT

I, Suzanne Elie, of the City of Montreal, in the Province of Quebec, **MAKE OATH AND SAY**:

1. I am a Paralegal with the law firm of Fasken Martineau DuMoulin LLP, solicitors for CRH CANADA GROUP INC. and as such I have knowledge of the matters to which I hereinafter depose;
2. I am fluent in both English and French, and have carefully compared the original *Certificat de modification* and *Statuts de modification* (together, the "**Certificate of Amendment**"), attached hereto as Exhibit "A", with the translation (the "**Translation**"), attached hereto as Exhibit "B"; and
3. the Translation is in all respects a true and correct translation of the Certificate of Amendment.

SWORN BEFORE ME at the City of)
Montreal, in the Province of Quebec, this)
twenty-first (21st) day of August 2015)

Commissaire à l'Assermentation pour les Districts judiciaires du Québec
Commissioner of Oaths for the Judicial Districts of Quebec
DIANE L'ÉCUYER
103 985

A Commissioner for taking affidavits)

SUZANNE ELIE

This is Exhibit "B" referred to in the Affidavit of Suzanne Elie sworn before me, this 21st day of August, 2015

EXHIBIT "B"

Certificate of Modification

I attest, by these presents, that the company **HOLCIM (CANADA) INC.** has modified its articles on July 15, 2015, pursuant to the *Business Corporations Act* (Québec) as indicated in the articles of amendment attached hereto.

Filed at the Quebec Enterprises Registry on July 31, 2015 under Quebec Enterprise Number 1164634611.

Articles of Amendment

The name of the company is changed to **CRH CANADA GROUP INC.**

The names of the company prior to the amendment: **HOLCIM (CANADA) INC.**

Filed at the Quebec Enterprises Registry on July 31, 2015.

Certificat de modification

Loi sur les sociétés par actions (RLRQ, chapitre S-31.1)

J'atteste que la société par actions

HOLCIM (CANADA) INC.

a modifié ses statuts en vertu de la Loi sur les sociétés par actions afin de changer son nom et sa version pour

GROUPE CRH CANADA INC.

et sa version

CRH CANADA GROUP INC.

Le 31 juillet 2015 à 12 h 0 min

Déposé au registre le 31 juillet 2015 sous le numéro d'entreprise du Québec 1164634611.

Registraire des entreprises

Registraire des entreprises Québec

Statuts de modification

Numéro d'entreprise du Québec										
NEQ	1	1	6	4	6	3	4	6	1	1

Loi sur les sociétés par actions, L.R.Q., c. S-31.1

1 Identification de la société

Nom de la société par actions

HOLCIM (CANADA) INC.

Version(s) du nom de la société dans une autre langue que le français, s'il y a lieu

2 Modification des statuts

2.1 Modification relative au nom

Nom de la société par actions

GROUPE CRH CANADA INC.

Version(s) du nom de la société dans une autre langue que le français, s'il y a lieu

CRH CANADA GROUP INC.

☐ Désignation numérique pour tenir lieu de nom

2.2 Autres modifications

2.3 Date et heure à attribuer au certificat, s'il y a lieu

Date 2015 07 31 Heure 12 00

heures minutes

3 Correction des statuts

3.1 Statuts et certificat visés par la correction

Les statuts de _____ déposés au registre des entreprises le |_|_|_|_|_|_| contiennent
Type de statuts

des dispositions illégales, des erreurs ou des irrégularités. Un certificat se rapportant à ces statuts a été délivré par le Registraire des entreprises en date du |_|_|_|_|_|_| et le cas échéant, à l'heure |_|_|_|_|.
heures minutes

3.2 Corrections demandées

3.3 Droits des actionnaires et des créanciers

Les corrections demandées

- ☐ ne risquent pas de porter atteinte aux droits des actionnaires;
- ☐ ne risquent pas de porter atteinte aux droits des créanciers;
- ☐ risquent de porter atteinte aux droits des actionnaires;
- ☐ risquent de porter atteinte aux droits des créanciers.

4 Signature

Jennifer Good
Nom de l'administrateur ou du dirigeant autorisé

Signature de l'administrateur ou du dirigeant autorisé

Signez et retournez ce formulaire accompagné des documents exigés et du paiement requis. Ne pas télécopier.

Réservé à l'administration

10VP ZZ 49488680

Québec

CERTIFICAT DE MODIFICATION

Loi sur les compagnies, Partie IA
(L.R.Q., chap. C-38)

J'atteste par les présentes que la compagnie

HOLCIM (CANADA) INC.

a modifié ses statuts le ***15 AVRIL 2009***, en vertu de la partie IA de la Loi sur les compagnies, comme indiqué dans les statuts de modification ci-joints.

Registraire des entreprises Québec

Déposé au registre le 14 avril 2009
sous le numéro d'entreprise du Québec 1164634611

Registraire des entreprises

L430I11S16C41AA

LEX-303 (2007-04)

Registraire des entreprises
Québec

Statuts de modification

Loi sur les compagnies (L.R.Q., c. C-38, partie IA)

1. Nom - Inscrire le nouveau nom de la compagnie si celui-ci est modifié et inscrire le nom antérieur à la section 5.
ou
- Inscrire le nom actuel si vous le conservez et inscrire S. O. à la section 5.

Numéro d'entreprise du Québec
NEQ 1 1 6 4 6 3 4 6 1 1

HOLCIM (CANADA) INC.

Marquer la case d'un X si vous demandez un numéro matricule (compagnie à numéro) au lieu d'un nom. ☐

2. Les statuts de la compagnie sont modifiés de la façon suivante :

3. Date d'entrée en vigueur (si différente de la date du dépôt des statuts de modification) pour les demandes qui ne sont pas visées par la section 4.

Date postérieure à celle du dépôt :	Année	Mois	Jour
	2 0 0 9	0 4	1 5

4. Modification des statuts en vertu de l'article 123.140 et suivants de la Loi sur les compagnies

Marquer la case d'un X si la demande de modification est présentée pour rectifier une illégalité, une irrégularité ou pour y insérer une disposition requise par la Loi sur les compagnies :

- qui ne porte pas atteinte aux droits des actionnaires ou des créanciers (art. 123.140) ; ..... ☐
- qui peut porter atteinte aux droits des actionnaires ou des créanciers - joindre copie du jugement (art. 123.141). ..... ☐

Date d'entrée en vigueur (la modification rétroagit à la date du certificat accompagnant les statuts que l'on modifie, à moins que les présents statuts ou le jugement ne mentionnent une date ultérieure) :	Année	Mois	Jour

5. Nom antérieur à la modification (si différent de celui mentionné à la section 1).

CIMENT ST-LAURENT INC.
ST. LAWRENCE CEMENT INC.

Réservé à l'administration
Québec
Déposé le
09 AVR. 2009
Le registraire des entreprises

Signature de l'administrateur autorisé

Paul Ostrander

Si l'espace prévu est insuffisant, joindre une annexe remplie en deux exemplaires, identifier la section correspondante et numéroter les pages s'il y a lieu.

Signer et retourner les deux exemplaires avec votre paiement.
Ne pas télécopier.

Appendix E
Stratigraphic and Instrumentation Logs

PROJECT: AES 09-06

MW1-09

LOCATION: Teedon Pit - Beamish

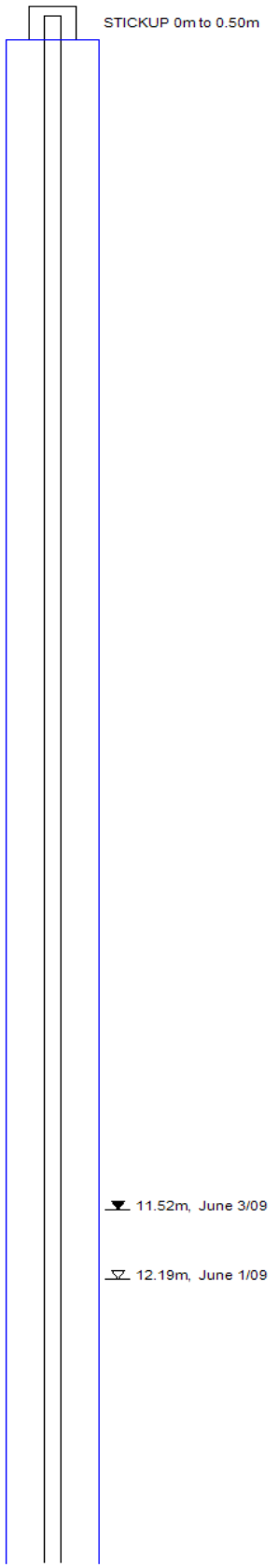
BORING DATE: June 1/09 DATUM: 247.5 m asl DIP: LOGGED: FRC

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE	STRATA PLOT	DEPTH B.G.S. (m)
			GROUND SURFACE		0
0 to 3	0 to 10	air rotary	SAND, light to medium brown with gravel to 2-inch OD, sand is sharp, fine to medium grained, dry		3
3 to 6	10 to 20	air rotary	SAND, light to medium brown with some gravel to 2-inch OD, sand is sharp, fine to medium grained, dry		6.1
6 to 9	20 to 30	air rotary	SAND with fine gravel, sand is light to medium brown, gravel is rounded and pea sized, sand is sharp, fine to medium grained, dry		9.1
9 to 12	30 to 40	air rotary	GRAVEL with sandy matrix, gravel is fine to medium to 1-inch OD, sand is light to medium brown, sharp, fine to medium grained, dry		12.2
12 to 15	40 to 50	air rotary	GRAVEL with sandy matrix, gravel is fine to medium to 1-inch OD, sand is light to medium brown, sharp, fine to medium grained, water bearing		

Continued on next page

Samples: ID | Type | Recovery (%) | "N" Value

Concentration: LEL ◆ Moisture Content ● Gas Concentration ■ (0 20 40 60 80 100)



DRAWN: FRC

Alpha Environmental Services Inc

CHECKED: FRC

PROJECT: AES 09-06

MW1-09

LOCATION: Teedon Pit - Beamish

BORING DATE: June 1/09 DATUM: 247.5 m asl DIP: LOGGED: FRC

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE	STRATA PLOT	DEPTH B.G.S. (m)	Samples ID	Samples Type	Samples Recovery (%)	Samples "N" Value	Concentration
										LEL ◆ Moisture Content ● Gas Concentration ■ 0 20 40 60 80 100
15	50	air rotary	GRAVEL, with sand, gravel is fine to medium to 1-inch OD, sand is light to medium brown, sharp, fine to medium grained, water bearing, strong upward pressure		15.2					
16	52									
	54									
17	56									
	58									
18	60		GRAVEL with sandy matrix, less sand than above, gravel is fine to medium to 1-inch OD, sand is light to medium brown, sharp, fine to medium grained, water bearing, strong upward prssure, lots of water		18.3					
19	62									
	64									
20	66									
	68									
21	70		SAND with gravel, sand is light to medium brown, gravel to 1-inch OD, sand is sharp, fine to medium grained, water bearing, lots of water, strong upward pressure		21.3					
22	72									
	74									
23	76									
	78									
24	80		GRAVEL and SAND, gravel to 1-ich OD, sand is light to medium brown, sharp, fine to medium grained, water bearing, strong upward pressure		24.4					
25	82									
	84									
26	86									
	88									
27	90		SAND with some gravel, sand is medium grained, light to medium brown, gravel to 1-inch OD, water bearing, strong upward pressure		27.4					
28	92									
	94									
29	96									
	98									
30			Continued on next page							

PROJECT: AES 09-06

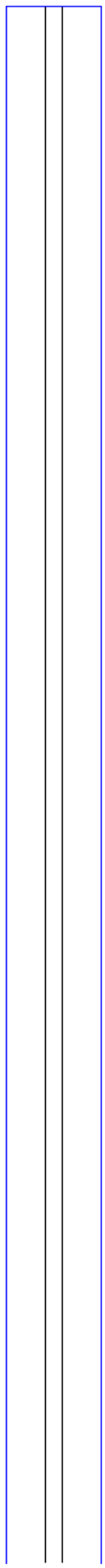
MW1-09

LOCATION: Teedon Pit - Beamish

BORING DATE: June 1/09 DATUM: 247.5 m asl DIP: LOGGED: FRC

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE	STRATA PLOT	DEPTH B.G.S. (m)
30	100	air rotary	SAND with some gravel, sand is medium grained, light to medium brown, gravel to		
					30.4
31	102		SAND with occasional gravel, sand is fine grained, sharp, light to medium brown, gravel is pea sized to 1/2-inch OD, water bearing, strong upward pressure		
32	104				
	106				
33	108				
	110				
					33.5
34	112		SAND, fine to medium grained, light to medium brown, clean, sharp, water bearing, strong upward pressure		
	114				
35	116				
	118				
36	120				
					36.6
37	122		SAND, light to medium brown, fine grained, occasional pea sized gravel, clean, sharp, water bearing, strong upward pressure		
	124				
38	126				
	128				
39	130				
					39.6
40	132		SAND, light to medium brown, fine grained, occasional pea sized gravel, clean, sharp, water bearing, strong upward pressure		
	134				
41	136				
	138				
42	140				
					42.7
43	142		SAND, fine to medium grained with some pea sized gravel, sand is light to medium brown, sharp, water bearing, strong upward pressure		
	144				
44	146				
	148				
45			Continued on next page		

Samples				Concentration
ID	Type	Recovery (%)	"N" Value	LEL ◆ Moisture Content ● Gas Concentration ■ 0 20 40 60 80 100



DRAWN: FRC

Alpha Environmental Services Inc

CHECKED: FRC

PROJECT: AES 09-06

MW1-09

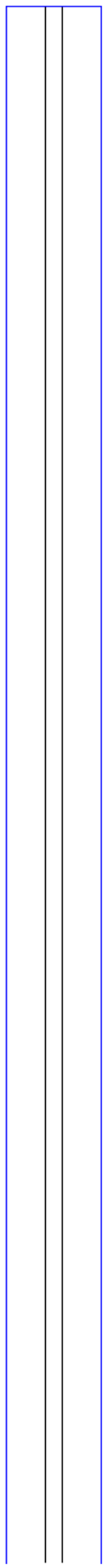
LOCATION: Teedon Pit - Beamish

BORING DATE: June 1/09 DATUM: 247.5 m asl DIP: LOGGED: FRC

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE	STRATA PLOT	DEPTH B.G.S. (m)
45	148	air rotary	SAND, fine to medium grained with some pea sized gravel, sand is light to medium brown, sharp, water bearing, strong		
	150				45.7
46	152		SAND, fine grained, light to medium brown, clean, sharp, water bearing, strong upward pressure, occasional pea sized gravel		
47	154				
	156				
48	158				
	160				48.8
49	162		SAND, fine to medium grained with some pea sized gravel, sand is light to medium brown, sharp, water bearing, strong upward pressure		
50	164				
	166				
51	168				
	170				51.8
52	172		SAND, fine to medium grained with some gravel to 1/2-inch OD, sand is light to medium brown, sharp, water bearing, strong upward pressure		
53	174				
	176				
54	178				
	180				54.9
55	182		SAND and SILT, light to medium brown, clean, no gravel or clay, water bearing, no sand heaving		
56	184				
	186				
57	188				
	190				57.9
58	192		SAND and SILT, light to medium brown, clean, no gravel or clay, water bearing, no sand heaving		
59	194				
	196				
60					

Continued on next page

Samples				Concentration
ID	Type	Recovery (%)	"N" Value	LEL ◆ Moisture Content ● Gas Concentration ■ 0 20 40 60 80 100



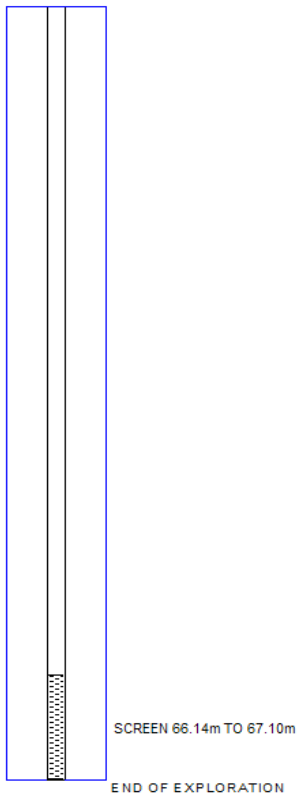
PROJECT: AES 09-06

MW1-09

LOCATION: Teedon Pit - Beamish

BORING DATE: June 1/09 DATUM: 247.5 m asl DIP: LOGGED: FRC

DEPTH SCALE METRES	DEPTH SCALE FEET	BORING METHOD	SOIL PROFILE	STRATA PLOT	DEPTH B.G.S. (m)	Samples ID	Samples Type	Samples Recovery (%)	Samples "N" Value	Concentration: LEL ◆ Moisture Content ● Gas Concentration ■ (0 20 40 60 80 100)
60	198	air rotary	SAND and SILT, light to medium brown, clean, no gravel or clay, water bearing, no sand heaving							
61	200				61.0					
62	202		SAND, fine grained, light to medium brown, clean, no gravel or clay, some silt, water bearing, lots of water, strong upward pressure							
63	204									
64	206									
65	208				64.0					
66	210		SAND, slightly finer grained than above, light to medium brown, clean, no gravel, some silt, no clay evident, water bearing, strong upward pressure							
67	212									
68	214									
69	216									
70	218									
71	220		END OF EXPLORATION @ 67.10m		67.10					
72	222									
73	224									
74	226									
75	228									
	230									
	232									
	234									
	236									
	238									
	240									
	242									
	244									
	246									



DRAWN: FRC

Alpha Environmental Services Inc

CHECKED: FRC

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: Teedon Pit	BOREHOLE NUMBER: TP1
PROJECT NUMBER: 641	COMPLETION DATE: Jan 26, 2006
CLIENT: Beamish	GROUND ELEVATION: 262.167
LOCATION: Teedon Pit	TOP OF PIPE ELEVATION: 263.617
DRILLING METHOD: Back HoeTeedon Pit	PAGE 1 OF 1

DEPTH (m)	DEPTH (ft)	GEOLOGICAL DESCRIPTION	SAMPLE No.	SAMPLE Type	MONITORING WELL INSTRUMENTATION
0					Stick up 145 cm
		black silty FINE SAND			3cm ø ABS
1					
	5	brown silty FINE SAND - moist			Natural Fill
2					
					3cm ø well screen
3	10	grey silty FINE SAND - saturated			
		BOH			0.92m ø
4					
	15				
5					
6	20				
7					
	25				
8					
9	30				
10					

WATERLOO GEOSCIENCE CONSULTANTS LTD.

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: Teedon Pit	BOREHOLE NUMBER: TP2
PROJECT NUMBER: 641	COMPLETION DATE: Jan 26, 2006
CLIENT: Beamish	GROUND ELEVATION: 259.965
LOCATION: Teedon Pit	TOP OF PIPE ELEVATION: 260.765
DRILLING METHOD: Back HoeTeedon Pit	PAGE 1 OF 1

DEPTH (m)	DEPTH (ft)	GEOLOGICAL DESCRIPTION	SAMPLE No.	SAMPLE Type	MONITORING WELL INSTRUMENTATION
0					Stickup 80 cm
1	5	black silty FINE SAND			3cm ø ABS
		brown silty FINE SAND - moist			Natural Fill
2		brown gravelly sand - saturated			
		grey silty FINE SAND - saturated			3cm ø well screen
3	10	grey silty FINE SAND some gravel, compact TILL			
		BOH			0.92m ø
4	15				
5					
6	20				
7					
8	25				
9	30				
10					

WATERLOO GEOSCIENCE CONSULTANTS LTD.

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: Teedon Pit	BOREHOLE NUMBER: TP3
PROJECT NUMBER: 641	COMPLETION DATE: Jan 26, 2006
CLIENT: Beamish	GROUND ELEVATION: 262.367
LOCATION: Teedon Pit	TOP OF PIPE ELEVATION: 263.617
DRILLING METHOD: Back HoeTeedon Pit	PAGE 1 OF 1

DEPTH (m)	DEPTH (ft)	GEOLOGICAL DESCRIPTION	SAMPLE No.	SAMPLE Type	MONITORING WELL INSTRUMENTATION
0					Stickup 125 cm
		dark grey silty FINE SAND			
		red brown silty FINE SAND			
1		brown silty FINE SAND - moist			3cm ø ABS
	5				Natural Fill
2		grey silty FINE SAND - saturated			
3	10				3cm ø well screen
		grey silty FINE SAND laminated, compact, wet			
4		BOH			0.92m ø
5	15				
6	20				
7					
8	25				
9	30				
10					

WATERLOO GEOSCIENCE CONSULTANTS LTD.

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: Teedon Pit	BOREHOLE NUMBER: TP4
PROJECT NUMBER: 641	COMPLETION DATE: Jan 26, 2006
CLIENT: Beamish	GROUND ELEVATION: 264.512
LOCATION: Teedon Pit	TOP OF PIPE ELEVATION: 265.852
DRILLING METHOD: Back HoeTeedon Pit	PAGE 1 OF 1

DEPTH (m)	DEPTH (ft)	GEOLOGICAL DESCRIPTION	SAMPLE No.	SAMPLE Type	MONITORING WELL INSTRUMENTATION
0					Stickup 134cm
		brown gravelly medium - course SAND			3cm ø ABS
1					Natural Fill
	5	brown silty FINE SAND - moist			
2					
3	10	grey silty FINE SAND - saturated			3cm ø well screen
4					
	15	grey silty FINE SAND - wet, laminated, compact			0.92m ø
5		BOH			
6	20				
7					
	25				
8					
9	30				
10					

WATERLOO GEOSCIENCE CONSULTANTS LTD.

Appendix F
Ministry of the Environment and Climate Change Water Well Records

UTM 17 Z 592393 E

PLNE 5 R 494659 N

Con 1
Elev. 6 R 0 9 1 1 5
Lot 79

Basin 22

57 No. 4467

The Ontario Water Resources Commission Act

WATER WELL RECORD

WATER RESOURCES DIVISION
JUN 3 1964
ONTARIO WATER RESOURCES COMMISSION

County or District Simcoe Township, Village, Town or City Tiny

Con. P.R.W. 1 Lot 79 Date completed 13 (day) MARCH (month) 1964 (year)

[redacted] Address Weverley Ont

Casing and Screen Record		Pumping Test	
Inside diameter of casing	6¼ inch.	Static level	161
Total length of casing	186 Feet	Test-pumping rate	3 G.P.M.
Type of screen	Johnsons	Pumping level	185
Length of screen	4 Foot (slot 20)	Duration of test pumping	3 hrs
Depth to top of screen	185 Feet	Water clear or cloudy at end of test	clear
Diameter of finished hole	6¼ inch.	Recommended pumping rate	3 G.P.M.
		with pump setting of	185 feet below ground surface

Well Log / Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
Top soil	0	½		
Brown clay with pebbles and stones	½	105		
Course sand & gravel mixed with little brown clay	105	185		
Course sand	185	189	186	Fresh
Brown clay mixed with sand & gravel	189	246		

For what purpose(s) is the water to be used? Domestic and Stock.

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

Drilling or Boring Firm Henry Hammers

Address RR #3 Barrie

Licence Number 1303

Name of Driller or Borer Rupp Saynders AL. Hammer Ont.

Address RR#5 Barrie

Date March 16/64

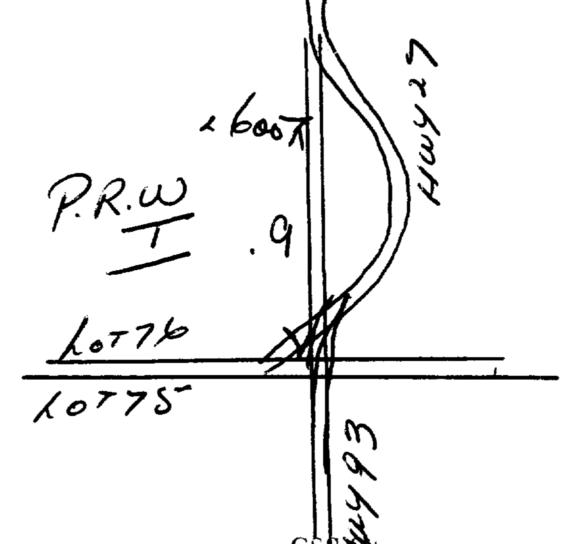
Henry Hammers
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

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



CS8.8

The Ontario Water Resources Commission Act

WATER WELL RECORD

310/12W

Water management in Ontario

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

11 5709481

MUNICIP. 57012 CON PR E 4 01

COUNTY OR DISTRICT: SIMCOE

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: IAY TWP

CON., BLOCK, TRACT, SURVEY ETC.: CON 1 PRE

LOT: 079

DATE COMPLETED: DAY 13 MO. 11 YR 72

[redacted] R1 W4 BRIDGE

RC. 4 | ELEVATION 0890 | RC. 5 | BASIN CODE 22

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			0	7
BROWN	CLAY	SAND		7	34
GREY	CLAY			34	91
GREY	GRAVEL	SAND		91	94

31 0007605 0034605 0091205 0094211 28

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0091	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
05	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	1188	0	91
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			0091
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.): 016 | DIAMETER: 05000 INCHES | LENGTH: 03 FEET

MATERIAL AND TYPE: STAINLESS STEEL | DEPTH TO TOP OF SCREEN: 0091 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

PUMPING RATE: 0010 GPM | DURATION OF PUMPING: 01 HOURS 15 MINS.

1 ☐ PUMPING 2 ☒ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
060 FEET	065 FEET	060 FEET	060 FEET	060 FEET	060 FEET

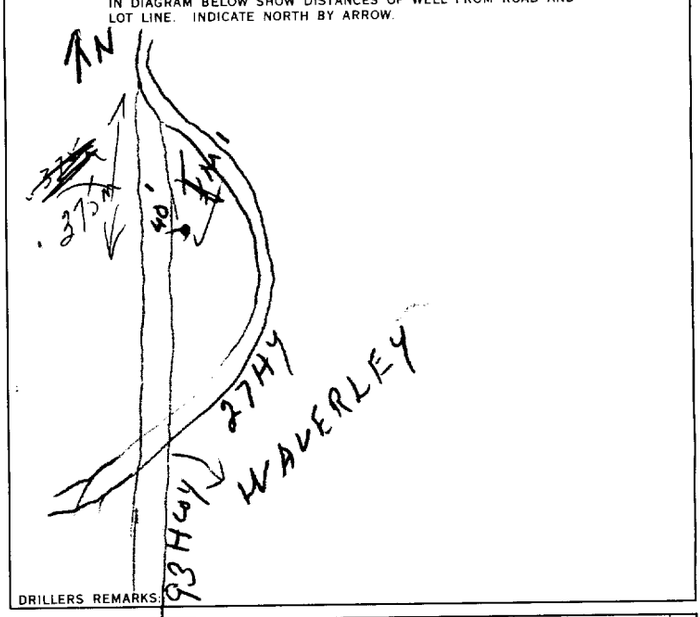
IF FLOWING, GIVE RATE: GPM. | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 075 FEET | RECOMMENDED PUMPING RATE: 0010 GPM.

50-53 0020 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

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 ☐ UNFINISHED

WATER USE (55-56) 01
1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; ☐ OTHER; 9 ☐ NOT USED

METHOD OF DRILLING (57)
1 ☒ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: ANDERSON DRILLING | LICENCE NUMBER: 1204

ADDRESS: RR#2 THORNTON

NAME OF DRILLER OR BORER: O ANDERSON | LICENCE NUMBER: 1204

SIGNATURE OF CONTRACTOR: Oscar Anderson | SUBMISSION DATE: DAY 29 MO. 11 YR 72

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 1204 | DATE RECEIVED (63-68): 300173

DATE OF INSPECTION | INSPECTOR

REMARKS: CSS.S8 | P | WI

OWRC COPY

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

ONTARIO

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

(11) 5709931 MUNICIP. 57012 CON. PRE C 01

COUNTY OR DISTRICT: Simcoe

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Tay

CON., BLOCK, TRACT, SURVEY, ETC.: 1 PRE

LOT: 080

[redacted] AYERLEY ONT

DATE COMPLETED: DAY 04 MO. 05 YR. 73

45145 RC 4 ELEVATION 0945 RC 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Black	Topsoil			0	1
Brown	Sand		Dry	1	23
"	"		Wet	23	113
"	Clay			113	

(31) 0001802 0042628 0043605

(32)

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0023	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

(51) CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
05	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0040
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.): 08 DIAMETER: 05000 INCHES LENGTH: 03 FEET

MATERIAL AND TYPE: Johnson SS DEPTH TO TOP OF SCREEN: 0040 FEET

(61) PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
		Rubber packer

(71) PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☑ BAILER

PUMPING RATE: 0004 GPM. DURATION OF PUMPING: 01 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
023 FEET	079 FEET	1 ☐ PUMPING 2 ☐ RECOVERY	029 FEET	029 FEET	029 FEET	029 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

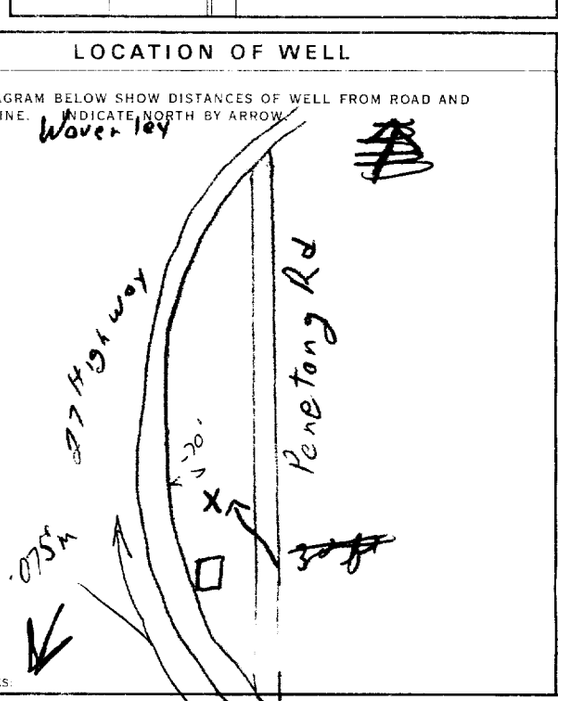
RECOMMENDED PUMP SETTING: 035 FEET

RECOMMENDED PUMPING RATE: 0004 GPM.

0000.7 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

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 ☐ UNFINISHED

WATER USE

(55-56) 01

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

METHOD OF DRILLING

(57) 1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: NIELSEN WATER WELLS LICENCE NUMBER: 3203

ADDRESS: RR 1 BARRIE ONT

NAME OF DRILLER OR BORER: GORD KENT LICENCE NUMBER: —

SIGNATURE OF CONTRACTOR: [signature] SUBMISSION DATE: DAY 5 MO. 5 YR. 73

OFFICE USE ONLY

DATA SOURCE: 1 (58) CONTRACTOR: 3203 (59-62) DATE RECEIVED: 100773 (63-68)

DATE OF INSPECTION: INSPECTOR:

REMARKS: CSS.S8 P WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

Well ID

Well ID Number: 5710791
Well Audit Number:
Well Tag Number:
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	
Township	TINY TOWNSHIP
Lot	079
Concession	PR W 01
County/District/Municipality	SIMCOE
City/Town/Village	
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 592549.40 Northing: 4944824.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
BRWN	CLAY	BLDR		0 ft	30 ft
GREY	CLAY	GRVL	BLDR	30 ft	69 ft
BRWN	CLAY			69 ft	90 ft
BRWN	MSND			90 ft	136 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed

Method of Construction & Well Use

Method of Construction	Well Use
Cable Tool	Domestic
	Livestock

Status of Well

Water Supply

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
6 inch	STEEL		131 ft

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To
6 inch		131 ft	136 ft

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 2514

Results of Well Yield Testing

After test of well yield, water was	CLEAR
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	10 GPM
Duration of Pumping	1 h:0 m
Final water level	130 ft
If flowing give rate	
Recommended pump depth	128 ft
Recommended pump rate	9 GPM

Well Production	BAILER
Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL	115 ft		
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	115 ft
20		20	
25		25	
30		30	115 ft
40		40	
45		45	115 ft
50		50	
60		60	115

Water Details

Water Found at Depth	Kind
130 ft	Fresh

1. **Hole Diameter**

Audit Number:

Date Well Completed: November 17, 1973

Date Well Record Received by MOE: March 19, 1974

Ontario

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

31D/12W.

1. PRINT ONLY IN SPACES PROVIDED
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11

5710842 | MUNICIP. 57014 | CON. PR W C 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
[redacted]	Tiny	PRW I	080

[redacted] ORONTO ONT

DATE COMPLETED 48-53: DAY 01 MO. 02 YR. 74

[redacted] 945060 | RC. 4 | ELEVATION 0850 | RC. 5 | BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Dug Well			0	20
Brown	Sand		Dry	20	36
"	"		Wet	36	54

31 | 0020 23 | 0054 28

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
36 ~~54~~ 0036 (10-13)	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	194	0	54 0051
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 012 | DIAMETER 0600 INCHES | LENGTH 03 FEET

MATERIAL AND TYPE: Johnson S.S. | DEPTH TO TOP OF SCREEN 0051 FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER | PUMPING RATE 0010 GPM | DURATION OF PUMPING 01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
025 FEET	035 FEET	035 FEET	035 FEET	035 FEET	035 FEET

WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

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 045 FEET | RECOMMENDED PUMPING RATE 0010 GPM

001.0 GPM./FT. SPECIFIC CAPACITY

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

WATER USE 01

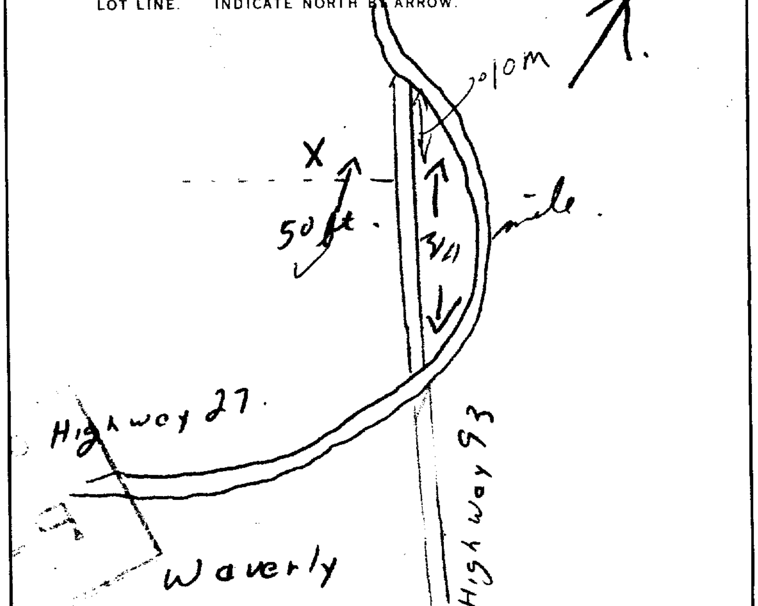
1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☐ NOT USED

METHOD OF DRILLING

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

LOCATION OF WELL

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



DRILLERS REMARKS:

CONTRACTOR

NAME OF WELL CONTRACTOR: Knelsen Water Wells | LICENCE NUMBER: 3213

ADDRESS: RR#1 Bonnie Ont

NAME OF DRILLER OR BORER: Gord Kent | LICENCE NUMBER: 3135

SIGNATURE OF CONTRACTOR: [signature] | SUBMISSION DATE: DAY 11 MO. 2 YR. 74

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 3213 | DATE RECEIVED 190374

DATE OF INSPECTION | INSPECTOR

REMARKS: CSS.S8

P | WI

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FORM 7 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

31D12W

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11 | 5712829 | MUNICIP. 57012 | CON. CON 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]		I P.R.E.	078

DATE COMPLETED: DAY 04 MO. Nov. YR. 75

[redacted] 44450 | RC 5 | ELEVATION 0930 | RC 5 | BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	clay &	gravel		0	128
	sand		fine	128	131
	clay			131	167
	sand		medium	167	194
	sand &	clay		194	210

31 | 0128 0511 | 0131 08 | 0167 05 | 0194 09 | 0210 2805

32

WATER RECORD (41)

WATER FOUND AT - FEET	KIND OF WATER
0179	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

CASING & OPEN HOLE RECORD (51)

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0175
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
012	06.000 INCHES	04 FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN
stainless steel	0172 FEET (seal)

PLUGGING & SEALING RECORD (61)

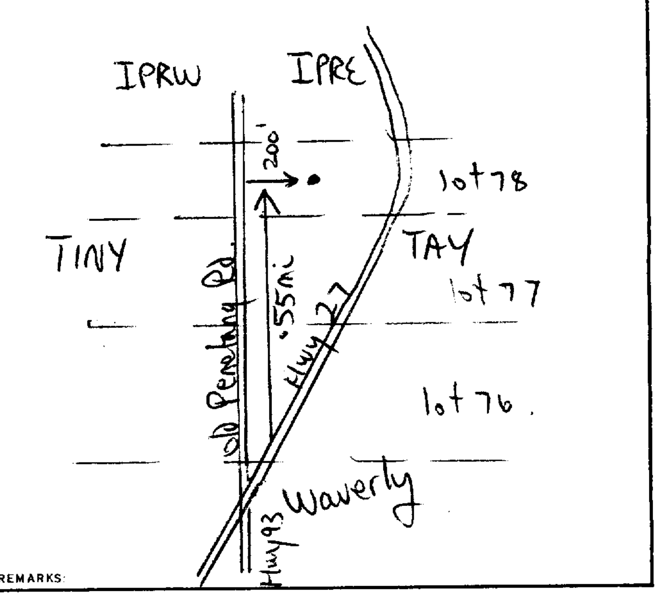
DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0179 / 179	0210 / 210	drill cuttings

PUMPING TEST (71)

PUMPING TEST METHOD	1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE	0020 GPM
DURATION OF PUMPING	02 HOURS 00 MINS
STATIC LEVEL	145 FEET
WATER LEVEL END OF PUMPING	165 FEET
WATER LEVELS DURING	1 ☐ PUMPING 2 ☐ RECOVERY
15 MINUTES / 30 MINUTES / 45 MINUTES / 60 MINUTES	
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	165 FEET
RECOMMENDED PUMPING RATE	0010 GPM
50-53	GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 9244

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



DRILLERS REMARKS:

FINAL STATUS OF WELL: 1	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE: 01	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 DRILLING: 2	1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	Snider Drilling Limited,
LICENCE NUMBER	4816
ADDRESS	Craighurst, Ontario.
NAME OF DRILLER OR BORER	Michael Arnold.
LICENCE NUMBER	
SIGNATURE OF CONTRACTOR	Ralph Snider.
SUBMISSION DATE	DAY MO. YR.

OFFICE USE ONLY

DATA SOURCE	1
CONTRACTOR	4816
DATE RECEIVED	240276
DATE OF INSPECTION	Aug 6/76
INSPECTOR	
REMARKS	CSS.S8
P	
WI	

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FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

31 D12W

Ontario E

1. PRINT ONLY IN SPACES PROVIDED
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11 | 5713905 | MUNICIP. 57012 | CON. PK E | 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	TAY TWP	CON 1 ~~PKE~~	079

[redacted] AUERLEY

DATE COMPLETED: DAY 05 MO. 11 YR. 76

[redacted] 44800 | RC. 5 | ELEVATION 9875 | RC. 5 | BASIN CODE 22

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		SOFT	0	54
GREY	CLAY	SILT	SOFT	54	65
GREY	CLAY		HARD	65	80
GREY	CLAY	SAND GRAVEL	SOFT	80	90
GREY	CLAY		SOFT	90	185
BROWN	SAND		FINE	185	189

31 | 0054605185 | 0065205068S | 0080205173 | 0090205281 1 | 0185205 85 | 0189608

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0185	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0186
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
006	05000 INCHES	03 FEET
MATERIAL AND TYPE: STAINLESS STEEL	DEPTH TO TOP OF SCREEN: 0186 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 2 ☒ BAILER

PUMPING RATE: 0005 GPM

DURATION OF PUMPING: 01 HOURS 00 MINS

WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
070 FEET	087 FEET	072 FEET	070 FEET	070 FEET	070 FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: FEET

WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

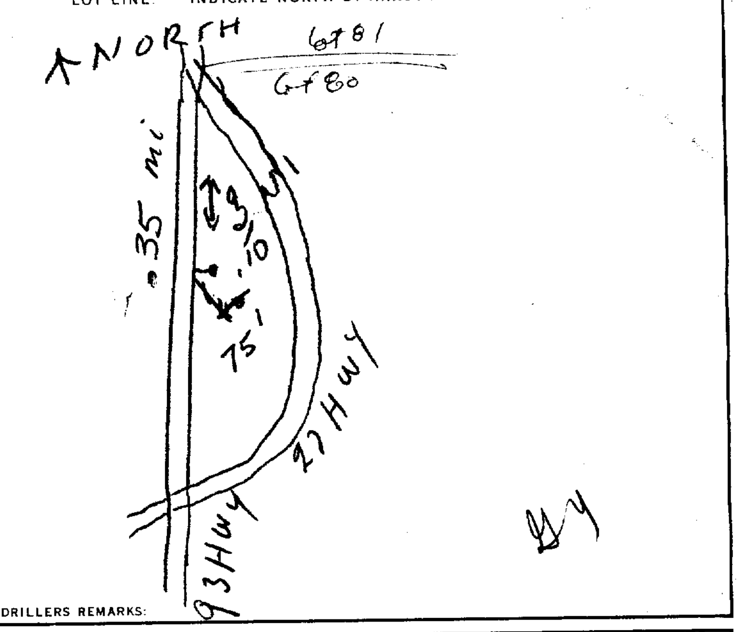
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

RECOMMENDED PUMP SETTING: 100 FEET

RECOMMENDED PUMPING RATE: 0005 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL: 1

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

WATER USE: 01

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 DRILLING: 1

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

CONTRACTOR

NAME OF WELL CONTRACTOR: ANDERSON DRILLING — LICENCE NUMBER 1204

ADDRESS: RR 2 THORNTON

NAME OF DRILLER OR BORER: O ANDERSON — LICENCE NUMBER 1204

SIGNATURE OF CONTRACTOR: Oscar Anderson

SUBMISSION DATE: DAY 26 MO. 11 YR. 76

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 1204 | DATE RECEIVED: 060177

DATE OF INSPECTION: | INSPECTOR:

REMARKS:

CSS.S8

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

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

11 | 5714596 | MUNICIP 57012 | CO PR | E | 01

COUNTY OR DISTRICT: SIMCOE CTY
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: TWP of TAY
CON., BLOCK, TRACT, SURVEY, ETC.: CONC 1
LOT: 079
[redacted] 91 Wilcox Rd. Missassauga
DATE COMPLETED: DAY 13 MO 07 YR 77
UTM: 4944950 | RC 5 | ELEVATION 0840 | RC 5 | BASIN CODE 22

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	CLAY		0	10
BROWN	SAND	CLAY, STONES		10	14
BROWN	CLAY	GRAVEL		14	17
GREY	CLAY	SAND	SOFT	17	39
GREY	CLAY	SILT		39	62
GREY	CLAY			62	97
GREY	CLAY	SILT		97	118
GREY	CLAY			118	124
GREY	SAND			124	128

31: 0010628805 | 0014628 05 12 | 0017605 11 | 0039205 28 85 | 0062205 06 | 0097205 | 1
32: 0118205 06 | 0124205 | 0128228

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0124	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0125 +25
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.): 010 | DIAMETER: 05000 INCHES | LENGTH: 03 FEET
MATERIAL AND TYPE: STAINLESS STEEL | DEPTH TO TOP OF SCREEN: 0125 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
		LEAD PACKER WITH
		2" x 4" NIPPLE

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE: 0006 GPM
DURATION OF PUMPING: 01 HOURS 05 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
042 FEET	106 FEET	054 FEET	045 FEET	043 FEET	042 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: 122 FEET
RECOMMENDED PUMPING RATE: 0006 GPM
GPM./FT. SPECIFIC CAPACITY:

LOCATION OF WELL

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

DRILLERS REMARKS: well approx north of laundry

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 ☐ UNFINISHED

WATER USE 55-56: 01 — 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 DRILLING 57: 1 — 1 ☒ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: KEITH ANDERSON DRILLING | LICENCE NUMBER: 1222
ADDRESS: RR #1 ANGUS
NAME OF DRILLER OR BORER: KEITH ANDERSON | LICENCE NUMBER: 1222
SIGNATURE OF CONTRACTOR: Keith Anderson | SUBMISSION DATE: DAY 16 MO 7 YR 77

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 1222 | DATE RECEIVED: 19 07 77 June 16/78
DATE OF INSPECTION | INSPECTOR
REMARKS: CSS.58 | P | WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-09

Ministry of the Environment
Ontario

The Ontario Water Resources Act
WATER WELL RECORD

31^{9}/{1}2 60

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

(11) 5715868 MUNICIP. 57012 CON. PR E 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Simcoe	Tay	PRE 1	029

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
MTC ~~Ministry of Transportation~~	P.O. Box 6338 London Ontario	DAY 12 MO. 09 ~~Sept~~ YR. 78

Comm. Gillespie Property

ZONE	EASTING	NORTHING	RC	ELEVATION	RC	BASIN CODE
17	592600	4944950	5	0840	5	2 32

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Top soil				0	2
Brown clay				2	38
Coarse sand				38	53

31 | 0002 02 | 0038 66 | 0053 10 |

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0038	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
30	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☒ CONCRETE 4 ☐ OPEN HOLE	2 1/2	0	0053
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

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	top	Granular A

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	003 GPM	04 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
034 FEET	045 FEET	045 FEET	045 FEET	045 FEET	045 FEET

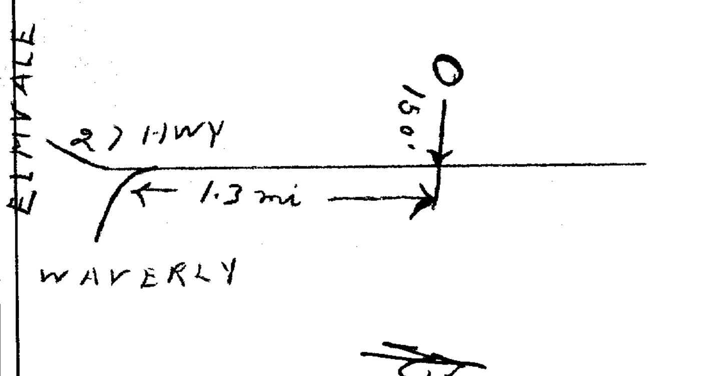
WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

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	050 FEET	0003 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 1

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

WATER USE 01

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 DRILLING 6

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Lone Star Well Digging — LICENCE NUMBER 3742
ADDRESS: RR4 Barrie Ontario L4M 4S6
NAME OF DRILLER OR BORER: P. Moore — LICENCE NUMBER 3742
SIGNATURE OF CONTRACTOR: P. Moore — SUBMISSION DATE DAY 12 MO. Sept YR. 78

OFFICE USE ONLY

DATA SOURCE 1 — CONTRACTOR 3742 — DATE RECEIVED 27 03 79
DATE OF INSPECTION — INSPECTOR
REMARKS: PLOTTED AUG 14 79 SS.S8

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506-4-77

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31D/12W

1. PRINT ONLY IN SPACES PROVIDED
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11 | 5715869 | MUNICIP 57012 | CON. PR E | 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Simcoe	Tay	PRE/H	079

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
~~Ministry of Transportation~~ MTC Communications / Butzke Property	P. O. Box 6338 London Ontario	DAY 20 MO 09 (Sept) YR. 78

21 | ZONE 17 | EASTING 592850 | NORTHING 4945100 | RC 5 | ELEVATION 0825 | RC 5 | BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Coarse		gravel		0	30
Fine	gravel			30	38
Coarse	Sand			38	45'

31 | 0030 31 | 0038 29 | 0045 10

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0030	☒ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERAL
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
30"	☒ CONCRETE	2 1/2	0	0045'

SCREEN

SIZE(S) OF OPENING (SLOT NO.) | DIAMETER INCHES | LENGTH FEET | MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

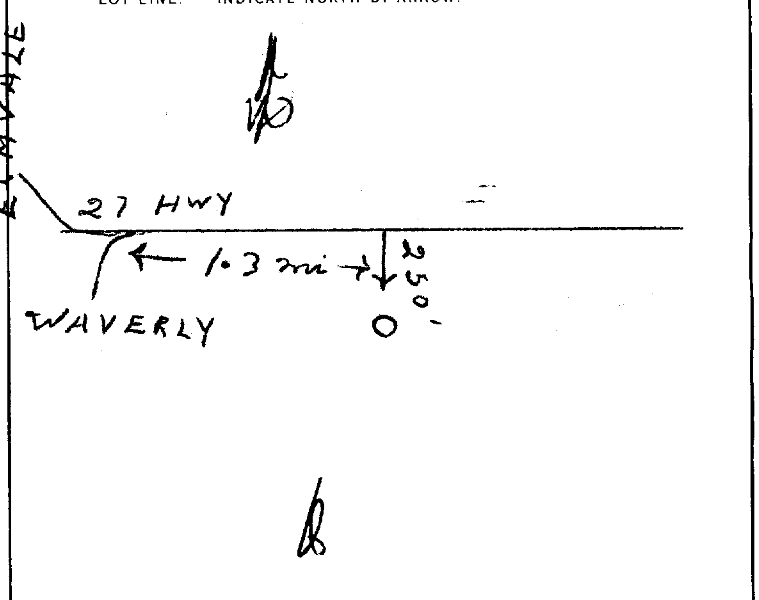
DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
~~10 ton~~		Granular A

71 PUMPING TEST

Field	Value
PUMPING TEST METHOD	☐ PUMP ☒ BAILER
PUMPING RATE	0004 GPM
DURATION OF PUMPING	04 HOURS 00 MINS
STATIC LEVEL	016 FEET
WATER LEVEL END OF PUMPING	030 FEET
WATER LEVELS DURING	☒ PUMPING ☐ RECOVERY
15 MINUTES	030 FEET
30 MINUTES	030 FEET
45 MINUTES	030 FEET
60 MINUTES	030 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	035 FEET
RECOMMENDED PUMPING RATE	0004 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL: 1	☒ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED
WATER USE: 01	☒ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER ☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED
METHOD OF DRILLING: 6	☐ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION ☒ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING

CONTRACTOR

Field	Value
NAME OF WELL CONTRACTOR	Lone Star Well Digging
LICENCE NUMBER	3742
ADDRESS	RR4 Barrie Ontario L4M 4S6
NAME OF DRILLER OR BORER	P. Moore
LICENCE NUMBER	3742
SIGNATURE OF CONTRACTOR	P. Moore
SUBMISSION DATE	DAY 20 MO Sept YR 78

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	3742	270379

DATE OF INSPECTION | INSPECTOR

REMARKS: PLOTTED AUG/14/ CSS.S8

FORM NO. 0506-4-77

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31D12

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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11 5716144 MUNICIP 57012 CON. PRE 21

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	TAY PRE	I	079

[redacted] Y 27

DATE COMPLETED: DAY 05 MO JUNE YR 79

44900 RC. 5 ELEVATION 0825 RC. 5 BASIN CODE 1

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	LARGE STONES	CLAY MIXTURE	0	67
GREY	CLAY	GRITT	HARD GRITTY CLAY	67	201
BROWN	SAND	CLAY RIDGES	SAND RIDGES WATER BEARING	201	211

31 | 0067 028 1 2105 | 0201 2995 18 | 0211 6280591 |

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
050 67	FLUTED POTS; 1 ☒ FRESH
0201	1 ☒ FRESH
201	FRESH (struck out)
211	

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
06	1 ☒ STEEL	.188	0	0205

SCREEN

SIZE(S) OF OPENING (SLOT NO.): 008 — DIAMETER: 06000 INCHES — LENGTH: 06 FEET

MATERIAL AND TYPE: stainless steel (SUPER) — DEPTH TO TOP OF SCREEN: 0205 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 — PUMPING RATE: 0025 GPM — DURATION OF PUMPING: 01 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
060 FEET	180 FEET	180 FEET	180 FEET	180 FEET	180 FEET

WATER LEVELS DURING: 1 ☒ PUMPING

WATER AT END OF TEST: 1 ☒ CLEAR

RECOMMENDED PUMP TYPE: ☒ DEEP — RECOMMENDED PUMP SETTING: 150 FEET — RECOMMENDED PUMPING RATE: 0012 GPM

FINAL STATUS OF WELL: 1

1 ☒ WATER SUPPLY

WATER USE: 01

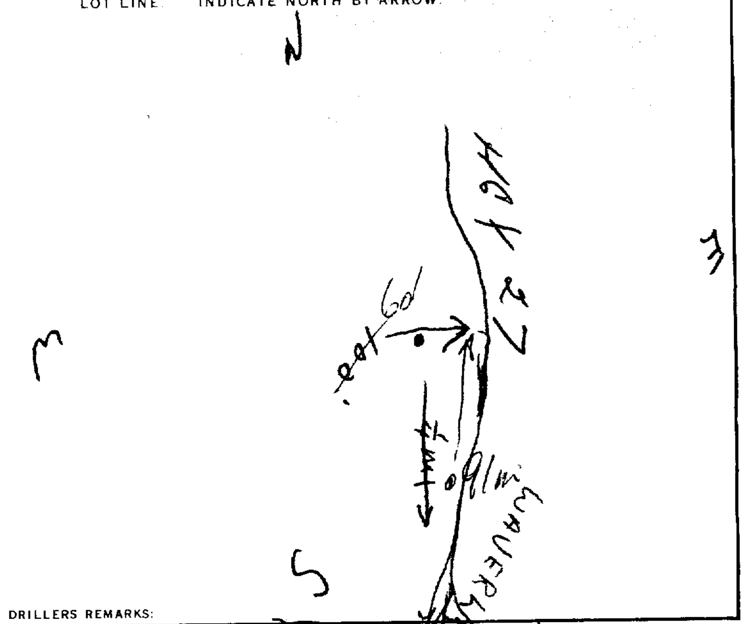
1 ☒ DOMESTIC

METHOD OF DRILLING: 2

2 ☒ ROTARY (CONVENTIONAL)

LOCATION OF WELL

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



DRILLERS REMARKS:

CONTRACTOR

NAME OF WELL CONTRACTOR: Mighton's Well Drilling Ltd — LICENCE NUMBER: 3602

ADDRESS: R3 Stayner

NAME OF DRILLER OR BORER: Larry Mighton

SIGNATURE OF CONTRACTOR: Kenneth A. Mighton — SUBMISSION DATE: DAY 25 MO. 6 YR. 79

OFFICE USE ONLY

DATA SOURCE: 1 — CONTRACTOR: 3602 — DATE RECEIVED: 030779

REMARKS: loc only 29/4/81

CSS.ES

FORM NO. 0506

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

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11 5716439 MUNICIP. 57014 CON. PR W 01 31012

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
Simcoe	Tiny	PRW 1	080

OWNER (SURNAME FIRST) 28-47	ADDRESS	DATE COMPLETED 48-53
Beamish Const~~ruction~~	7901 Bayview Ave., Thornhill, Ont.	DAY 09 MO 11 YR 79

21 ZONE 17 EASTING 591450 NORTHING 4944500 RC 5 ELEVATION 0950 RC 5 BASIN CODE 2L

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
	sand			0	5
	fine gravel			5	21
	fine gravel	streaks of sand		21	51
	sand			51	59
	fine gravel	cobbles, streaks of sand		59	80
	fine gravel	streaks of sand		80	140

31 | 0005 25 | 0021 13 | 0051 292814 | 0059 28 | 0080 292814 | 0140 292814
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
10-11	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			13-16
17-18	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			20-23
24-25	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33 | DIAMETER 34-38 INCHES | LENGTH 39-40 FEET
MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN 41-44 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	140	drill cuttings
18-21	22-25	
26-29	30-33	

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 | 15 MINUTES | 30 MINUTES | 45 MINUTES | 60 MINUTES

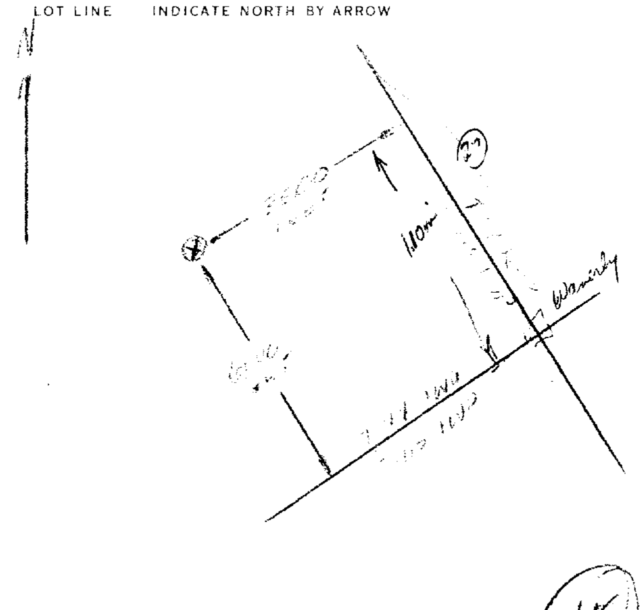
IF FLOWING, GIVE RATE GPM | PUMP INTAKE SET AT FEET | WATER AT END OF TEST 1 ☐ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING FEET | RECOMMENDED PUMPING RATE GPM

GPM / FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS

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

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Snider Drilling Limited, | LICENCE NUMBER: 4816
ADDRESS: R.R.#1, (Craighurst), BARRIE, Ont. L4M 4Y8
NAME OF DRILLER OR BORER: Phillip Brown. | LICENCE NUMBER
SIGNATURE OF CONTRACTOR: Snider Drilling Limited. | SUBMISSION DATE DAY MO. YR.

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 4816 | DATE RECEIVED 28 11 79
DATE OF INSPECTION | INSPECTOR
REMARKS: loc only 06/4/81 | P | WI
CSS.ES

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

Ontario

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

31012

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

11 5716440

MUNICIP 57014 CON PR W 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
Simcoe	Tiny	PRW 1	080

OWNER (SURNAME FIRST) 28-47	ADDRESS	DATE COMPLETED 48-53
Beamish Const~~ruction~~	7901 Bayview Ave., Thornhill.	DAY 08 MO. 11 YR. 79

21 ZONE 17 EASTING 591450 NORTHING 4944350 RC ELEVATION 0475 RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
	sand	streaks of gravel		0	29
	fine gravel	streaks of sand		29	36
	fine gravel			36	53
	sand	streaks of gravel		53	80
	sand			80	104
	gravel			104	114
	gravel	streaks of sand		114	140

31 0029 28 11 74 0036 29 28 74 0053 21 0080 28 11 74 0104 28 0114 11 1
32 0140 11 28 74

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
10-11	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			13-16
17-18	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			20-23
24-25	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33 | DIAMETER 34-38 INCHES | LENGTH 39-40 FEET
MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN 41-44 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	140	drill cuttings

71 PUMPING TEST

PUMPING TEST METHOD 1 ☐ PUMP 2 ☐ BAILER | PUMPING RATE GPM | DURATION OF PUMPING HOURS MINS

STATIC LEVEL FEET | WATER LEVEL END OF PUMPING FEET | WATER LEVELS DURING 1 ☐ PUMPING 2 ☐ RECOVERY: 15 MINUTES FEET, 30 MINUTES FEET, 45 MINUTES FEET, 60 MINUTES FEET

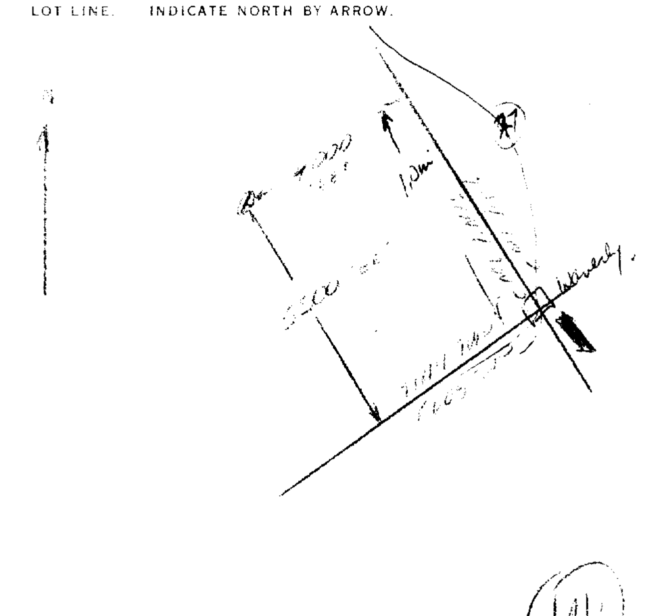
IF FLOWING, GIVE RATE GPM | PUMP INTAKE SET AT FEET | WATER AT END OF TEST 1 ☐ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING FEET | RECOMMENDED PUMPING RATE GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

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

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Snider Drilling Limited. LICENCE NUMBER: 4816
ADDRESS: R. R. #1, (Craighurst), BARRIE, Ont. L4M 4Y8
NAME OF DRILLER OR BORER: Phillip Brown. LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Snider Drilling Limited. SUBMISSION DATE DAY MO. YR.

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 4816 | DATE RECEIVED 28 11 79
DATE OF INSPECTION | INSPECTOR
REMARKS: loc only 06/4/81 P CSS.ES WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

31D/12

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 5717709 MUNICIP 57012 CON. PR E 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	[redacted] # 3, ELMVALE, ONTARIO	I	079

DATE COMPLETED: DAY 23 MO 09 YR 81

21 45000 RC 5 ELEVATION 0825 RC 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BLACK	TOP SOIL			0	2
BROWN	CLAY			2	30
GREY	~~SAN~~ CLAY			30	65
GREY	SAND			65	73
GREY	CLAY			73	185
GREY	SAND		MEDIUM	185	190

NOV 19 1986

31 0002802 00030605 00065205 00073228 01855205 01902228

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
~~185~~ 10-13	1 ☒ FRESH 3 ☐ SULPHUR 14; 2 ☐ SALTY 4 ☐ MINERAL
~~185-190~~	
15-18	1 ☐ FRESH 3 ☐ SULPHUR 19; 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 24; 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 29; 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 34; 2 ☐ SALTY 4 ☐ MINERAL 80

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
10-11 05	1 ☒ STEEL 12; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	.188	0	13-16 185
17-18	1 ☐ STEEL 19; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			20-23
24-25	1 ☐ STEEL 26; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER 34-38	LENGTH 39-40
012	05000 INCHES	03 FEET

MATERIAL AND TYPE: JOHNSON

DEPTH TO TOP OF SCREEN 41-44: ~~185~~ 187 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13 185	14-17 187	K-PACKER & LEAD PIPE
18-21	22-25	
26-29	30-33 80	

71 PUMPING TEST

PUMPING TEST METHOD 10: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE 11-14: 0006 GPM

DURATION OF PUMPING: 15-16 HOURS 01 17-18 MINS 00

STATIC LEVEL	WATER LEVEL END OF PUMPING	25 WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
19-21 065 FEET	22-24 172 FEET	26-28 140 FEET	29-31 172 FEET	32-34 172 FEET	35-37 172 FEET

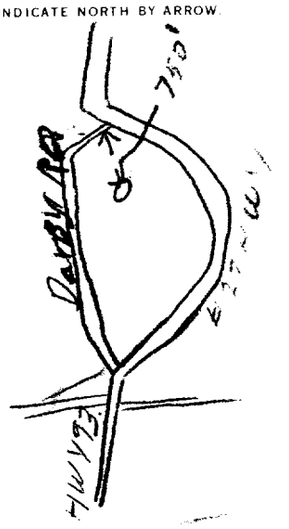
IF FLOWING GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST 42
38-41 GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	43-45 175 FEET	46-49 ~~0006~~ 5% GPM

50-53

LOCATION OF WELL

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



3.031 03

DRILLERS REMARKS

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 ☐ UNFINISHED — 1

WATER USE 55-56: 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED — 01

METHOD OF DRILLING 57: 1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING — 2

CONTRACTOR

NAME OF WELL CONTRACTOR: MARCHILDON DRILLING LIMITED — LICENCE NUMBER: 3660

ADDRESS: R.R. # 2, SHANTY BAY, ONTARIO L0L 2L0

NAME OF DRILLER OR BORER: PETER MARCHILDON — LICENCE NUMBER: 3660

SIGNATURE OF CONTRACTOR: Peter Marchildon — SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 3660 — DATE RECEIVED 63-68: 061181 — 80

DATE OF INSPECTION — INSPECTOR

REMARKS: tax only 14/85 KD

CSS.ES

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FORM NO. 0506—4—77 FORM 7

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 — 5725425 — MUNICIP 5701 2 — CON. CON 9

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	Tay	1	N.Pt.80

[redacted].R.#1 Phelpston

DATE COMPLETED: DAY 08 MO 08 YR 89

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	sand		medium	0	40
gray	clay			40	65

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
38	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
6¼"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	0	34
5"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	31	34
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
10	6" tele INCHES	4 FEET

MATERIAL AND TYPE: stainless steel — DEPTH TO TOP OF SCREEN: 34 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	20	hole plug

71 PUMPING TEST

PUMPING TEST METHOD: airlifted (1 ☐ PUMP 2 ☐ BAILER) — PUMPING RATE: 5 GPM — DURATION OF PUMPING: 1 HOURS ___ MINS

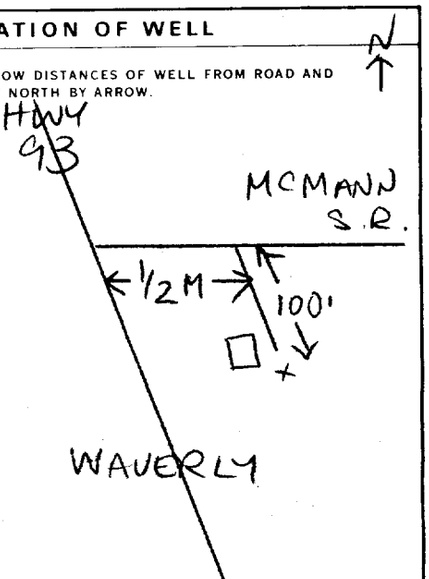
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☒ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
3 FEET	FEET	3 FEET	3 FEET	3 FEET	3 FEET

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: 30 FEET — RECOMMENDED PUMPING RATE: 5 GPM

LOCATION OF WELL

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



64379

DRILLERS REMARKS

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: Clearwater Drilling — WELL CONTRACTOR'S LICENCE NUMBER: 1583

ADDRESS: R.R.#1 Barrie, Ont. L4M 4Y8

NAME OF WELL TECHNICIAN: Donald R. Prince — WELL TECHNICIAN'S LICENCE NUMBER: T0176

SIGNATURE OF TECHNICIAN/CONTRACTOR — SUBMISSION DATE: DAY 31 MO 08 YR 89

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE — CONTRACTOR: 1583 — DATE RECEIVED: SEP 08 1989

DATE OF INSPECTION — INSPECTOR

REMARKS: CSS.ES

FORM NO. 0506 (11/86) FORM 9

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 (1 2) **5732834** Municipality 57014 (10 14) Con. CON (15 22 23 24) 01

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Simcoe	Tiny	1	79

Address: Rt 1 Wyebridge L0K-1E0

Date completed (48-53): 03 day 07 month 97 year

21 (1 2) T/M (10) Northing (12 17 24) RC (25) Elevation (26 30) RC (31) Basin Code (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		stoney	0	10
Brown	Sand	Clay		10	50
Grey	Clay	Clay	Soft	50	60
Brown	Sand	Gravel		60	68

31 (10 14 15 21)
32 (4 32 43)

41 WATER RECORD

Water found at – feet	Kind of water
68	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ 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	0	64
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter	Length
16	5" inches	4' feet

Material and type: StianlessSteel
Depth at top of screen: 64 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	10	Bentonite

71 PUMPING TEST

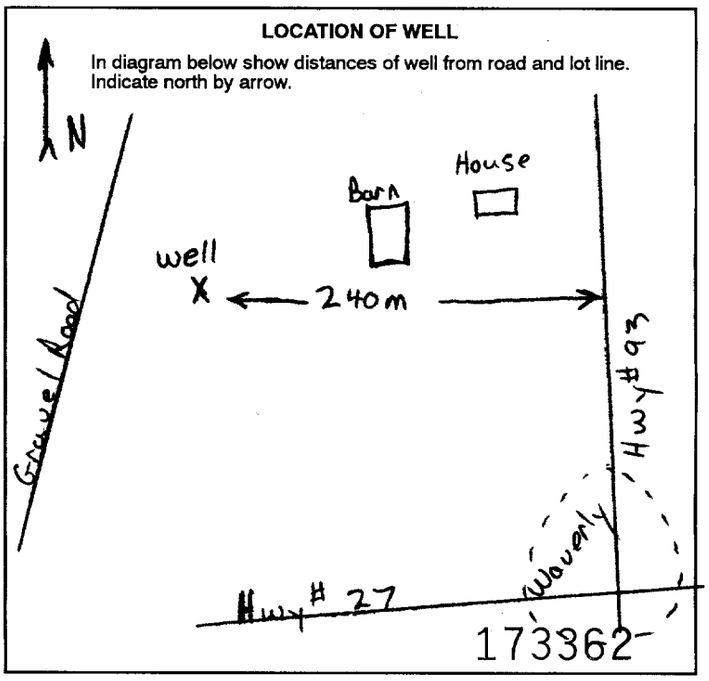
Pumping test method: 1 ☐ Pump 2 ☒ Bailer
Pumping rate: 4 GPM
Duration of pumping: 2 Hours 0 Mins

Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping 2 ☒ Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
15 feet	68 feet	35 feet	20 feet	15 feet	15 feet

If flowing give rate: GPM
Pump intake set at: 64 feet
Water at end of test: ☒ Clear ☐ Cloudy
Recommended pump type: ☒ Shallow ☐ Deep
Recommended pump setting: 64 feet
Recommended pump rate: 3.5 GPM

LOCATION OF WELL

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



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	Well Contractor's Licence No.
Vinson's Well Drilling	5224

Address: RR#2 Coldwater L0K-1E0

Name of Well Technician	Well Technician's Licence No.
Dave Vinson	1956

Signature of Technician/Contractor: Dave Vinson
Submission date: day 01 mo 08 yr 97

MINISTRY USE ONLY

Data source (58) | Contractor 5224 (59-62) | Date received JUL 21 1997 (63-68) (80)
Date of inspection | Inspector
Remarks: CSS.38

2 - MINISTRY OF ENVIRONMENT & ENERGY COPY

0506 (07/94) Front Form 9

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

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

11 | 5737555 | Municipality 57014 | Con. PR W 01

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
SIMCOE	TINY	1	78

[redacted]

Address: 161 DARBY RD RR#1 ~~WAVERLEY~~ WYEBRIDGE ONT.

Date completed: 30 (day) OCT (month) 02 (year)

21 | Northing | 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
BLACK	TOP SOIL			0	1
BROWN	SAND	GRAVEL		1	31
BROWN	SAND	CLAY		31	53
GREY	CLAY	SAND		53	69
GREY	CLAY			69	92
BROWN	CLAY	SAND		92	177
GREY	CLAY			177	235
GREY	SAND	CLAY		235	260
BROWN	SAND	STREAKS OF CLAY		260	271
GREY	CLAY			271	—
		TOTAL DEPTH 271'			

31

32

WATER RECORD

Water found at - feet	Kind of water
260	☑ Fresh

CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
5	Steel	.188	16" ABOVE GROUND	263

SCREEN

Sizes of opening (Slot No.)	Diameter	Length
4-12 / 4-14	5 inches	8 feet

Material and type: STAINLESS STEEL | Depth at top of screen: 263 feet

PLUGGING & SEALING RECORD

☐ Annular space ☐ Abandonment

Depth set at - feet From	To	Material and type (Cement grout, bentonite, etc.)
		K PACKER
		BOLE PLUG

PUMPING TEST

Pumping test method	Pumping rate	Duration of pumping
☑ Bailer	5 GPM	12 Hours — Mins

Water levels during: ☑ Pumping ☐ Recovery

Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
48 feet	160 feet	104 feet	131 feet	143 feet	160 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: 185 feet | Recommended pump rate: 6 GPM

FINAL STATUS OF WELL

☑ Water supply

WATER USE

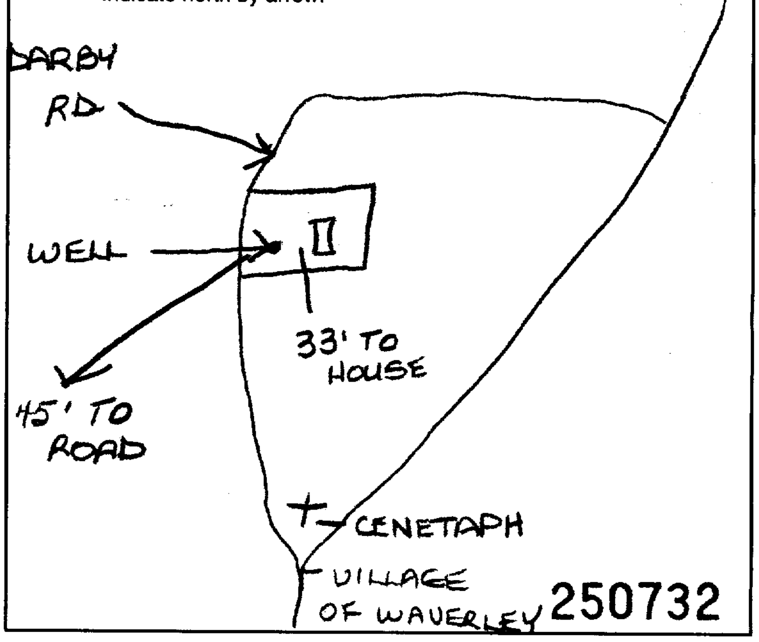
☑ Domestic

METHOD OF CONSTRUCTION

☑ Cable tool

LOCATION OF WELL

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



250732

Name of Well Contractor	Well Contractor's Licence No.
BUIE & BUKER DRILLING LTD	1467

Address: RR#1 BOX 7. BARRIE ONT

Name of Well Technician	Well Technician's Licence No.
BRIAN BUKER	T0226

Signature of Technician/Contractor: Brian Buker | Submission date: 5 (day) 02 (mo) 03 (yr)

MINISTRY USE ONLY

Data source	Contractor	Date received
	1467	FEB 18 2003

Date of inspection | Inspector

Remarks: CSS.ES3

2 - MINISTRY OF THE ENVIRONMENT COPY

0506 (07/00) Front Form 9

Ontario — Ministry of Environment and Energy

The Ontario Water Resources Act
WATER WELL RECORD

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

11 — 5738778 — Municipality 57014 — Con PR W — 01

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
[redacted]	TINY	7				78

Address of Well Location: 161 DARBY RD. RR#1 WYEBRIDGE

Date completed: 10 day / 1 month / 04 year

21 — UTM Zone / Easting / 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	SAND	STONES		0	23
GREY	SAND	CLAY		23	102
GREY	SAND		DRY	102	109
GREY	CLAY	SAND		109	178
GREY	CLAY			178	222
GREY	SAND			222	226
GREY	SAND	CLAY		226	—
		TOTAL DEPTH	226'		

31 — 32

41 WATER RECORD

Water found at - feet	Kind of water
222 (10-13)	1 ☑ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (14)
(15-18)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (19)
(20-23)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (24)
(25-28)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (29)
(30-33)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (34) (60)

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
5 (10-11)	1 ☑ Steel (12) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	16" ABOVE GROUND (13-16)	222 (17-18)
(17-18)	1 ☐ Steel (19) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic		(20-23)	
(24-25)	1 ☐ Steel (26) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic		(27-30)	

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38)	Length (39-40)
4-16	5 inches	4 feet

Material and type: STAINLESS STEEL — Depth at top of screen (41-44): 222 feet (80)

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	K PACKER
18-21	22-25	BENSEAL
26-29	30-33 (80)	

71 PUMPING TEST

Pumping test method (10): 1 ☐ Pump 2 ☑ Bailer

Pumping rate (11-14): 8 GPM

Duration of pumping (15-16 / 17-18): 4 Hours — Mins

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

Static level (19-21)	Water level end of pumping (22-24)	15 minutes (26-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
174 feet	196 feet	183 feet	196 feet	196 feet	196 feet

If flowing give rate (38-41): GPM

Pump intake set at: feet

Water at end of test (42): ☑ Clear ☐ Cloudy

Recommended pump type: ☐ Shallow ☑ Deep

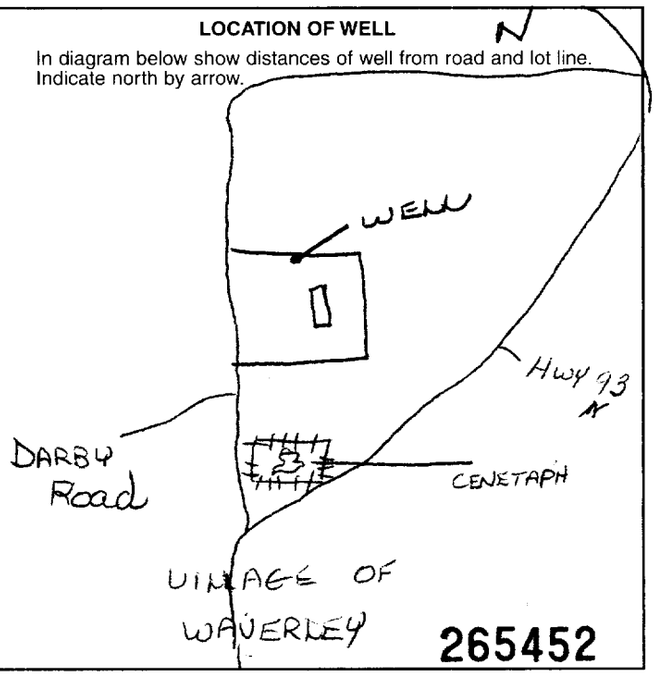
Recommended pump setting (43-45): 205 feet

Recommended pump rate (46-49): 8 GPM

(50-53)

LOCATION OF WELL

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



265452

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 use 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.
Bill & Baker Drilling Ltd	1467
Address: RR#1 Barrie Ont	
Name of Well Technician: Brian Baker	Well Technician's Licence No.: T0226
Signature of Technician/Contractor: Brian Baker	Submission date: day 30 mo 5 yr 04

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68) (80)
	1467	JUN 10 2004
Date of inspection	Inspector	
Remarks		CSSE55

2 - MINISTRY OF ENVIRONMENT AND ENERGY COPY

0506 (06/02) Front Form 9

Ontario Ministry of the Environment

Well Ta A062215 (nt Below)

A062215

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name	E-mail Address	Well Constructed by Well Owner
CEDARHURST QUARRIES AND CRUSHING LIMITED		(C/O WATERLOO GEOSCIENCE)	☐

Mailing Address (Street Number/Name, RR)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
P.O. Box 250	KING CITY	ONTARIO	L7B 1B2	

Part A Construction and/or Major Alteration of a Well

Address of Well Location (Street Number/Name, RR)	Township	Lot	Concession
40 DARBY ROAD			

County/District/Municipality	City/Town/Village	Province	Postal Code
	WAVERLY	Ontario	

UTM Coordinates	Zone	Easting	Northing	GPS Unit Make	Model	Mode of Operation
NAD 83	17	591767	4944915			☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Overburden and Bedrock Materials *(see instructions on the back of this form)*

FEET

General Colour	Most Common Material	Other Materials	General Description	Depth (Metres) From	Depth (Metres) To
BROWN	SAND			0	5'
BROWN	SILTY CLAY			5'	10'
GREY	SILTY CLAY			10'	60'

Annular Space/Abandonment Sealing Record

FEET

Depth Set at (Metres) From	To	Type of Sealant Used (Material and Type)	Volume Placed (Cubic Metres)
0	2'	CEMENT	
2'	10'	BENTONITE HOLEPLUG	
10'	44'	BENTONITE GROUT	
44'	47'	BENTONITE HOLEPLUG	
47'	60'	SILICA SAND	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Rotary (Air) ☐ Digging
☐ Air percussion ☑ Boring
☐ Other, *specify*

Water Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☑ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Status of Well

☐ Water Supply ☐ Dewatering Well ☑ Observation and/or Monitoring Hole
☐ Replacement Well ☐ Abandoned, Insufficient Supply ☐ Alteration (Construction)
☐ Test Hole ☐ Abandoned, Poor Water Quality ☐ Other, *specify*
☐ Recharge Well ☐ Abandoned, other, *specify*

Location of Well

Please provide a map below showing:
- all property boundaries, and measurements sufficient to locate the well in relation to fixed points,
- an arrow indicating the North direction
- detailed drawings can be provided as attachments no larger than legal size (8.5" by 14")
- vidigital pictures of inside of well can also be provided

SEE ATTACHED

Results of Well Yield Testing

Check box if after test of well yield, water was:
☐ Clear and sand free
☐ Cannot develop to sand-free state

If pumping discontinued, give reason:

Pumping test method

Pump intake set at *(Metres)* N/A

Pumping rate *(Litres/min)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(Metres)*

Recommended pump type ☐ Shallow ☐ Deep

Recommended pump depth ____ Metres

Recommended pump rate *(Litres/min)*

If flowing give rate *(Litres/min)*

	Draw Down Time (Min)	Draw Down Water Level (Metres)	Recovery Time (Min)	Recovery Water Level (Metres)
Static Level			Static Level	
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Water Details

Water found at Depth	Kind of Water
____ Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
____ Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
____ Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals

Casing Used

☐ Galvanized ☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete

Screen Used

☐ Galvanized ☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete

No Casing and Screen Used

☐ Open Hole

Disinfected? ☐ Yes ☐ No

Casing and Well Details

Diameter of the Hole *(Centimetres)* 6"

Depth of the Hole *(Metres)* FEET 60'

Wall Thickness *(Metres)* SCH 40

Inside Diameter of the Casing *(Metres)* 2"

Depth of the Casing *(Metres)* FEET 50'

Date Well Completed (yyyy/mm/dd)	Was the well owner's information package delivered?	Date the Well Record and Package Delivered to Well Owner (yyyy/mm/dd)
2007/11/8	☐ Yes ☑ No	

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
LANTECH DRILLING SERVICES INC.	6809

Business Address (Street No./Name, number, RR)	Municipality
3661 MT. ALBERT ROAD	SHARON

Province	Postal Code	Business E-mail Address
ONTARIO	L0G 1V0	

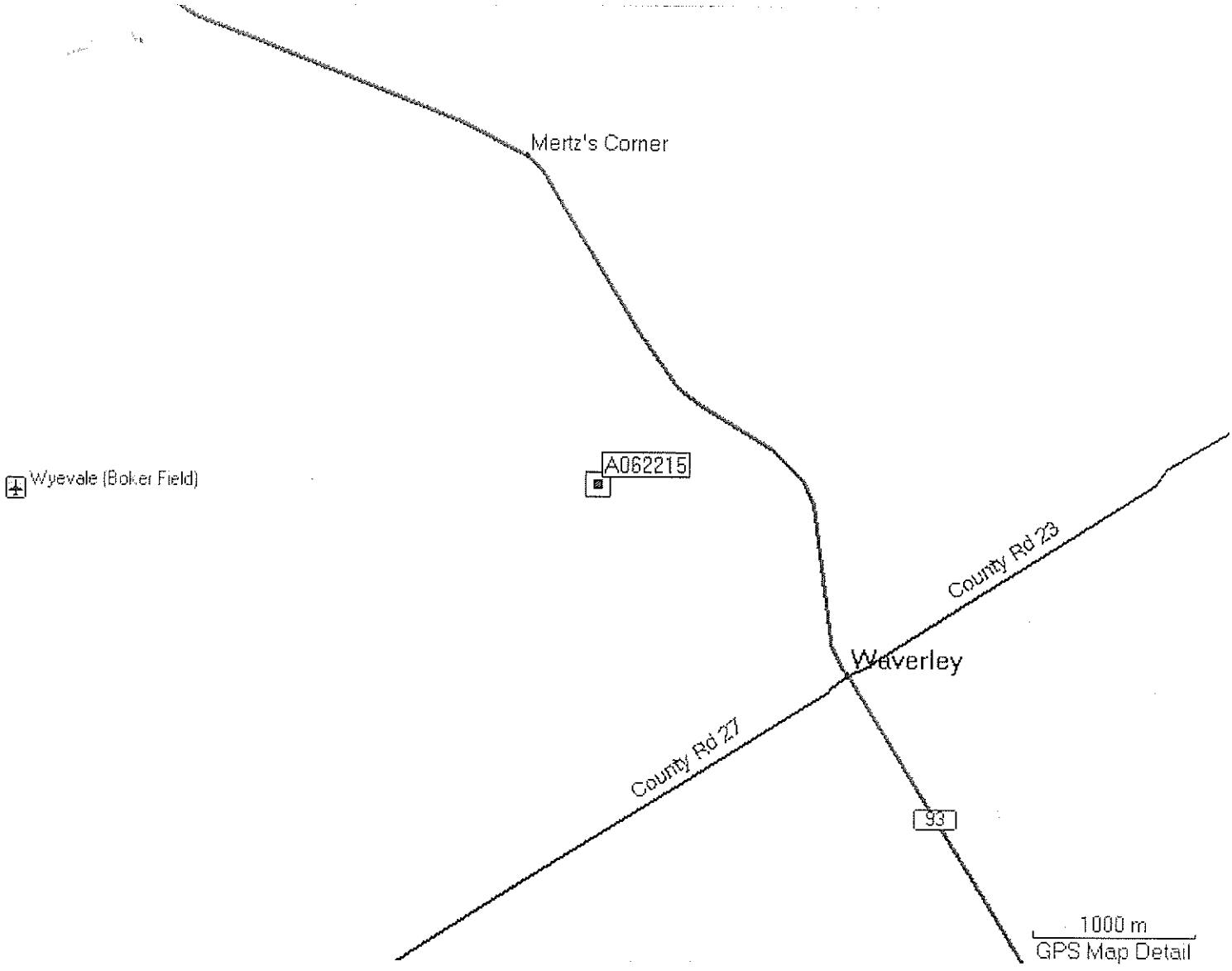
Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
905 478 2243	JEREMY LYNCH

Well Technician's Licence No.	Signature of Technician	Date Submitted (yyyy/mm/dd)
3019		2007/11/26

Ministry Use Only

Audit No.	Well Contractor No.
Z69299	
Date Received (yyyy/mm/dd)	**Date of Inspection (yyyy/mm/dd)**
DEC 24 2007	
Remarks	

0506E (11/2006) Ministry's Copy



Z 69299
DEC 2 4 2007

A 082184 WW263

Ontario — Ministry of the Environment

Well T... No. (Place Sticker and/or Print Below)

A 082184

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name: KJ Beamish. Last Name / Organization: Cedarhurst Quarries & Crushing Ltd. E-mail Address: ☐ Well Constructed by Well Owner

Mailing Address (Street Number/Name): P.O. Box 250 Municipality: KING CITY. Province: ON Postal Code: L7B 1B2 Telephone No. (inc. area code): 905-833-4666

Well Location

Address of Well Location (Street Number/Name): Marshall - Baseline Rd. Township: TINY Lot: Concession:

County/District/Municipality: City/Town/Village: Waverly Province: Ontario Postal Code:

UTM Coordinates NAD 83: Zone 17 Easting 590519 Northing 4944304 Municipal Plan and Sublot Number: Other:

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
brown	gravel	course Sand	loose	0	110'
brown	Sand	gravel	loose	110'	160'
brown	medium Sand	fine Sand	loose	160'	180'
brown	Silt	fine Sand	Packed	180'	189'
brown	medium Sand	fine Sand	loose	189'	220'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	22'	grout	40 gal

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, specify Air Rotary

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☒ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/8"	Steel	1.88	+20"	216'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	12	216'	220'

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify

Water Details

Water found at Depth	Kind of Water	
40' (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☒ Untested ☐ Other, specify	
216' (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☒ Untested ☐ Other, specify	
(m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	22'	8 3/4"
22'	220'	7"

Results of Well Yield Testing

After test of well yield, water was: ☒ Clear and sand free ☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 100'

Pumping rate (l/min / GPM): 14 GPM

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 54'7"

If flowing give rate (l/min-/ GPM)

Recommended pump depth (m/ft): 75'

Recommended pump rate (l/min / GPM): 15 GPM +

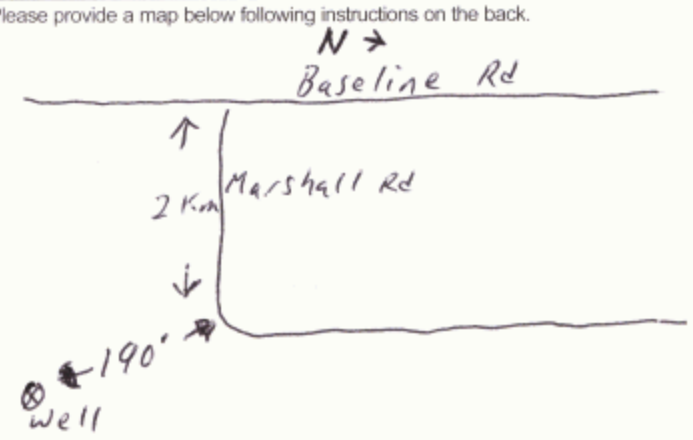
Well production (l/min / GPM): 15 GPM +

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	38'2"		
1	45	1	46'7
2	48'7	2	43'2
3	50'9	3	41'1
4	52'3	4	39'9
5	53'1	5	39'1
10	54'3	10	38'
15	54'4	15	37'
20	54'5	20	
25	54'6	25	
30	54'6	30	
40	54'6	40	
50	54'6	50	
60	54'7	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: Canadian Well Drilling Well Contractor's Licence No.: 7075

Business Address (Street Number/Name): 9 Bertram Ind Park Midhurst Municipality: Springwater

Province: ON Postal Code: L0L 1X0 Business E-mail Address:

Bus. Telephone No. (inc. area code): 705 728 9872 Name of Well Technician (Last Name, First Name): Fleming Peter

Well Technician's Licence No.: 2874 Signature of Technician and/or Contractor: Peter Fleming Date Submitted: 20090615

Well owner's information package delivered: ☐ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 20090602

Ministry Use Only

Audit No. Z 94354

Received JUN 29 2009

0506E (12/2007)

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

V A 082190 (Print Below)

A082190

WW29

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Cedarhurst Quarries & Crushing Ltd		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
P.O. BOX 250	King City	ON	L7B1B2	9058334666

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Darby Rd	Tiny	79	1

County/District/Municipality	City/Town/Village	Province	Postal Code
Simcoe	Waversley	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	592343	4945072		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
brown	Sand	clay	loose	0	63'
grey	clay	silt	hard	63'	125'
grey	clay	silt	Soft	125'	155'
grey	Fine Sand		Packed	155'	175'
brown	Fine Sand		loose	175'	209'
brown	course Sand		loose	209'	222'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	22'	grout	40 gal

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, specify Air Rotary

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/8"	Steel	1.88	+2'	211'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
6"	Steel		212'	222'

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth	Kind of Water	Hole Diameter Depth (m/ft) From	To	Diameter (cm/in)
55' (m/ft) ☐ Gas	☒ Fresh ☐ Untested ☐ Other, specify	22'	222'	7"
190 (m/ft) ☐ Gas	☒ Fresh ☐ Untested ☐ Other, specify			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify			

Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 100'

Pumping rate (l/min / GPM): 10 GPM

Duration of pumping: 1 hrs 00 min

Final water level end of pumping (m/ft): 74'

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 120'

Recommended pump rate (l/min / GPM): 10 + gpm

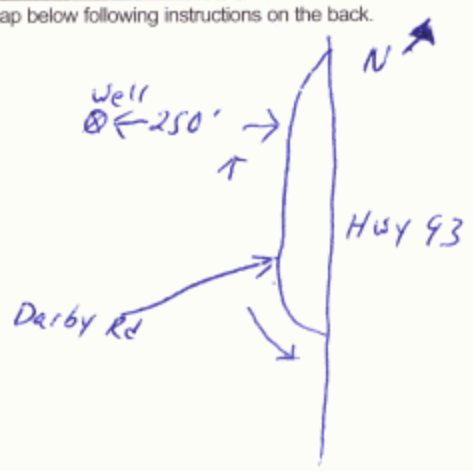
Well production (l/min / GPM): 200 + gpm

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	73'		
1	74'	1	73'
2	74'	2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60	74'	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Canadian Well Drilling	7075

Business Address (Street Number/Name)	Municipality
9 Bertram Ind Park Midhurst	Springwater

Province	Postal Code	Business E-mail Address
ON	L0L1X0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
7052898972	Fleming Peter

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
2874	Pete Fleming	2009 05 04

Well owner's information package delivered: ☐ Yes ☐ No

Date Package Delivered: _____

Date Work Completed: 2009 04 29

Ministry Use Only

Audit No. Z 94368

Received JUN 29 2009

0506E (12/2007)

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Measurements recorded in: ☐ Metric ☒ Imperial

We [illegible] A105968 [illegible] int Below)

A105968

WW323

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Peanut Const.			

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
3300 King Vaughan Rd #250	King City	ON	L0G 1K0	9058338466

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#40 Darby Rd			

County/District/Municipality	City/Town/Village	Province	Postal Code
Simcoe		Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	592351	4945076		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
brown	Sand gravel	clay	loose	0	58

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	20'	grout	40 gal

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, specify Air Rotary

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
6 1/8	Steel	1.88	+2	55'
5 3/8	Steel	1.88	53	55'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
6"	Steel	14	55	58

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	☐ Gas	Kind of Water: ☐ Fresh ☒ Untested ☐ Other, specify
50		
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20	8 3/4
20	58	7"

Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 50'

Pumping rate (l/min / GPM): 15 gpm

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 34'

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 50'

Recommended pump rate (l/min / GPM): 15 gpm +

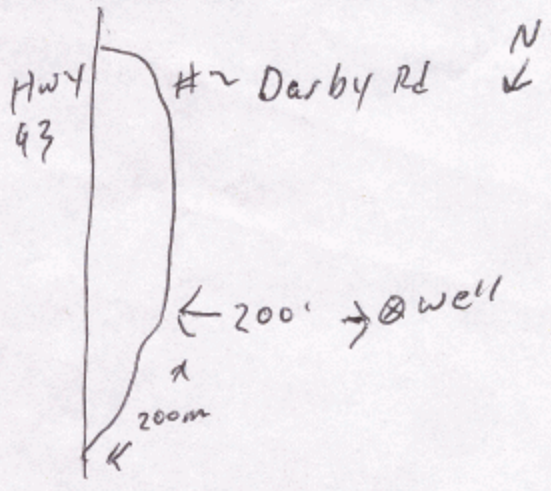
Well production (l/min / GPM): 40 gpm

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	28'9		
1	32'9	1	29.65
2	33.40	2	29.40
3	33.55	3	29.25
4	33.60	4	29.25
5	33.65	5	29.20
10	33.80	10	
15	33.85	15	
20	33.90	20	
25		25	
30	33.95	30	
40	33.97	40	
50	34.25	50	
60	34	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Canadian Soil Drilling	7075

Business Address (Street Number/Name)	Municipality
12493 Hwy 27 N Midhurst	Springwater

Province	Postal Code	Business E-mail Address
ON	L0L1X0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
7057289872	Fleming Peter

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
2874	Peter Fleming	20100809

Well owner's information package delivered: ☐ Yes ☐ No

Date Package Delivered: [illegible]

Date Work Completed: 20100805

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Audit No. Z099585

Received AUG 31 2010

0506E (12/2007)

Ministry's Copy

Ontario — Ministry of the Environment

Well T... A105969 (Below)

A105969

WW322.

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Beamish Construction (King City)		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
3300 King Vaughan Rd Box 250		ON	L0G 1N0	9058334666

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
2 Darby Rd			

County/District/Municipality	City/Town/Village	Province	Postal Code
Simcoe		Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	592279	4945367		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
brown	fine sand	clay	loose	0	50'
grey	clay	silt	hard	50'	256'
brown	fine sand		loose	256'	258'
grey	clay		hard	256'	260'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	20	grout	40 gal

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, specify Air Rotary

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/8	Steel	1.88	+2	254
5 7/8	steel	1.88	252	254

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	8	254	258

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth	Kind of Water	
256 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, specify	
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20	8 3/4
20	260	7"

Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 250'

Pumping rate (l/min / GPM): 5 gpm

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 218'

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 250'

Recommended pump rate (l/min / GPM): 5 gpm

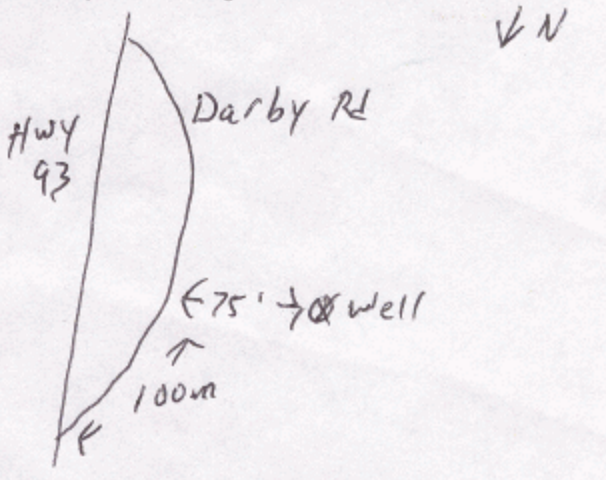
Well production (l/min / GPM):

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	75'		
1	84'	1	216'7
2	86'	2	215'
3	90'	3	214'
4	92'	4	212'9
5	95'	5	211'4
10	109'3	10	206'4
15	123'1	15	199'8
20	135'2	20	195
25	160'5	25	186'1
30	~~178'8~~	30	178'3
40	179'8	40	170'2
50	198'5	50	161'2
60	214'8 218'	60	152'3

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Canadian Soil Drilling	7075

Business Address (Street Number/Name)	Municipality
12493 Hwy 27 N Midhurst	Springwater

Province	Postal Code	Business E-mail Address
ON	L0L 1X0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
7057289872	Fleming Peter

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
2874	Peter Fleming	20100809

Well owner's information package delivered: ☐ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 20100804

Ministry Use Only

Audit No. Z099584

AUG 31 2010 Received

0506E (12/2007)

Ministry's Copy

Appendix G
Historical Data

Appendix G.1
Historical Groundwater and Surface Water Elevations

Historical Groundwater and Surface Water Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

PW1-09

GS =	260.00	
REF =	260.62	
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
-	-	-
-	-	-
-	-	-
7/15/2009 09:00	23.09	237.53
7/20/2009 13:00	23.10	237.52
7/29/2009 10:51	23.07	237.55
8/14/2009 13:23	23.05	237.57
-	-	-
3/22/2010 07:53	23.43	237.19
3/30/2010 11:35	23.44	237.18
-	-	-
8/19/2010 13:25	23.50	237.12
10/19/2010 12:20	23.58	237.04
5/12/2011 12:10	23.55	237.07
8/4/2011 14:23	23.43	237.20
10/28/2011 11:54	23.48	237.14
-	-	-
8/23/2012 15:09	30.87	229.75
11/6/2012 11:41	23.80	236.82
6/11/2013 12:25	30.79	229.83
8/23/2014 11:05	23.08	237.54
10/25/2014 10:04	23.16	237.46
3/16/2017 14:20	23.61	237.01
-	-	-
10/5/2017 09:53	30.45	230.17
11/1/2017 11:35	23.15	237.47

MW4-10

GS =	260.00	
REF =	260.82	
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
8/4/2010 14:36	8.80	252.02
8/19/2010 11:10	8.85	251.97
10/19/2010 12:35	9.98	250.84
5/12/2011 12:25	8.57	252.25
8/4/2011 14:45	8.44	252.38
10/28/2011 12:17	8.73	252.09
7/30/2012 15:38	8.89	251.93
8/23/2012 14:58	9.00	251.83
11/6/2012 11:39	9.18	251.64
6/11/2013 12:47	8.45	252.37
8/23/2014 11:55	8.22	252.60
10/25/2014 10:18	8.41	252.41
3/16/2017 14:10	8.89	251.93
-	-	-
10/5/2017 09:58	8.33	252.49
11/1/2017 12:00	8.49	252.33

Historical Groundwater and Surface Water Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

MW1			MW1-09		
GS =	263.00		GS =	247.50	
REF =	263.20		REF =	247.96	
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)	Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
-	-	-	6/3/2009 11:23	11.52	236.45
-	-	-	-	-	-
7/7/2009 11:30	8.20	255.00	7/7/2009 13:00	11.60	236.36
-	-	-	-	-	-
7/20/2009 16:08	8.31	254.89	7/20/2009 13:35	11.65	236.31
-	-	-	-	-	-
8/14/2009 12:42	8.18	255.02	8/14/2009 14:38	11.67	236.29
3/18/2010 10:43	8.22	254.98	3/18/2010 11:23	11.96	236.00
3/22/2010 8:04	8.24	254.96	3/22/2010 8:36	11.96	236.00
3/30/2010 12:13	8.22	254.98	3/30/2010 1:23	11.91	236.05
-	-	-	-	-	-
-	-	-	8/19/2010 15:00	12.04	235.92
10/19/2010 12:50	8.48	254.72	10/19/2010 13:58	12.15	235.82
5/12/2011 12:45	8.27	254.93	5/12/2011 13:42	11.80	236.16
8/4/2011 15:08	8.17	255.03	8/4/2011 15:30	11.90	236.06
10/28/2011 12:33	8.29	254.91	10/28/2011 13:15	12.05	235.91
7/30/2012 15:58	8.51	254.69	7/30/2012 16:26	12.15	235.81
8/23/2012 14:38	8.44	254.76	8/23/2012 13:00	12.24	235.73
11/6/2012 12:10	8.21	254.99	11/6/2012 12:50	12.36	235.61
6/11/2013 13:09	8.12	255.08	6/11/2013 14:52	11.84	236.12
8/23/2014 10:50	8.36	254.84	8/23/2014 13:20	11.79	236.17
10/25/2014 9:49	8.41	254.79	10/25/2014 9:18	11.89	236.07
3/16/2017 14:00	8.14	255.06	3/16/2017 15:47	12.03	235.93
-	-	-	-	-	-
10/5/2017 10:24	8.06	255.14	10/5/2017 11:45	11.74	236.22
11/1/2017 12:35	7.96	255.24	11/1/2017 14:00	11.84	236.12

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Historical Groundwater and Surface Water Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

#50632			#25425		
GS =	260.50		GS =	254.00	
REF =	261.05		REF =	254.50	
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)	Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
-	-	-	6/3/2009 10:00	4.36	250.14
-	-	-	6/4/2009 14:12	4.37	250.13
-	-	-	7/7/2009 13:34	4.53	249.97
-	-	-	-	-	-
-	-	-	7/20/2009 14:55	4.63	249.87
-	-	-	-	-	-
-	-	-	8/14/2009 14:10	4.56	249.94
-	-	-	3/18/2010 12:25	4.825	249.68
-	-	-	3/22/2010 9:30	4.85	249.65
-	-	-	3/30/2010 13:02	4.91	249.59
-	-	-	-	-	-
8/19/2010 14:13	23.21	237.84	-	-	-
10/19/2010 13:05	28.79	232.26	10/19/2010 14:40	5.28	249.22
5/12/2011 14:18	26.60	234.45	5/12/2011 14:50	5.33	249.17
8/4/2011 15:58	23.28	237.77	8/4/2011 16:20	5.28	249.22
10/28/2011 13:39	23.71	237.34	10/28/2011 13:56	5.06	249.44
7/30/2012 16:51	24.65	236.40	7/30/2012 17:16	5.36	249.14
8/23/2012 13:32	24.66	236.40	8/23/2012 13:50	5.48	249.02
11/6/2012 13:16	23.95	237.10	11/6/2012 13:35	5.36	249.14
6/11/2013 14:00	23.43	237.62	6/11/2013 13:44	4.71	249.79
8/23/2014 14:40	22.25	238.81	8/23/2014 12:25	4.75	249.75
10/25/2014 11:06	22.92	238.13	10/25/2014 10:50	4.88	249.62
3/16/2017 12:30	24.22	236.83	3/16/2017 13:06	4.63	249.87
-	-	-	-	-	-
10/5/2017 11:15	30.45	230.60	-	-	-
11/1/2017 10:30	26.68	234.37	-	-	-

Historical Groundwater and Surface Water Elevations
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

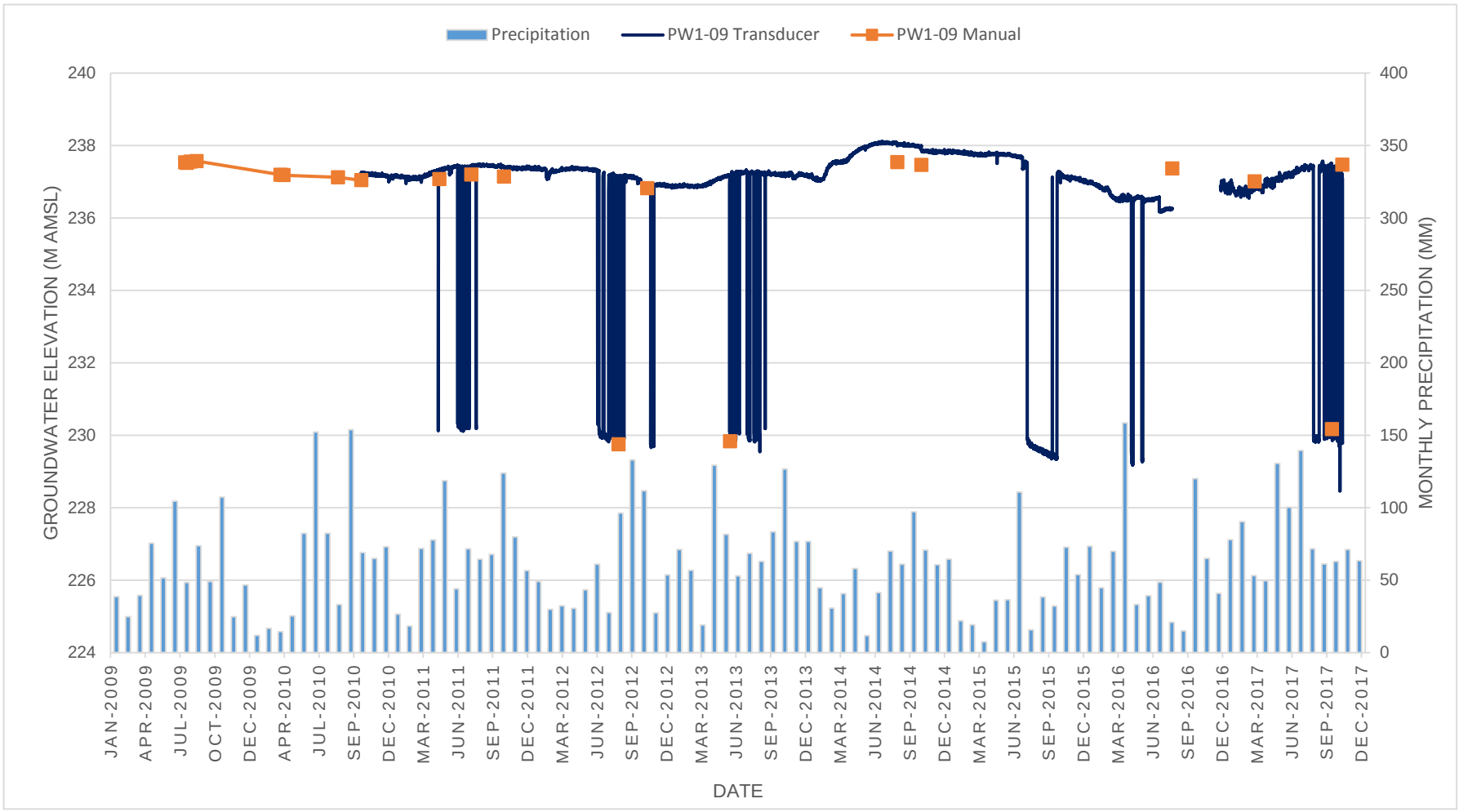
#17709

GS =	256.00	
REF =	256.40	
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
6/3/2009 13:08	19.70	236.70
-	-	-
7/7/2009 13:50	19.00	237.40
-	-	-
7/20/2009 15:10	19.01	237.39
-	-	-
8/14/2009 13:45	19.06	237.34
3/18/2010 13:45	19.32	237.08
3/22/2010 9:09	19.33	237.07
3/30/2010 12:42	19.36	237.04
-	-	-
-	-	-
10/19/2010 14:58	19.53	236.87
5/12/2011 15:08	22.75	233.65
8/4/2011 16:33	19.35	237.05
10/28/2011 14:10	19.40	237.00
7/30/2012 17:30	20.73	235.67
8/23/2012 14:19	20.05	236.35
11/6/2012 13:48	20.30	236.10
6/11/2013 13:27	19.90	236.50
8/23/2014 12:15	18.94	237.46
10/25/2014 10:39	19.03	237.37
3/16/2017 13:30	19.54	236.86
7/14/2017 13:15	18.98	237.42
10/5/2017 10:50	19.45	236.95
11/1/2017 11:15	19.17	237.23

Staff Gauge

GS =	NA	
REF =	264.37	Top of Staff Gauge
Date/Time	Depth to Water (m)	Groundwater Elevation (m AMSL)
8/21/2017	0.20	263.57
8/22/2017	0.22	263.59
8/23/2017	0.23	263.60
8/24/2017	0.25	263.62
8/25/2017	0.31	263.68
8/28/2017	0.37	263.74
8/29/2017	0.41	263.78
8/30/2017	0.49	263.86
8/31/2017	0.55	263.92
9/01/2017	0.60	263.97
9/05/2017	0.59	263.96
9/06/2017	0.49	263.86
9/07/2017	0.44	263.81
9/08/2017	0.38	263.75
9/11/2017	0.33	263.70
9/12/2017	0.27	263.64
9/13/2017	0.21	263.58
9/14/2017	0.26	263.63
9/15/2017	0.30	263.67
9/18/2017	0.24	263.61
9/19/2017	0.24	263.61
9/20/2017	0.21	263.58
9/21/2017	0.21	263.58
9/22/2017	0.30	263.67
9/25/2017	0.20	263.57
9/26/2017	0.21	263.58
9/27/2017	0.22	263.59
9/28/2017	0.16	263.53
9/29/2017	0.16	263.53
10/02/2017	0.16	263.53
10/03/2017	0.12	263.49
10/04/2017	0.17	263.54
10/05/2017	0.14	263.51
10/06/2017	0.15	263.52
10/10/2017	0.13	263.50
10/11/2017	0.19	263.56
10/12/2017	0.14	263.51
10/13/2017	0.19	263.56
10/16/2017	0.18	263.55
10/17/2017	0.18	263.55
10/18/2017	0.11	263.48
10/19/2017	0.18	263.55
10/20/2017	0.17	263.54
10/23/2017	0.15	263.52
10/24/2017	0.21	263.58
10/25/2017	0.17	263.54
10/26/2017	0.24	263.61
10/27/2017	0.19	263.56
10/30/2017	0.21	263.58
10/31/2017	0.22	263.59
11/01/2017	0.28	263.65
11/02/2017	0.25	263.62
11/03/2017	0.29	263.66
11/06/2017	0.29	263.66
11/07/2017	0.36	263.73
11/08/2017	0.34	263.71
11/09/2017	0.36	263.73
11/13/2017	0.33	263.70
11/14/2017	0.40	263.77
11/16/2017	0.39	263.76
11/17/2017	0.33	263.70
11/20/2017	0.31	263.68
11/21/2017	0.31	263.68
11/22/2017	0.40	263.77
11/23/2017	0.36	263.73
11/24/2017	0.31	263.68
11/27/2017	0.39	263.76
11/28/2017	0.34	263.71
11/29/2017	0.31	263.68
11/30/2017	0.33	263.70
12/01/2017	0.30	263.67
12/04/2017	0.33	263.70

Appendix G.2
Hydrographs



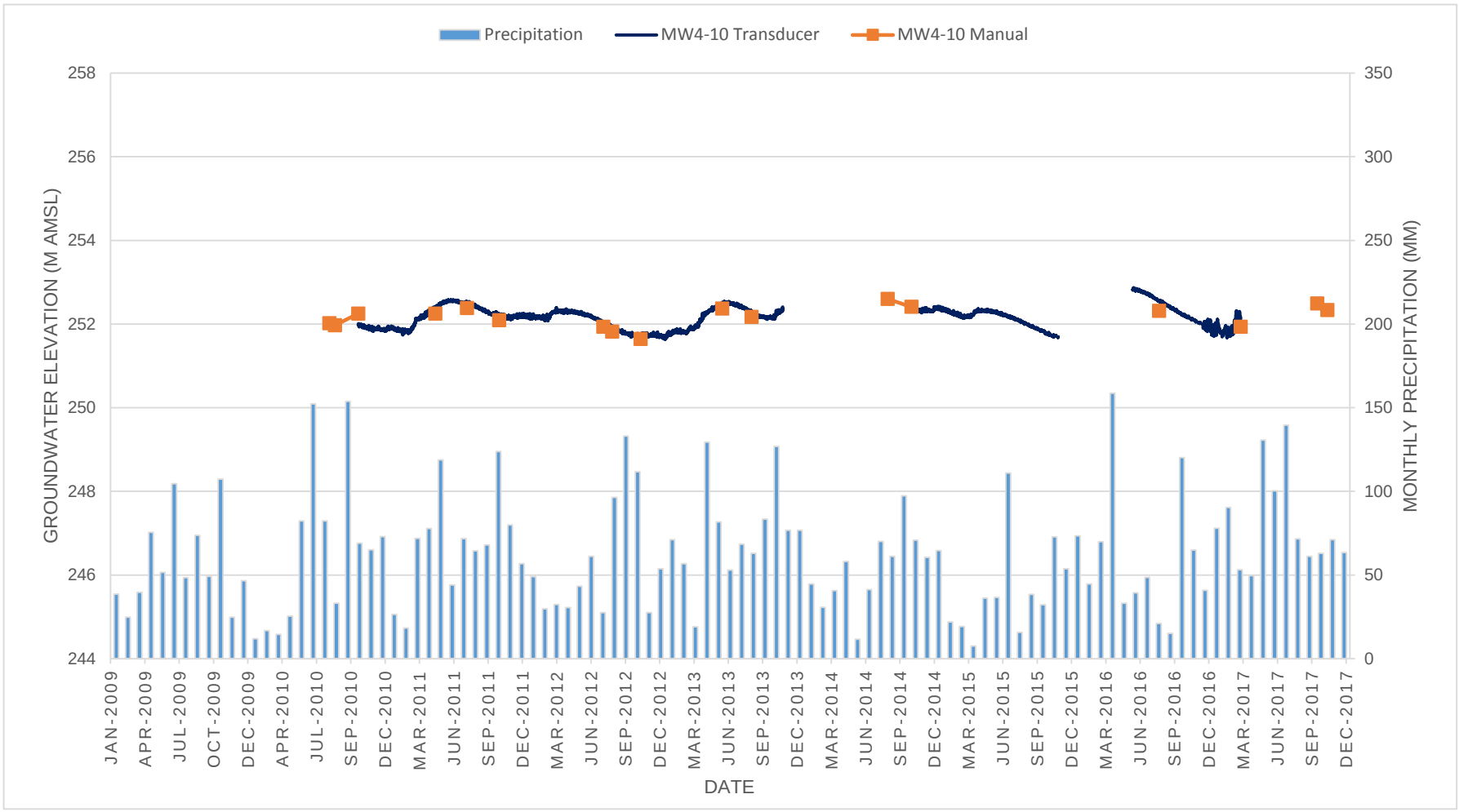
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365

1/17/2018

PW1-09 Hydrograph

FIGURE 1



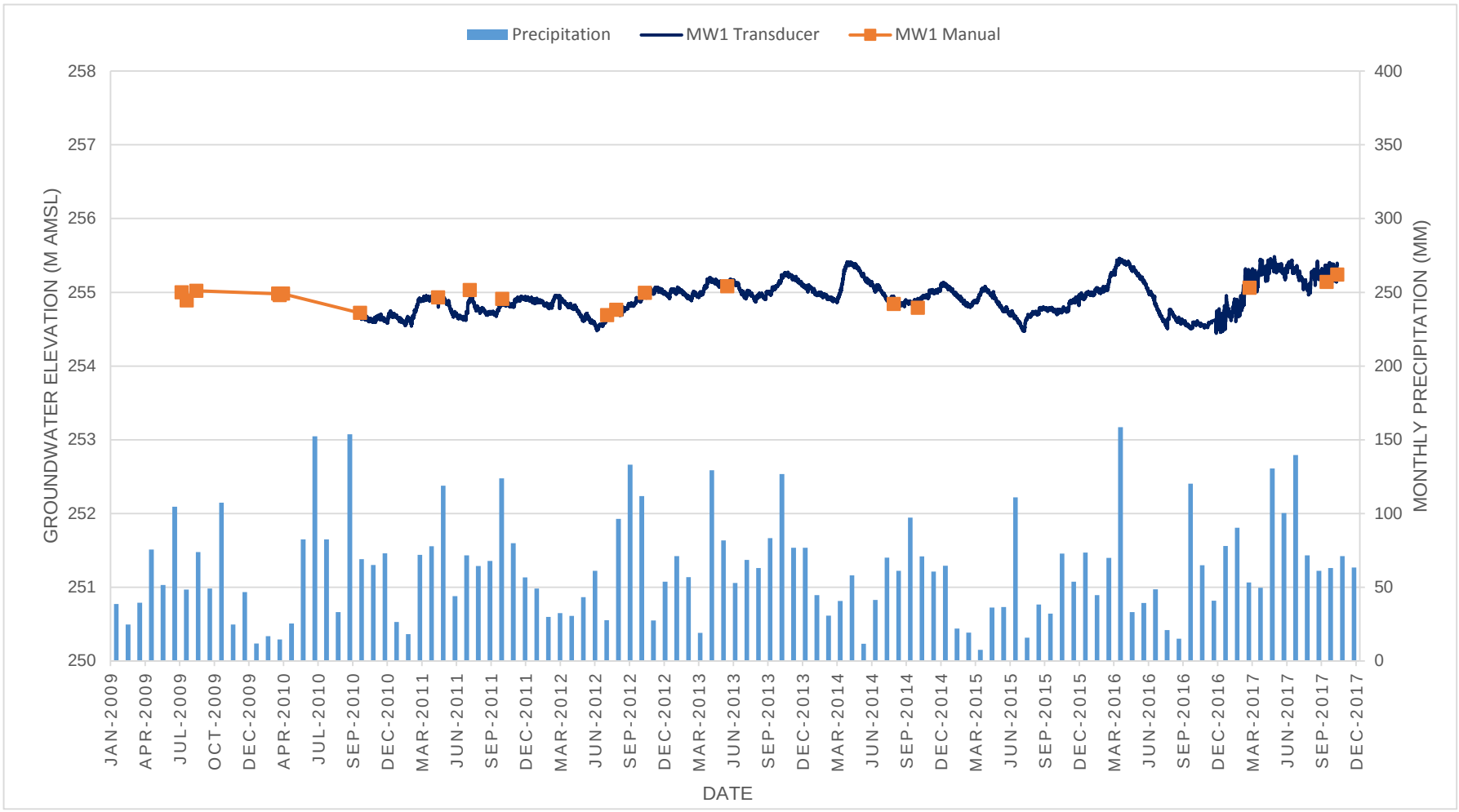
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365

1/17/2018

MW4-10 Hydrograph

FIGURE 2



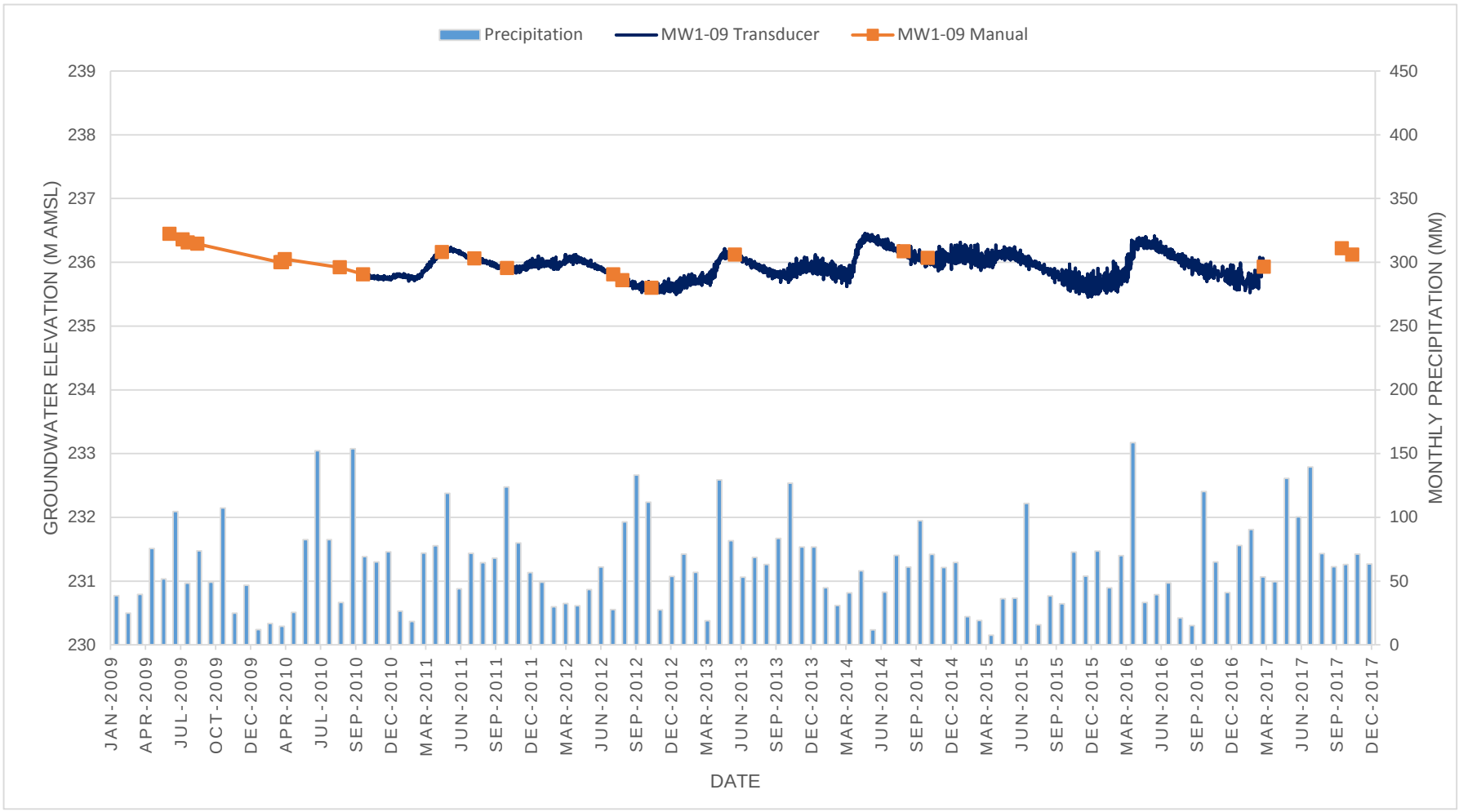
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365

1/17/2018

MW1 Hydrograph

FIGURE 3



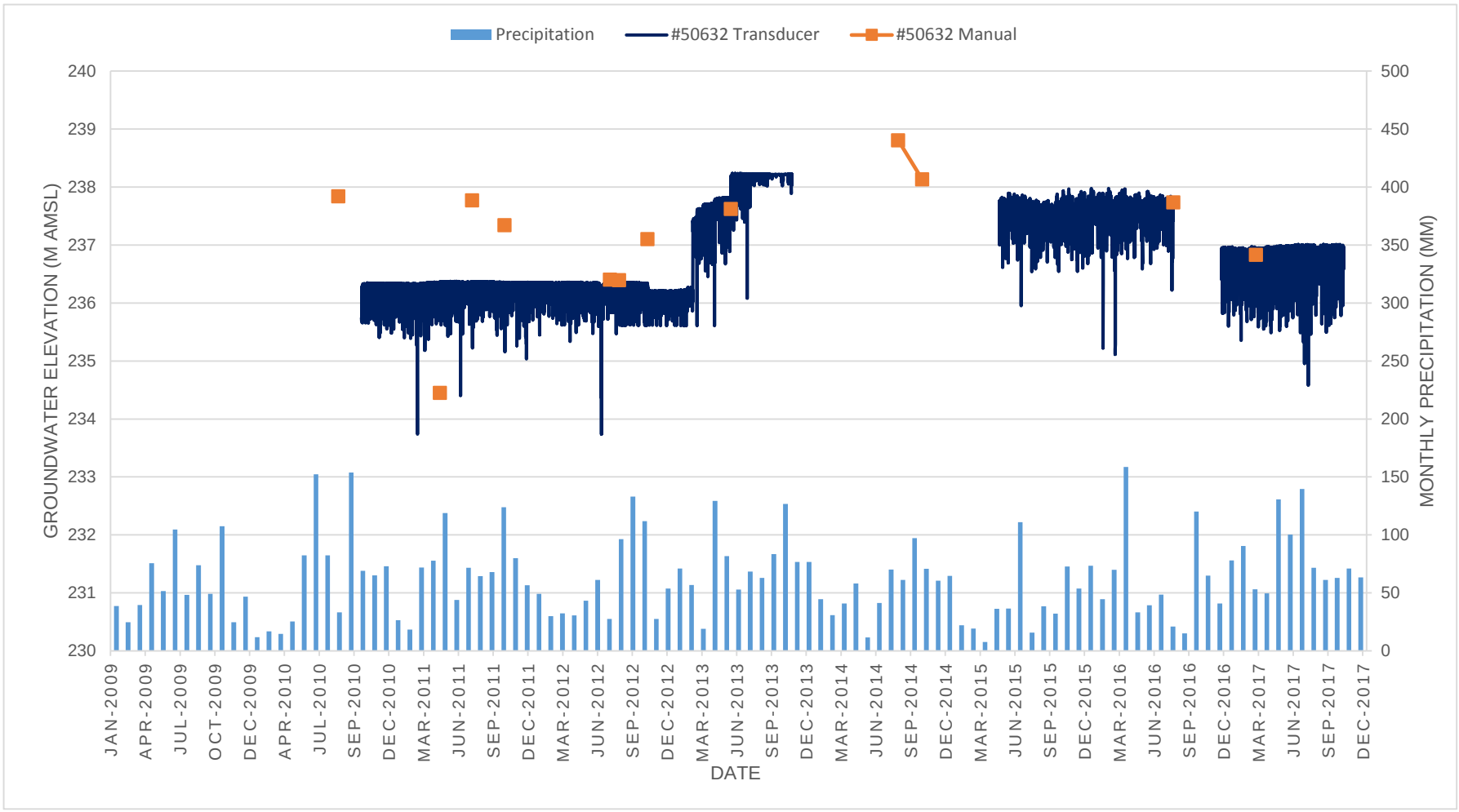
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365

1/17/2018

MW1-09 Hydrograph

FIGURE 4



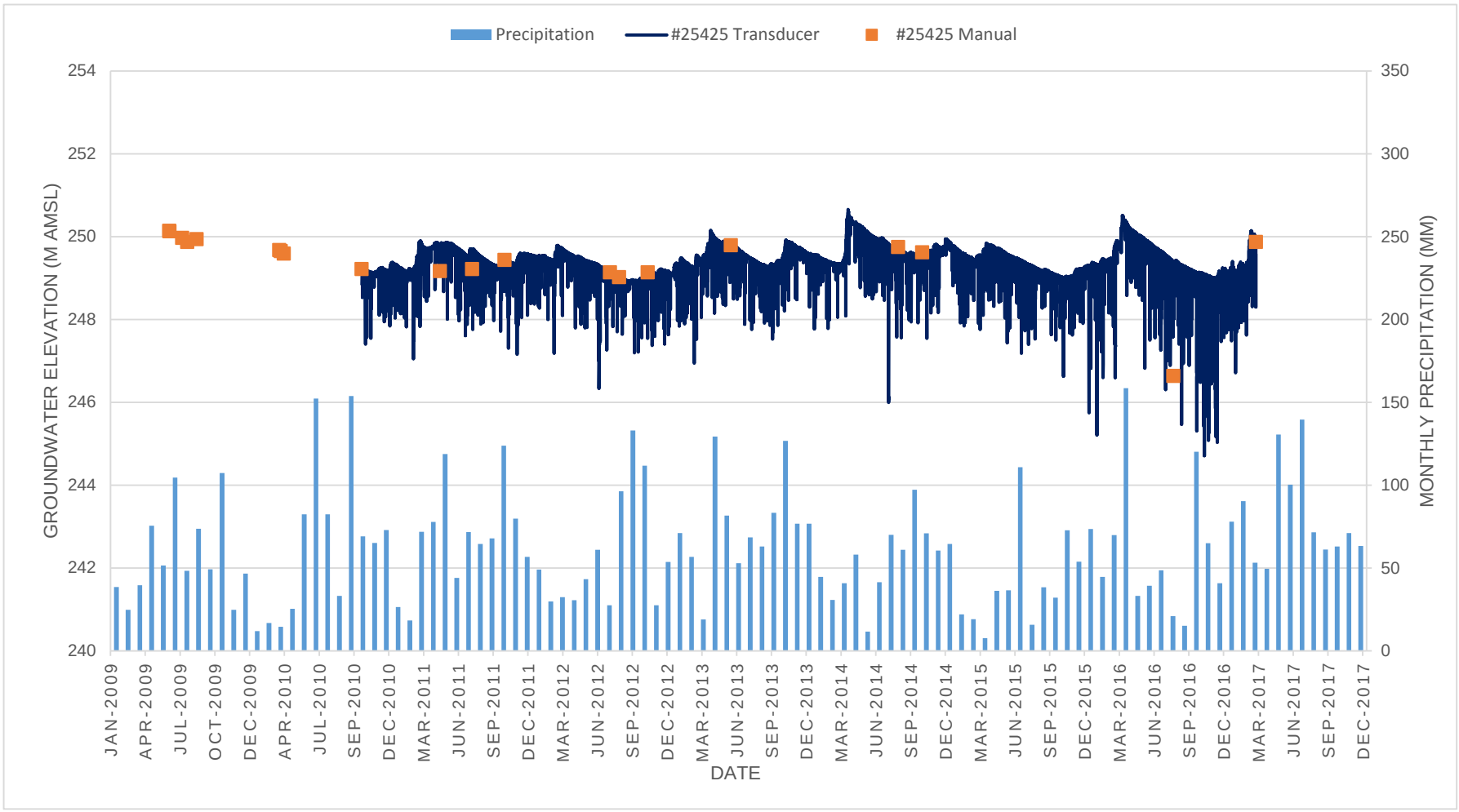
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365

1/17/2018

#50632 Hydrograph

FIGURE 5



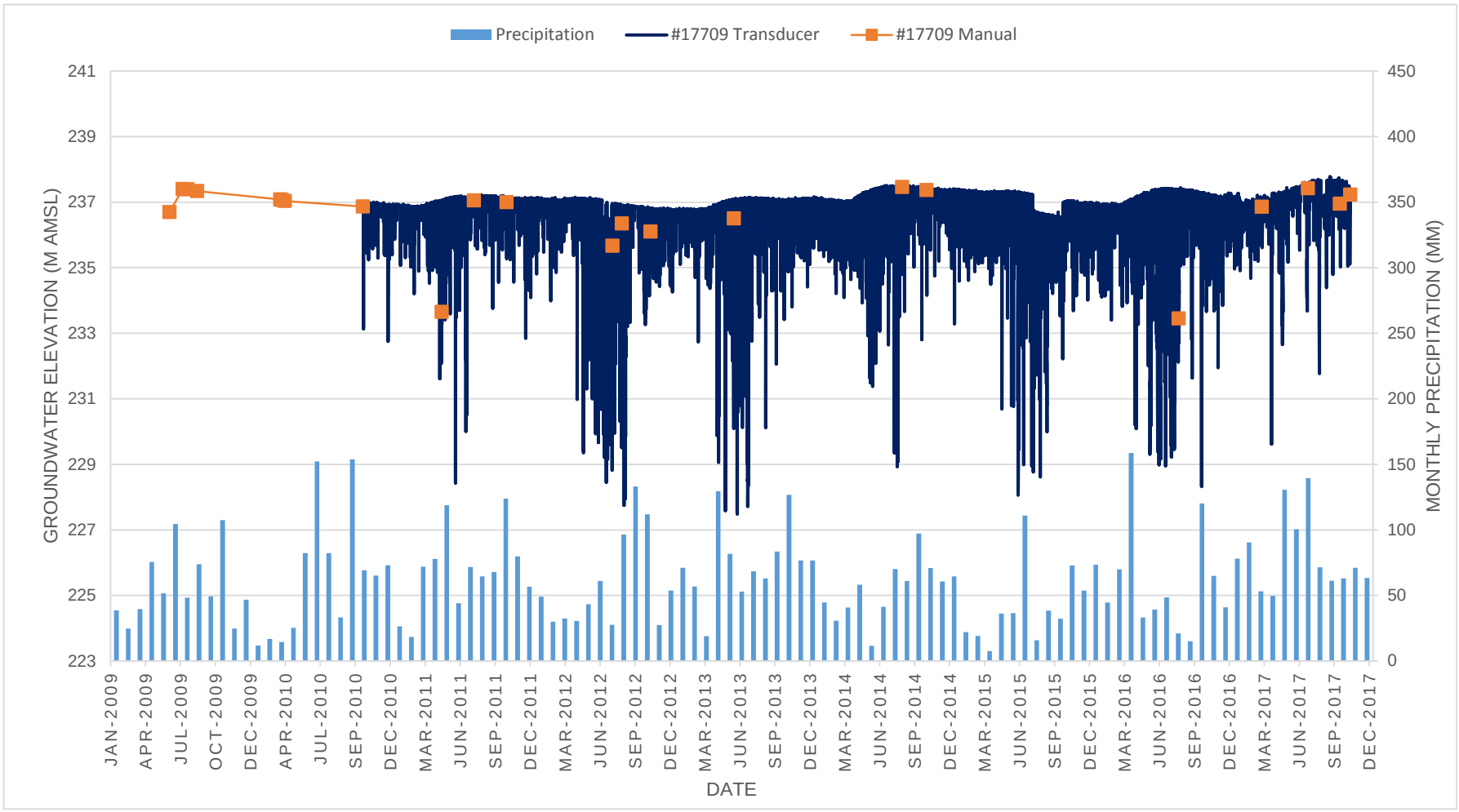
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365

1/17/2018

#25425 Hydrograph

FIGURE 6



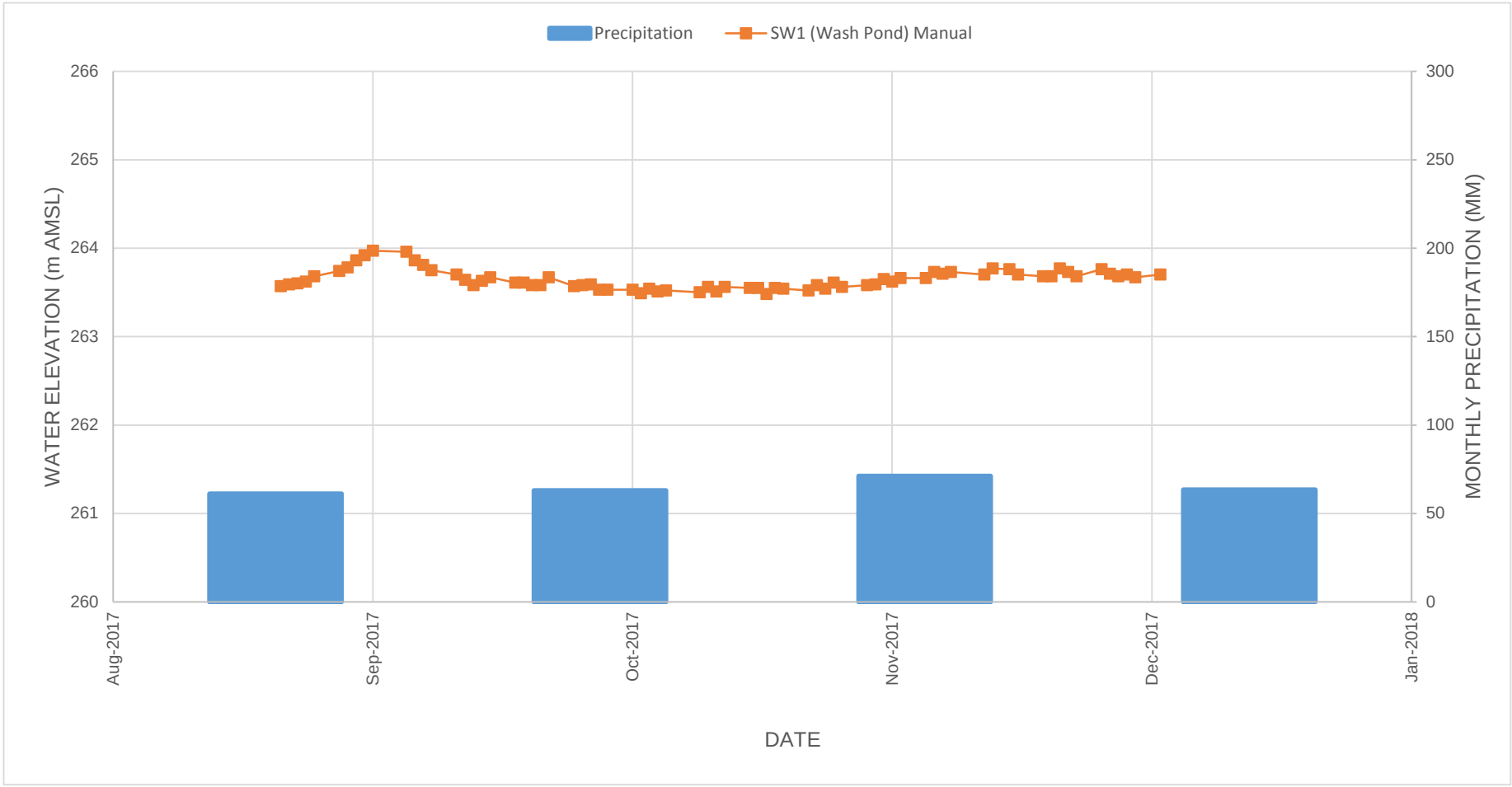
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365

1/17/2018

#17709 Hydrograph

FIGURE 7



Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

11155365

1/17/2018

SW1 (Wash Pond) Hydrograph

FIGURE 8

Appendix G.3
2017 Water Takings

Table G.3a

2017 Water Taking Data - Well Pump Data
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Teedon Pit (3079) - PTTW 5003-APFH26 Well Pump Data	2017 *Days YTD*	Drilled Well (PW1-09) *65*	Max. Num. of Days Taken per Year 210	Max. Taken per Day (litres) 1,635,840	Max. Num. of Hrs taken per Day 24	Max. Taken per Minute (litres) 1,136	Liters/Gallons 4.54609
Date & Time	**Staff Guage Reading**	**Pond Elevation**	**Meter Readings (Imperial Gallons)**	**Liters between Readings**	**Minutes between readings**	**Liters/Minute**	**Comments**
Thursday, August 17, 2017 10:40 AM	0.13	263.501	21,358,561	-	-	-	First day
Friday, August 18, 2017 07:10 AM	0.25	263.621	21,516,153	716,427	1,230	582	Charging the pond
Saturday, August 19, 2017 12:00 AM Sunday, August 20, 2017 12:00 AM							
Monday, August 21, 2017 06:35 AM	0.20	263.571	22,065,162	2,495,844	4,285	582	Charging the pond
Tuesday, August 22, 2017 07:50 AM	0.22	263.591	22,258,869	880,609	1,515	581	Charging the pond
Wednesday, August 23, 2017 06:51 AM	0.23	263.601	22,435,443	802,721	1,381	581	Charging the pond
Thursday, August 24, 2017 07:46 AM	0.25	263.621	22,626,035	866,448	1,495	580	Charging the pond
Friday, August 25, 2017 06:45 AM	0.25	263.621	22,801,710	798,634	1,379	579	Charging the pond
Friday, August 25, 2017 07:06 PM	0.31	263.681	22,894,928	423,777	741	572	Charging the pond
Saturday, August 26, 2017 12:00 AM Sunday, August 27, 2017 12:00 AM							
Monday, August 28, 2017 07:12 AM	0.37	263.741	23,354,800	2,090,620	3,606	580	Charging the pond
Monday, August 28, 2017 07:18 PM	0.37	263.741	23,447,434	421,123	726	580	Charging the pond
Tuesday, August 29, 2017 07:32 PM	0.41	263.781	23,632,687	842,177	1,454	579	Charging the pond
Wednesday, August 30, 2017 09:16 AM	0.44	263.811	23,738,618	481,572	824	584	Charging the pond
Wednesday, August 30, 2017 07:17 PM	0.49	263.861	23,814,111	343,198	601	571	Charging the pond
Thursday, August 31, 2017 07:40 AM	0.55	263.921	23,908,914	430,983	743	580	Charging the pond
Friday, September 01, 2017 07:00 AM	0.60	263.971	24,087,222	810,604	1,400	579	Charging the pond
Saturday, September 02, 2017 12:00 AM Sunday, September 03, 2017 12:00 AM Monday, September 04, 2017 12:00 AM							Long weekend
Tuesday, September 05, 2017 12:00 AM	-	-	-	-	-	-	
Wednesday, September 06, 2017 12:00 AM	-	-	-	-	-	-	
Thursday, September 07, 2017 12:00 AM	-	-	-	-	-	-	
Friday, September 08, 2017 10:45 AM	-	-	24,087,222	-	-	-	Water Sample
Friday, September 08, 2017 10:52 AM	0.39	263.761	24,088,116	4,064	7	581	Water Sample
Saturday, September 09, 2017 12:00 AM Sunday, September 10, 2017 12:00 AM							
Monday, September 11, 2017 10:40 AM	-	-	-	-	-	-	
Tuesday, September 12, 2017 10:40 AM	-	-	-	-	-	-	
Wednesday, September 13, 2017 10:40 AM	-	-	-	-	-	-	
Thursday, September 14, 2017 10:40 AM	0.26	263.631	24,088,116	-	-	-	
Friday, September 15, 2017 06:15 PM	0.30	263.671		-	-	-	Meter Error
Saturday, September 16, 2017 12:00 AM Sunday, September 17, 2017 12:00 AM							
Monday, September 18, 2017 02:08 PM	-	-	24,090,469	10,697	4,073	3	Flow Meter Test/Service
Monday, September 18, 2017 03:02 PM	0.24	263.611	24,097,383	31,432	4,127	8	Flow Meter Test/Service
Tuesday, September 19, 2017 10:40 AM	-	-	-	-	-	-	
Wednesday, September 20, 2017 10:30 AM	-	-	24,097,383	-	-	-	
Thursday, September 21, 2017 06:15 PM	0.24	263.611	24,341,143	1,108,155	1,905	582	Charging the pond
Friday, September 22, 2017 10:40 AM	-	-	-	-	-	-	
Saturday, September 23, 2017 12:00 AM Sunday, September 24, 2017 12:00 AM							
Monday, September 25, 2017 10:40 AM	-	-	-	-	-	-	
Tuesday, September 26, 2017 10:40 AM	-	-	-	-	-	-	Not Running
Wednesday, September 27, 2017 10:40 AM	-	-	-	-	-	-	Not Running
Thursday, September 28, 2017 10:40 AM	-	-	-	-	-	-	
Friday, September 29, 2017 08:30 AM	0.23	263.601	24,341,143	-	-	-	
Saturday, September 30, 2017 12:30 PM	0.23	263.601	24,556,472	978,905	1,680	583	Charging the pond

Table G.3a

2017 Water Taking Data - Well Pump Data
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Teedon Pit (3079) - PTTW 5003-APFH26	2017	Drilled Well (PW1-09)	Max. Num. of Days Taken per Year	Max. Taken per Day (litres)	Max. Num. of Hrs taken per Day	Max. Taken per Minute (litres)	Liters/Gallons
Well Pump Data	*Days YTD*	*65*	210	1,635,840	24	1,136	4.54609

Date & Time	Staff Guage Reading	Pond Elevation	Meter Readings (Imperial Gallons)	Liters between Readings	Minutes between readings	Liters/Minute	Comments
Sunday, October 01, 2017 12:00 AM							
Monday, October 02, 2017 10:40 AM	-	-	-	-	-	-	
Tuesday, October 03, 2017 10:40 AM	-	-	-	-	-	-	
Wednesday, October 04, 2017 10:40 AM	0.12	263.491	24,556,472	-	-	-	
Thursday, October 05, 2017 10:40 AM	0.17	263.541	24,775,636	996,339	1,440	692	Charging the pond
Friday, October 06, 2017 10:40 AM	-	-	-	-	-	-	
Saturday, October 07, 2017 12:00 AM Sunday, October 08, 2017 12:00 AM Monday, October 09, 2017 12:00 AM							Long weekend
Tuesday, October 10, 2017 12:00 PM	0.19	263.561	24,775,636	-	-	-	
Wednesday, October 11, 2017 11:00 AM	0.21	263.581	24,952,758	805,213	1,380	583	Charging the pond
Thursday, October 12, 2017 10:40 AM	-	-	-	-	-	-	
Friday, October 13, 2017 10:40 AM	-	-	-	-	-	-	
Saturday, October 14, 2017 12:00 AM Sunday, October 15, 2017 12:00 AM							
Monday, October 16, 2017 10:40 AM	-	-	-	-	-	-	
Tuesday, October 17, 2017 10:40 AM	-	-	-	-	-	-	
Wednesday, October 18, 2017 06:30 AM	0.18	263.551	24,952,758	-	-	-	
Thursday, October 19, 2017 06:30 PM	0.18	263.551	25,225,698	1,240,810	2,160	574	Charging the pond
Friday, October 20, 2017 10:40 AM	-	-	-	-	-	-	
Saturday, October 21, 2017 12:00 AM Sunday, October 22, 2017 12:00 AM							
Monday, October 23, 2017 10:30 AM	0.15	263.521	25,225,698				Pump turned on
Tuesday, October 24, 2017 10:40 AM	0.21	263.581	25,417,066	869,976	1,450	600	Pump Turned off
Wednesday, October 25, 2017 04:30 PM	0.17	263.541	25,417,066				Pump Turned on
Thursday, October 26, 2017 05:10 PM	0.24	263.611	25,604,732	853,147	4,720	181	Pump turned off
Friday, October 27, 2017 10:40 AM							
Saturday, October 28, 2017 12:00 AM Sunday, October 29, 2017 12:00 AM							
Monday, October 30, 2017 10:30 AM	0.21	263.581	25,604,732				Pump turned on
Tuesday, October 31, 2017 07:45 AM	0.22	263.591	25,790,394	844,036	1,275	662	Pump turned off
Wednesday, November 01, 2017 10:40 AM							
Thursday, November 02, 2017 10:40 AM							
Friday, November 03, 2017 10:30 AM	0.29	263.661	25,790,394				Pump turned on
Friday, November 03, 2017 06:30 PM	0.29	263.661	25,854,125	289,727	480	604	Pump turned off
Saturday, November 04, 2017 12:00 AM Sunday, November 05, 2017 12:00 AM							
Monday, November 06, 2017 05:15 PM	0.29	263.661	25,854,125				Pump turned on
Tuesday, November 07, 2017 04:45 PM	0.36	263.731	26,033,578	815,809	1,410	579	Pump turned off
Wednesday, November 08, 2017 10:40 AM							
Thursday, November 09, 2017 10:40 AM							
Friday, November 10, 2017 10:40 AM							
Saturday, November 11, 2017 12:00 AM Sunday, November 12, 2017 12:00 AM							
Monday, November 13, 2017 05:15 PM	0.33	263.701	26,033,578				Pump turned on
Tuesday, November 14, 2017 05:15 PM	0.4	263.771	26,215,920	828,943	1,440	576	Pump turned off
Wednesday, November 15, 2017 10:40 AM							
Thursday, November 16, 2017 10:40 AM							
Friday, November 17, 2017 10:40 AM							
Saturday, November 18, 2017 12:00 AM							

Table G.3a

2017 Water Taking Data - Well Pump Data
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Teedon Pit (3079) - PTTW 5003-APFH26 Well Pump Data	2017 *Days YTD*	Drilled Well (PW1-09) *65*	Max. Num. of Days Taken per Year 210	Max. Taken per Day (litres) 1,635,840	Max. Num. of Hrs taken per Day 24	Max. Taken per Minute (litres) 1,136	Liters/Gallons 4.54609
Date & Time	**Staff Guage Reading**	**Pond Elevation**	**Meter Readings (Imperial Gallons)**	**Liters between Readings**	**Minutes between readings**	**Liters/Minute**	**Comments**
Sunday, November 19, 2017 12:00 AM							
Monday, November 20, 2017 10:40 AM		263.371					
Tuesday, November 21, 2017 10:40 AM	0.33	263.701	26,215,920				Pump turned on
Wednesday, November 22, 2017 10:40 AM	0.4	263.771	26,444,120	1,037,418	1,440	720	Pump turned off
Thursday, November 23, 2017 10:40 AM		263.371					
Friday, November 24, 2017 10:40 AM		263.371					
Saturday, November 25, 2017 12:00 AM Sunday, November 26, 2017 12:00 AM							
Monday, November 27, 2017 10:40 AM		263.371					
Tuesday, November 28, 2017 01:30 PM		263.371					
Wednesday, November 29, 2017 06:30 PM		263.371					
Thursday, November 30, 2017 10:40 AM		263.371					
Friday, December 01, 2017 10:40 AM		263.371					
Saturday, December 02, 2017 12:00 AM Sunday, December 03, 2017 12:00 AM							
Monday, December 04, 2017 10:40 AM		263.371					
Tuesday, December 05, 2017 10:40 AM		263.371					
Wednesday, December 06, 2017 10:40 AM		263.371					
Thursday, December 07, 2017 10:40 AM		263.371					
Friday, December 08, 2017 10:40 AM		263.371					
Saturday, December 09, 2017 12:00 AM Sunday, December 10, 2017 12:00 AM							
Monday, December 11, 2017 10:40 AM		263.371					
Tuesday, December 12, 2017 10:40 AM		263.371					
Wednesday, December 13, 2017 10:40 AM		263.371					
Thursday, December 14, 2017 10:40 AM		263.371					
Friday, December 15, 2017 10:40 AM		263.371					
Saturday, December 16, 2017 12:00 AM Sunday, December 17, 2017 12:00 AM							
Monday, December 18, 2017 10:40 AM		263.371					
Tuesday, December 19, 2017 10:40 AM		263.371					
Wednesday, December 20, 2017 10:40 AM		263.371					
Thursday, December 21, 2017 10:40 AM		263.371					
Friday, December 22, 2017 10:40 AM		263.371					
Saturday, December 23, 2017 12:00 AM Sunday, December 24, 2017 12:00 AM							
Monday, December 25, 2017 10:40 AM		263.371					
Tuesday, December 26, 2017 10:40 AM		263.371					
Wednesday, December 27, 2017 10:40 AM		263.371					
Thursday, December 28, 2017 10:40 AM		263.371					
		263.371					
		TOTAL		23,119,409	LITRES		

Table G.3b

2017 Water Taking Data - Wash Pond Data
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Teedon Pit (3079) - PTTW 5003-APFH2 **2017**							Top of Staff Gauge Elevation (masl)	Max. Num. of Hrs taken per Day	*Days YTD (Max 210)*	Max. Taken per Minute (litres)	Max. Taken per Day (litres)	
Wash Pond Data (Dugout Pond)							**264.371**	**12**	*72*	**7,274**	**5,237,280**	
Date	**Staff Guage Reading**	**Meter Reading (Start)**	**Meter Reading (End)**	**Pump Reading Time (Start)**	**Pump Reading Time (End)**	**Downtime (Hours)**	**Pond Elevation**	**Hours/Day**	**Liters/Hour**	**Liters/Minute**	**Liters/Day**	**Comments**
Monday, August 21, 2017	0.20	-	-				263.571	1.0	269,652	4,494	269,652	
Tuesday, August 22, 2017	0.22	-	-				263.591	6.0	257,894	4,298	1,547,366	
Wednesday, August 23, 2017	0.23	-	-				263.601	9.0	271,584	4,526	2,444,256	
Thursday, August 24, 2017	0.25	-	-				263.621	9.5	241,555	4,026	2,294,774	
Friday, August 25, 2017	0.31	-	-				263.681	10.0	299,405	4,990	2,994,048	
Saturday, August 26, 2017 Sunday, August 27, 2017												
Monday, August 28, 2017	0.37	-	-				263.741	10.0	267,175	4,453	2,671,746	
Tuesday, August 29, 2017	0.41	162,528	1,383,390				263.781	4.5	271,303	4,522	1,220,862	
Wednesday, August 30, 2017	0.49	1,383,390	4,270,572				263.861	10.5	274,970	4,583	2,887,182	
Thursday, August 31, 2017	0.55	4,270,572	7,234,080				263.921	10.5	282,239	4,704	2,963,508	
Friday, September 01, 2017	0.60	7,234,080	10,200,145				263.971	11.0	269,642	4,494	2,966,065	
Saturday, September 02, 2017 Sunday, September 03, 2017 Monday, September 04, 2017												Long weekend
Tuesday, September 05, 2017	0.59	10,200,145	12,893,029				263.961	10.0	269,288	4,488	2,692,884	
Wednesday, September 06, 2017	0.49	12,893,029	15,895,691				263.861	11.0	272,969	4,549	3,002,662	
Thursday, September 07, 2017	0.44	15,895,691	18,803,394				263.811	11.0	264,337	4,406	2,907,703	
Friday, September 08, 2017	0.38	18,803,394	21,238,735				263.751	9.0	270,593	4,510	2,435,341	
Saturday, September 09, 2017 Sunday, September 10, 2017												
Monday, September 11, 2017	0.33	21,238,735	24,198,174				263.701	10.5	281,851	4,698	2,959,439	
Tuesday, September 12, 2017	0.27	24,198,174	26,531,519				263.641	9.5	245,615	4,094	2,333,345	
Wednesday, September 13, 2017	0.21	26,531,519	29,291,612				263.581	11.0	250,918	4,182	2,760,093	
Thursday, September 14, 2017	0.26	29,291,612	31,759,970				263.631	10.0	246,836	4,114	2,468,358	
Friday, September 15, 2017	0.30	31,759,970	33,298,968				263.671	6.3	244,285	4,071	1,538,998	
Saturday, September 16, 2017 Sunday, September 17, 2017												
Monday, September 18, 2017	0.24	33,298,968	36,109,265				263.611	11.2	250,919	4,182	2,810,297	
Tuesday, September 19, 2017	0.24	36,109,265	38,693,443				263.611	11.2	230,730	3,846	2,584,178	
Wednesday, September 20, 2017	0.21	38,693,443	41,272,037				263.581	11.2	230,232	3,837	2,578,594	
Thursday, September 21, 2017	0.21	41,272,037	43,788,038				263.581	11.1	226,667	3,778	2,516,001	
Friday, September 22, 2017	0.30	43,788,038	45,313,520				263.671	6.8	224,336	3,739	1,525,482	
Saturday, September 23, 2017 Sunday, September 24, 2017												
Monday, September 25, 2017	0.20	45,313,520	47,625,217				263.571	10.2	226,637	3,777	2,311,697	
Tuesday, September 26, 2017	0.21	47,625,217	47,625,217				263.581	0.0	-	-	-	Not Running
Wednesday, September 27, 2017	0.22	47,625,217	47,625,217				263.591	0.0	-	-	-	Not Running
Thursday, September 28, 2017	0.16	47,625,217	48,526,560				263.531	4.5	200,298	3,338	901,343	
Friday, September 29, 2017	0.16	48,526,560	50,618,764				263.531	10.8	193,723	3,229	2,092,204	
Saturday, September 30, 2017 Sunday, October 01, 2017												
Monday, October 02, 2017	0.16	50,618,764	52,752,792				263.531	10.8	197,595	3,293	2,134,028	
Tuesday, October 03, 2017	0.12	52,752,792	54,404,437				263.491	10.3	160,354	2,673	1,651,645	
Wednesday, October 04, 2017	0.17	54,404,437	55,942,510				263.541	8.0	192,259	3,204	1,538,073	
Thursday, October 05, 2017	0.14	55,942,510	58,100,333				263.511	10.8	199,798	3,330	2,157,823	
Friday, October 06, 2017	0.15	58,100,333	60,332,435				263.521	11.3	197,531	3,292	2,232,102	
Saturday, October 07, 2017												

Table G.3b

2017 Water Taking Data - Wash Pond Data
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Teedon Pit (3079) - PTTW 5003-APFH2 **2017**							Top of Staff Gauge Elevation (masl)	Max. Num. of Hrs taken per Day	*Days YTD (Max 210)*	Max. Taken per Minute (litres)	Max. Taken per Day (litres)	
Wash Pond Data (Dugout Pond)							264.371	12	*72*	7,274	5,237,280	
Date	**Staff Guage Reading**	**Meter Reading (Start)**	**Meter Reading (End)**	**Pump Reading Time (Start)**	**Pump Reading Time (End)**	**Downtime (Hours)**	**Pond Elevation**	**Hours/Day**	**Liters/Hour**	**Liters/Minute**	**Liters/Day**	**Comments**
Sunday, October 08, 2017												
Monday, October 09, 2017												Long weekend
Tuesday, October 10, 2017	0.13	60,332,435	62,332,111				263.501	9.0	222,186	3,703	1,999,676	
Wednesday, October 11, 2017	0.19	62,332,111	63,814,071				263.561	7.5	197,595	3,293	1,481,960	
Thursday, October 12, 2017	0.14	63,814,071	65,753,246				263.511	9.6	201,997	3,367	1,939,175	
Friday, October 13, 2017	0.19	65,753,246	67,033,071				263.561	8.3	154,196	2,570	1,279,825	
Saturday, October 14, 2017												
Sunday, October 15, 2017												
Monday, October 16, 2017	0.18	67,033,071	69,247,187				263.551	11.1	199,470	3,325	2,214,116	
Tuesday, October 17, 2017	0.18	69,247,187	70,948,120				263.551	8.8	193,288	3,221	1,700,933	
Wednesday, October 18, 2017	0.11	70,948,120	72,628,918				263.481	7.5	224,106	3,735	1,680,798	
Thursday, October 19, 2017	0.18	72,628,918	74,575,431				263.551	9.3	209,302	3,488	1,946,513	
Friday, October 20, 2017	0.17	74,575,431	76,772,900				263.541	11.0	199,770	3,330	2,197,469	
Saturday, October 21, 2017												
Sunday, October 22, 2017												
Monday, October 23, 2017	0.15	76,772,900	78,982,169				263.521	10.7	206,474	3,441	2,209,269	
Tuesday, October 24, 2017	0.21	78,982,169	80,593,729				263.581	7.3	220,762	3,679	1,611,560	
Wednesday, October 25, 2017	0.17	80,593,729	82,808,864				263.541	10.5	210,965	3,516	2,215,135	
Thursday, October 26, 2017	0.24	82,808,864	85,071,197				263.611	11.0	205,667	3,428	2,262,333	
Friday, October 27, 2017	0.19	85,071,197	87,340,785				263.561	11.0	206,326	3,439	2,269,588	
Saturday, October 28, 2017												
Sunday, October 29, 2017												
Monday, October 30, 2017	0.21	87,340,785	89,193,803	7:15 AM	6:15 PM	2.25	263.581	8.75	211,773	3,530	1,853,018	
Tuesday, October 31, 2017	0.22	89,193,803	91,387,609	7:15 AM	6:20 PM	-	263.591	11.00	199,437	3,324	2,193,806	
Wednesday, November 01, 2017	0.28	91,387,609	93,154,641	7:45 AM	5:30 PM	2.25	263.651	6.75	261,783	4,363	1,767,032	
Thursday, November 02, 2017	0.25	93,154,641	94,933,467	7:15 AM	4:30 PM	2.50	263.621	6.50	273,666	4,561	1,778,826	
Friday, November 03, 2017	0.29	94,933,467	97,176,454	7:10 AM	6:15 PM	-	263.661	11.00	203,908	3,398	2,242,987	
Saturday, November 04, 2017												
Sunday, November 05, 2017												
Monday, November 06, 2017	0.29	97,176,454	99,373,679	7:15 AM	6:15 PM	-	263.661	11.00	199,748	3,329	2,197,225	
Tuesday, November 07, 2017	0.36	99,373,679	1,474,310	7:15 AM	6:10 PM	-	263.731	10.00	210,063	3,501	2,100,631	Flow meter reset
Wednesday, November 08, 2017	0.34	1,474,310	3,501,802	7:10 AM	6:00 PM	-	263.711	10.00	202,749	3,379	2,027,492	
Thursday, November 09, 2017	0.36	3,501,802	5,179,480	7:15 AM	5:00 PM	3.00	263.731	6.00	279,613	4,660	1,677,678	
Friday, November 10, 2017							-	-	-	-	-	Did not run because of weather
Saturday, November 11, 2017												
Sunday, November 12, 2017												
Monday, November 13, 2017	0.33	5,179,480	6,965,122	9:00 AM	6:15 PM	2.00	263.701	7.00	255,092	4,252	1,785,642	
Tuesday, November 14, 2017	0.4	6,965,122	8,665,201	8:00 AM	6:15 PM	2.00	263.771	8.00	212,510	3,542	1,700,079	
Wednesday, November 15, 2017							-	-	-	-	-	Did not run - screen changes and bearing
Thursday, November 16, 2017	0.39	8,665,201	9,484,663	8:30 AM	5:15 PM	3.75	263.761	4.25	192,815	3,214	819,462	
Friday, November 17, 2017	0.33	9,484,663	11,037,967	8:00 AM	5:30 PM	-	263.701	9.00	172,589	2,876	1,553,304	
Saturday, November 18, 2017												
Sunday, November 19, 2017												
Monday, November 20, 2017	0.31	11,037,967	12,261,983				263.681	7.00	174,859	2,914	1,224,016	
Tuesday, November 21, 2017	0.31	12,261,983	13,992,039				263.681	10.50	164,767	2,746	1,730,056	
Wednesday, November 22, 2017	0.4	13,992,039	15,606,842				263.771	10.50	153,791	2,563	1,614,803	
Thursday, November 23, 2017	0.36	15,606,842	17,019,369				263.731	6.50	217,312	3,622	1,412,527	
Friday, November 24, 2017	0.31	17,019,369	18,352,640				263.681	9.00	148,141	2,469	1,333,271	

Table G.3b

2017 Water Taking Data - Wash Pond Data
Dufferin Teedon Pit
Township of Tiny, County of Simcoe, Ontario

Teedon Pit (3079) - PTTW 5003-APFH2 **2017**							Top of Staff Gauge Elevation (masl)	Max. Num. of Hrs taken per Day	*Days YTD (Max 210)*	Max. Taken per Minute (litres)	Max. Taken per Day (litres)	
Wash Pond Data (Dugout Pond)							264.371	12	*72*	7,274	5,237,280	
Date	**Staff Guage Reading**	**Meter Reading (Start)**	**Meter Reading (End)**	**Pump Reading Time (Start)**	**Pump Reading Time (End)**	**Downtime (Hours)**	**Pond Elevation**	**Hours/Day**	**Liters/Hour**	**Liters/Minute**	**Liters/Day**	**Comments**
Saturday, November 25, 2017 Sunday, November 26, 2017												
Monday, November 27, 2017	0.39	18,352,640	18,352,640				263.761	-	-	-	-	
Tuesday, November 28, 2017	0.34	18,352,640	20,038,167				263.711	9.00	187,281	3,121	1,685,527	
Wednesday, November 29, 2017	0.31	20,038,167	20,184,438				263.681	2.50	58,508	975	146,271	
Thursday, November 30, 2017	0.33	20,184,438	20,393,213				263.701	2.00	104,388	1,740	208,775	
Friday, December 01, 2017	0.3	20,393,213	20,873,983				263.671	3.50	137,363	2,289	480,770	
Saturday, December 02, 2017 Sunday, December 03, 2017												
Monday, December 04, 2017	0.33	20,873,983	20,947,629				263.701	1.50	49,097	818	73,646	LAST DAY OF PUMPING
Tuesday, December 05, 2017							-	-	-	-	-	
Wednesday, December 06, 2017							-	-	-	-	-	
Thursday, December 07, 2017							-	-	-	-	-	
Friday, December 08, 2017							-	-	-	-	-	
Saturday, December 09, 2017 Sunday, December 10, 2017												
Monday, December 11, 2017							-	-	-	-	-	
Tuesday, December 12, 2017							-	-	-	-	-	
Wednesday, December 13, 2017							-	-	-	-	-	
Thursday, December 14, 2017							-	-	-	-	-	
Friday, December 15, 2017							-	-	-	-	-	
Saturday, December 16, 2017 Sunday, December 17, 2017												
Monday, December 18, 2017							-	-	-	-	-	
Tuesday, December 19, 2017							-	-	-	-	-	
Wednesday, December 20, 2017							-	-	-	-	-	
Thursday, December 21, 2017							-	-	-	-	-	
Friday, December 22, 2017							-	-	-	-	-	
Saturday, December 23, 2017 Sunday, December 24, 2017												
Monday, December 25, 2017							-	-	-	-	-	
Tuesday, December 26, 2017							-	-	-	-	-	
Wednesday, December 27, 2017							-	-	-	-	-	
Thursday, December 28, 2017							-	-	-	-	-	
Friday, December 29, 2017							-	-	-	-	-	
Saturday, December 30, 2017 Sunday, December 31, 2017												
										TOTAL	133,006,943	